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Deliverable 6: Connecting Nature Framework Reports for
Fast-Follower Cities



DOCUMENT PROPERTIES	
Document Title	Deliverable 6: Connecting Nature Framework Reports for Fast-Follower Cities
Work Package	WP2
Task Leader	DRIFT
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Dissemination level	Open Access
Version	Final
Status of Document	Final
Deadline	Month 58 (March 2022)

Contents

EXECUTIVE SUMMARY.....	4
1 INTRODUCTION	6
2 METHOD	7
2.1 THE CONNECTING NATURE FRAMEWORK	7
2.2 HOW THE CITIES WORKED WITH THE CONNECTING NATURE FRAMEWORK	10
2.3 ANALYSING INNOVATIONS.....	11
3 RESULTS: INNOVATIONS RELATED TO THE CONNECTING NATURE FRAMEWORK DURING THE IMPLEMENTATION OF NATURE-BASED SOLUTIONS	13
3.1 WHAT THE CITIES DID TO IMPLEMENT THE CONNECTING NATURE FRAMEWORK.....	13
3.1.1 TECHNICAL SOLUTIONS.....	14
3.1.2 GOVERNANCE	18
3.1.3 FINANCING AND BUSINESS MODELS.....	23
3.1.4 NATURE-BASED ENTREPRENEURSHIP	26
3.1.5 CO-PRODUCTION	30
3.1.6 REFLEXIVE MONITORING.....	33
3.1.7 IMPACT ASSESSMENT	35
3.2 LEARNING QUESTIONS, CHALLENGES AND OPPORTUNITIES WHEN IMPLEMENTING THE CONNECTING NATURE FRAMEWORK	37
4 TOWARDS A PRACTICAL GUIDE: WHAT NEEDS TO HAPPEN, WHEN.....	42
5 CONCLUSIONS AND OUTLOOK.....	44
REFERENCES	49
APPENDICES	53
APPENDIX A: A PRACTICAL GUIDE TO USING THE CONNECTING NATURE FRAMEWORK.....	53
APPENDIX B: THE FAST-FOLLOWER CITY'S CONNECTING NATURE FRAMEWORK REPORTS.....	53
APPENDIX C: OVERVIEW OF WORKSHOPS AND ACTIVITIES.....	53
APPENDIX D: LEARNING QUESTIONS FRCs AND FFCs PER CONNECTING NATURE FRAMEWORK ELEMENT.....	53

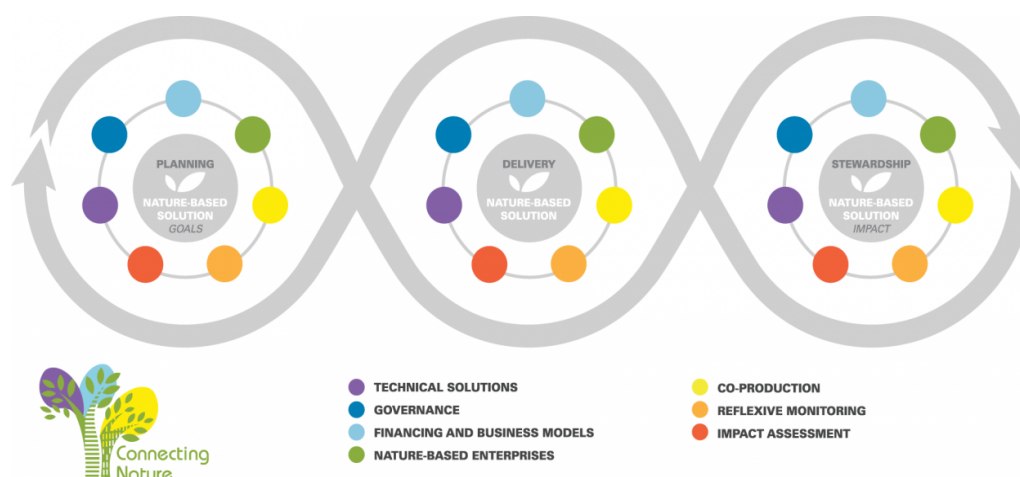
Executive summary

This Deliverable reports on the Connecting Nature Framework Reports of the Connecting Nature cities by presenting a cross-city analysis of how the cities have adapted and applied the Connecting Nature Framework for the large-scale implementation of nature-based solutions. Specifically, we identify the diverse types of innovations materialising in the cities to overcome barriers and leverage opportunities across the different elements of the Framework. These innovations represent changes in existing ways of nature-based solution planning, delivery and stewardship and thus generate new insights for science and practice about how to facilitate the large-scale implementation of nature-based solutions in cities.

The Connecting Nature Framework

The Connecting Nature Framework is a process tool that has been co-produced and co-applied with science and practice partners in the project with the aim to give a hands-on and comprehensive guide to the Connecting Nature cities to develop their nature-based solution exemplars. It places the nature-based solution at the core of an interactive process that distinguishes three phases of development for a nature-based solution: planning, delivery and stewardship. Throughout each phase there are seven separate elements that need to be considered: *Technical solutions, Governance, Financing and business models, Nature-based entrepreneurship, Co-production, Reflexive monitoring* and *Impact assessment* (Figure 1). While the first phase of the Framework development and application has focused on three Front-Runner Cities (2017-2019), we have in the second phase (2019-2022) transferred the Framework, including the generated knowledge and insights about how to apply it to different city contexts, to the seven Fast-Follower and Multiplier Cities.

Figure 1: The Connecting Nature Framework



Outcomes and impacts: analysis of innovations

The different elements of the Framework challenge the traditional urban planning practice and provide new ways to support integrated, collaborative and adaptive approaches. We identify the following key innovations that impact existing nature-based solution planning in the cities:

- Knowledge innovation: Urban planners are able to **generate systems' knowledge** about landscape conditions at various scales, involved actors and stakeholders, multiple benefits and trade-offs, financing opportunities and impacts. This knowledge is generated through collaborative processes involving other urban stakeholders.
- Technical and social innovation: **Linking the technical design of nature-based solution to social innovations** such as environmental education, cultural values, new human-nature relationships, which foster socio-cultural values, include environmental awareness raising and education and facilitate (intra-generational) exchange.
- Governance innovation: **Generating political support** through widely communicating nature-based solutions, linking nature-based solutions to strategic agendas, piloting examples of nature-based solutions and measuring the benefits.
- Organisational innovation: **Establishing cross-departmental collaboration and public-private partnerships** in order to generate systems' knowledge, facilitate co-financing and co-stewardship, and increase awareness, support and empowerment.
- Organisational innovation: **Employing new methods and tools for co-production** such as actor mapping, the Business Model Canvas and envisioning exercises to generate systems' knowledge, increase awareness, support



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- and empowerment for co-stewardship.
- Organisational innovation: Developing and implementing a **communication strategy** about nature-based solutions and the exemplar in different formats tailored to diverse target audiences.
- Organisational innovation: **Creating space for reflexive monitoring and impact assessment** to keep track on the progress in real-time and facilitate adaptive decision-making, mobilise opportunities and address barriers in view of long-term goals.
- Organisational innovation: **Investing in organisational conditions** to ensure human resources, skills and institutions for taking up integrated, adaptive and inclusive ways of working and mainstream nature-based solutions.
- Market innovation: Identifying and facilitating **provision of new products and services** related to the nature-based solution and supporting NBEs.

Benefits of the Connecting Nature Framework

The cities reported the Connecting Nature Framework as a valuable tool supporting the implementation of their nature-based solutions and urban planning more generally. From the cross-city analysis, we identify the following main benefits of the Framework and corresponding impacts in urban planning:

- A holistic and integrated approach to generate multiple benefits and break silos based on generating systemic knowledge and collaborative governance approaches;
- Keeping track of the progress and results with a long-term perspective based on reflexive monitoring and impact assessment tools;
- Innovative methods to generate knowledge, involve multiple actors, leverage financing, facilitate learning and evaluation;
- Building a narrative of nature-based solutions and the novel way of working, which also serves to leverage funding and support.

Challenges

We also identified several challenges the cities faced when implementing the Framework as a novel and complex approach. Challenges are about coming to grips with the Framework, others refer to barriers of existing planning contexts:

- Introducing the nature-based solutions concept: novel and complex
- Applying the Connecting Nature Framework tools challenges business-as-usual planning practice and requires investing in new human resources and skills of urban planners;
- Transformative nature-based solutions with multiple benefits require breaking departmental siloes and hierarchical ways of working;
- Complex and rigid regulations and fragmented ownership over land impede multi-functional nature-based solution planning, delivery and stewardship;
- Mobilising financial resources and co-financing for nature-based solutions for long-term stewardship;
- The COVID-19 pandemic slowed down implementation processes, but offered opportunities for consolidation and experimentation

Facilitating peer-to-peer learning about how to apply the Connecting Nature Framework

Our approach to facilitate peer-to-peer learning between the Connecting Nature cities has been valuable to transfer knowledge about how to adopt the Framework and implement nature-based solutions on a large-scale. It is evident that both Front-Runner and Fast-Follower Cities benefit from each other's experiences with the Connecting Nature Framework. The Learning Platform Webinar structure supported:

- Cities to verify learning objectives about the implementation of the Framework and the large-scale implementation of nature-based solutions, as well as to recognise relevant learning objectives from other cities;
- Cities to share examples and innovations that address the learning objectives;
- Scientific experts to support the cities with follow-up activities to address the learning objectives.

Outlook: transferring the Connecting Nature Framework beyond Connecting Nature

In the course of the project the Connecting Nature Framework has been transferred in different ways, specifically through the UrbanByNature programme and a video for the Glasgow Summit. To ensure the continued application of the Framework after the project, several steps have been taken, both per Connecting Nature Framework element and through overarching programmes (e.g. the continuation of UrbanByNature regional hubs and the availability of all developed materials, including guidebooks and videos in the Connecting Nature Resource Centre on the OPPLA Platform).

1 Introduction

This Deliverable reports on the Connecting Nature Framework Reports of the Connecting Nature cities by presenting a cross-city analysis of how the cities have adapted and applied the Connecting Nature Framework for the large-scale implementation of nature-based solutions. Specifically, we identify the diverse types of innovations materialising in the cities to overcome barriers and leverage opportunities across the different elements of the Framework to facilitate nature-based solution planning, delivery and stewardship.

In Connecting Nature, we have developed the Connecting Nature Framework (Box 1) to provide a comprehensive perspective on what kind of innovations are required for the planning, delivery and stewardship of nature-based solutions on a large scale in cities, as well as on how and when to develop those innovations. We approach nature-based solutions as ‘living’ sustainability transition experiments that aim to generate multiple benefits by testing “a range of new technical, regulatory, and institutional configurations as well as social practices” (Williams 2016, p. 80). For example, the large-scale implementation of nature-based solutions requires new forms of collaboration across institutional siloes to deliver on multiple policy and planning priorities, innovative financing and entrepreneurship for long-term stewardship and novel governance processes to mobilise societal support and empowerment (Frantzeskaki et al. 2020; Connop et al. 2016; Kabisch et al. 2016). Key challenges concerning the large-scale implementation of nature-based solutions centre on the question of how to facilitate the emergence and embedding of these multiple innovations – including for instance technical, market, social, and governance innovations – that together have the potential to facilitate radical, long-term societal change to transform urban systems towards sustainability (Dumitru et al. 2018).

The Connecting Nature Framework guides urban planning on how to facilitate the emergence and connections of these multiple innovations along critical elements for nature-based solutions planning, delivery and stewardship. The Connecting Nature Framework and its elements – Technical solutions, Governance, Financing and business models, Nature-based entrepreneurship, Co-production, Reflexive monitoring and Impact assessment – were in detail introduced in our previous Deliverable 5 (Hölscher et al. 2019a). The Framework has been co-produced and co-applied with science and practice partners in the project. Particularly, the Connecting Nature cities have worked with the Framework to develop their nature-based solution exemplars. While the first phase of the Framework development and application has focused on the Front-Runner Cities (as reported in Deliverable 5), we have, in the second phase, transferred the Framework, including the generated knowledge and insights about how to apply it to different city contexts by materialising diverse innovations, to the Fast-Follower and Multiplier Cities.

In summary, in this project we sought to use the Connecting Nature Framework

- to **facilitate, connect and collate** the diverse types of innovations emerging and interleaving through nature-based solutions implementation and scaling;
- to **facilitate learning and internal and external communication** by the Connecting Nature cities with regard to how they are developing and scaling their nature-based solutions exemplar; and
- to **generate best practices for interventions** that serve as a process initiation to be transferred to other cities and that helps them identify what they need to consider and to push nature-based solutions excellence.

In this Deliverable, we present our cross-city analysis of how the Connecting Nature cities have applied the Framework and what can be learned from their experiences. Importantly, we do not aim to assess the cities in terms of how well they have implemented the Framework and what impacts they have achieved regarding their nature-based solution exemplars. (this is addressed in Deliverables 2 (Dumitru, 2022a) and 11 (Connop and Georgiou 2021)). Rather, **we aim to identify practice-oriented lessons for the large-scale implementation of nature-based solutions in cities**. It is interesting to look across cities and learn about different contexts as well as highlight cities pioneering best practices for some Connecting Nature Framework elements while struggling with others. Specifically, we derive practice-oriented lessons about how to apply the Framework step-by-step, by identifying how and when innovations can be facilitated and connected, what opportunities can be mobilised, and which barriers need to be addressed. Building on our Experiential Learning Framework (ELF) methodology (Xidou et al. 2021), especially the Knowledge Transfer Phase 2 process, we additionally identify learning questions emerging in cities when applying the Framework, as well as opportunities and barriers emerging in practice.

This Deliverable is complemented by various documents:

- The **Connecting Nature Framework Manual**, which supported the cities to design, implement and report on their exemplar through a comprehensive set of steps and guiding questions per Framework element (Appendix A).

- The **city reports** by the Front-Runner Cities Genk (Belgium), Glasgow (United Kingdom) and Poznań (Poland) (see Deliverable 5, Hölscher et al. 2019a), as well as by the Fast-Follower Cities A Coruña (Spain), Burgas (Bulgaria), Ioannina (Greece), Málaga (Spain), Nicosia (Cyprus), Sarajevo (Bosnia) and Pavlos Melas (Greece), which showcase how the cities made use of the Framework to plan, deliver and steward their nature-based solutions exemplars (Appendix B). The city reports are living documents and will be updated by the cities.
- Guidebooks on each element of the Connecting Nature Framework, i.e. for Technical solutions (Connop and Nash 2020), Governance (Vandergert et al. 2020), Financing and business models (McQuaid and Fletcher 2020a), Nature-based enterprises (McQuaid and Fletcher 2020b), Co-production (van der Have et al. 2022), Reflexive monitoring (Lodder et al. 2022) and Impact assessment (Dumitru and Tomé-Lourido 2020) (**Figure 2**).

Figure 2: The Connecting Nature Framework Guidebooks



2 Method

In this section, we briefly introduce the Connecting Nature Framework (Section 2.1), the co-production steps we have undertaken to develop and apply the Framework (Section 2.2) and how we have identified and analysed the innovations resulting from the Framework application across all Connecting Nature cities (Section 2.3).

2.1 The Connecting Nature Framework

The Connecting Nature Framework has been co-produced and co-applied with science and practice partners in the project with the aim to guide the Connecting Nature cities to develop their nature-based solution exemplars. The Framework is essentially a process tool to give a hands-on and comprehensive guide to cities and specifically urban policymakers, planners and other practitioners to implement nature-based solutions on a large scale by materialising multiple innovations along critical elements for nature-based solutions planning, delivery and stewardship.

The Framework, including how it was developed and applied in co-production between the scientific partners and local city officers, has been introduced in detail in Deliverable 5 (Hölscher et al. 2019a). This focused on the Front-Runner Cities. Deliverable 4.1 (Xidou et al. 2021) focused on the Experiential Learning Framework (ELF) between Front-Runner and Fast-Follower Cities. Deliverable 11 (Connop and Georgiou 2021) presents the individual progress of the Front-Runner Cities' in terms of nature-based solution implementation, and Deliverable 14 (Xidou et al. 2022) that of the Fast-Follower Cities. Deliverables 15 (Rizzi et al. 2020) and Deliverable 17 present the roll-out of the UrbanByNature programme to bring the Framework to multiplier cities. Box 1 gives an overview of the main resources for practitioners

Box 1: Overview of resources on the Connecting Nature Framework

Various supporting documents and videos have been created to support the cities in the Connecting Nature project and other cities interested in working with the Connecting Nature Framework.

1. YouTube video Connecting Nature Framework figure (for Glasgow Summit)

This video is intended as first short introduction to the framework for any listener working on urban challenges.

See: https://youtu.be/bM3ds_ZdYfc

2. Connecting Nature Framework guidebook on the CN website

See: <https://connectingnature.eu/innovations/connecting-nature-framework> and

<https://connectingnature.eu/sites/default/files/images/inline/Connecting%20Nature%20Framework.pdf>

3. Guidebooks per Connecting Nature Framework element

Every Connecting Nature Framework element has its own practical guidebook published on the Connecting Nature website to support urban practitioners in working with this element. On this website additional resources are added per element.

- Technical solutions <https://connectingnature.eu/innovations/technical-solutions>
- Governance <https://connectingnature.eu/innovations/governance>
- Financing and business models <https://connectingnature.eu/innovations/financing-and-business-models>
- Nature-based enterprises <https://connectingnature.eu/innovations/nature-based-enterprises>
- Co-production <https://connectingnature.eu/innovations/co-production>
- Impact assessment <https://connectingnature.eu/innovations/impact-assessment>
- Reflexive monitoring <https://connectingnature.eu/innovations/reflexive-monitoring>

4. Connecting Nature Framework Manual (Appendix A)

In this manual guiding questions for all Connecting Nature Framework elements are written for the cities to support them in writing their Connecting Nature Framework Reports.

5. Personal learning narratives by the Connecting Nature Cities

These videos are intended as testimonials of how the framework has impacted the cities in working on nature-based solutions. They have been shared with all project partners, and as examples in courses.

- A Coruña: https://youtu.be/x5yeivy1_L0
- Burgas: <https://youtu.be/PazHCQzeWb4>
- Genk: <https://youtu.be/-UaoY3MEliA>
- Glasgow: <https://youtu.be/bEyF6pt-cs>
- Nicosia: <https://youtu.be/LoP8Rfmqglw>
- Pavlos Melas: <https://youtu.be/vqTyAEfdi6k>
- Poznań: <https://youtu.be/xNCrAze39Oc>
- Sarajevo: <https://youtu.be/4mLadSUMl2U>

6. The Connecting Nature Framework Narratives

These narratives were developed to communicate about how the cities worked with the framework with others, for example within the city governments and to wider networks.

- From Front-Runner Cities: reported in Deliverable 11 (Connop and Georgiou 2021)
- From Fast-Follower Cities: reported in Deliverable 14 (Xidou et al. 2022)

7. Information on the nature-based solution “Green Wall for kindergarten” in the city Yerevan, Armenia

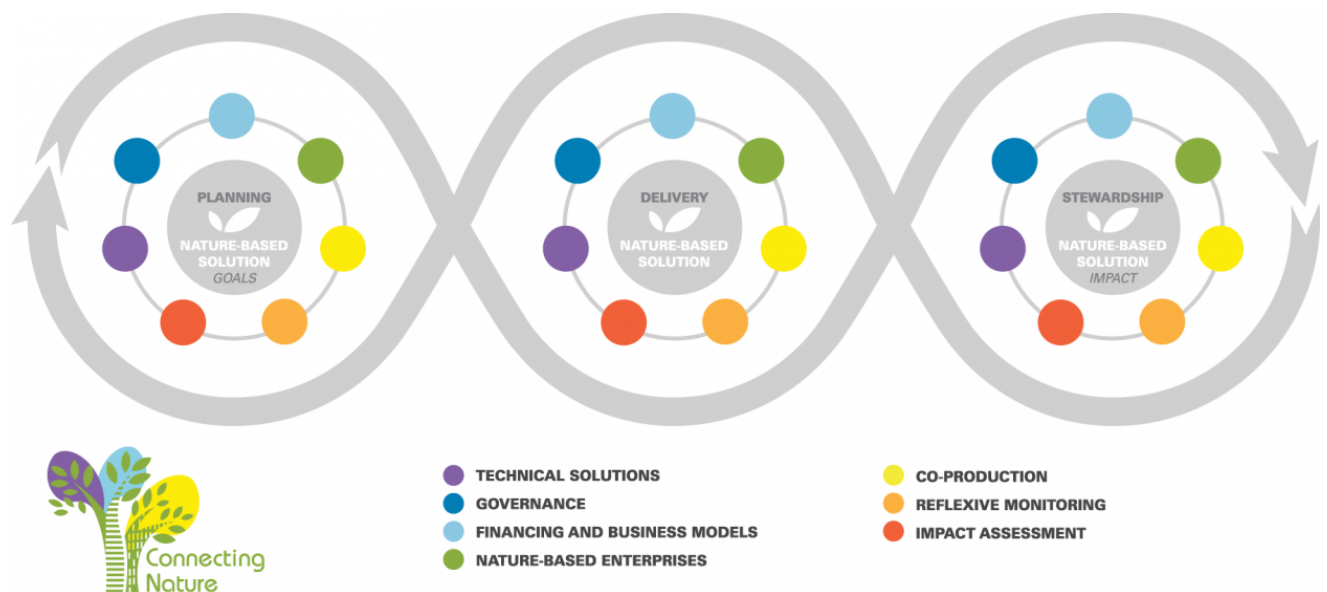
- On Oppla platform: <https://oppla.eu/casestudy/18930>
- On Youtube: <https://www.youtube.com/watch?v=NO-H1XR9NA4>

All these resources are included post project in the Connecting Nature Resource Centre on Oppla.

The Connecting Nature Framework places the nature-based solution at the core of an interactive process that distinguishes three phases of development for a nature-based solution: planning, delivery and stewardship (

Figure 3). In the *planning phase*, the goals for the nature-based solution are defined, the various innovations needed to realise it are developed – including for example the technical design, new governance models – and the activities required to implement it, for example a specific co-production process, are identified. The *delivery phase* refers to the process of implementing the nature-based solution including all its innovations. In the *stewardship phase*, stakeholders work on the ongoing participatory management and maintenance of the nature-based solution. Stewardship includes the monitoring and evaluation of the nature-based solutions, which enables adaptations to be made to ensure long-term sustainability and resilience.

Figure 3: The Connecting Nature Framework



Throughout each phase there are seven separate elements that need to be considered (see Hölscher et al. 2019a and Appendix A for more detail on each element): *Technical solutions* (the detailed design of the nature-based solution and its features, and how they are informed by local context and need), *Governance* (the organisational conditions and skills for connecting different actors across sectors under the same vision of nature-based solutions for the city), *Financing and business models* (the different sources of finances and business models for the delivery, long-term maintenance and operation of the nature-based solution that inform a new approach as a local business spin-off and attractor), *Nature-based entrepreneurship* (the stimulation of new market and business opportunities through and for nature-based solutions), *Co-production* (the process of active involvement and part-taking of different actors in the planning, delivery and stewardship of nature-based solutions), *Reflexive monitoring* (the process of facilitated, continuous and adaptive monitoring and assessment of the whole nature-based solutions process to capture lessons learnt in real time and adapt the planning and implementation process) and *Impact assessment* (the set of indicators that will be used as a reference for monitoring and evaluating nature-based solutions implementation and scaling that is adaptable to every city context and open to inputs over time).

It is important to emphasise that the Connecting Nature Framework is not a static step-by-step process. While there is of course a direction of travel in terms of rolling out nature-based solutions and their benefits on a city scale, the steps involved in this journey are interrelated and non-linear. It encapsulates the many elements that need to be considered for the implementation of nature-based solutions on a large scale in cities, whereby starting points and order of steps per elements are determined by the respective cities' contexts and needs. The Framework is therefore not meant as a linear blueprint with each step leading to the next; instead, it is meant to raise questions about what are starting points and what steps are needed in a city's or community's context and needs. In this sense, the Framework is different from traditional urban planning approaches that move in a linear process from planning to delivery. In our view, it offers a more realistic representation of the complexities in such processes and is thus better able to guide cities through them.

2.2 How the cities worked with the Connecting Nature Framework

We have co-produced the Connecting Nature Framework, its translation to the Front-Runner and Fast-Follower Cities' contexts and practices, and the derivation of lessons from the application through iterative interaction between researchers and planners of the cities in the Connecting Nature project. This means that we adopted a 'learning-by-doing' approach based on inter- and transdisciplinary cooperation (see Appendix C for a full overview of activities and workshops and Hölscher et al. 2019a and Xidous et al. 2021 for more detail on our approach). Our 'co-production team' brings together researchers from diverse disciplines – including ecology, business, psychology, governance, monitoring/evaluation and transformation research – and urban planners from the three Front-Runner Cities – Genk (Belgium), Glasgow (United Kingdom) and Poznań (Poland) – as well as seven Fast-Follower Cities– A Coruña (Spain), Burgas (Bulgaria), Ioannina (Greece), Màlaga (Spain), Nicosia (Cyprus), Pavlos Melas (Greece) and Sarajevo (Bosnia and Herzegovina).

Our aims were to, in this way, collaboratively:

- Explore which needs the cities have with regards to planning, delivery, and stewardship of nature-based solutions, leading to the identification and operationalisation of the critical elements of nature-based solutions implementation that the Connecting Nature Framework builds on;
- Test this approach together with the Connecting Nature cities in an iterative process and adapt the Framework based on what was learned from the cities' practice; and
- Identify the innovations and connections of innovations that result from the cities' implementation processes and lessons learned that benefit other cities interested in developing and scaling nature-based solutions.

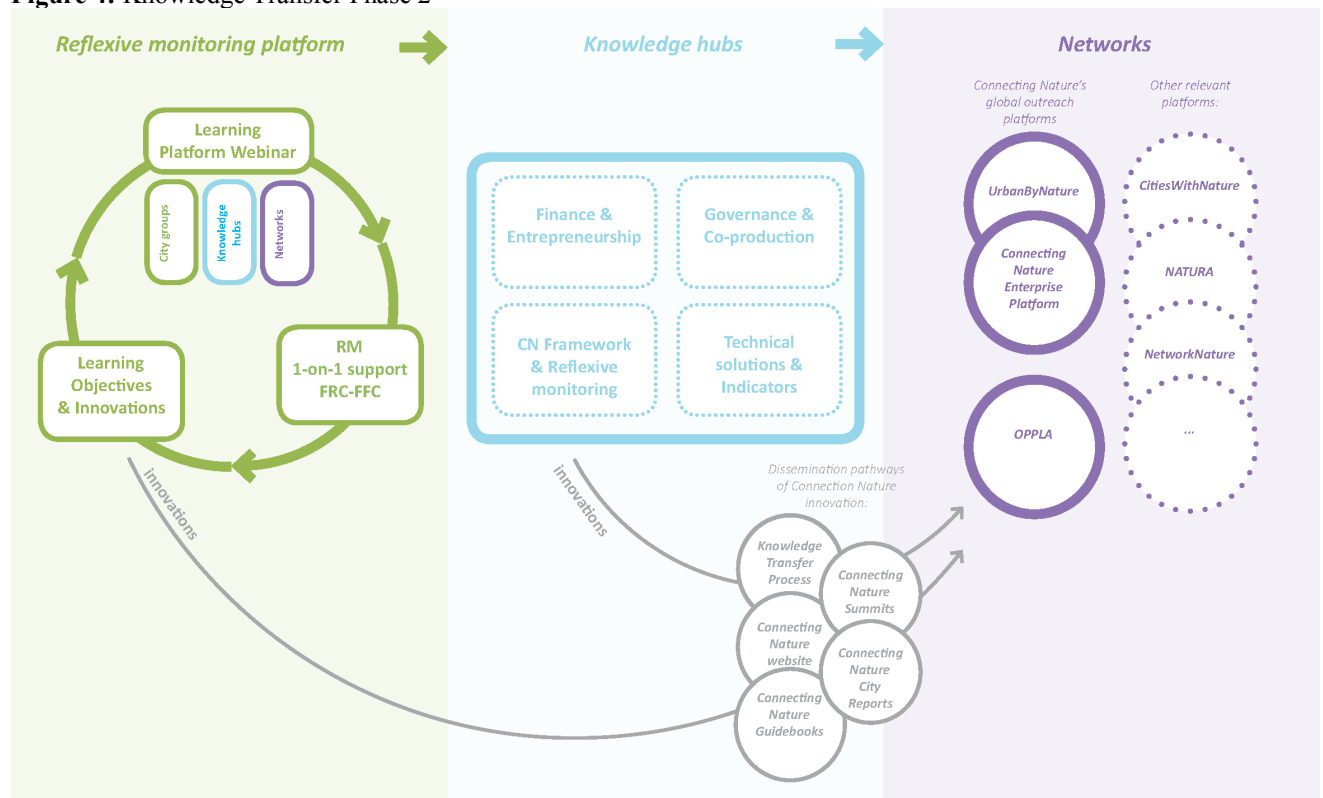
In line with our co-production approach, we undertook several iterative activities between all work package leaders and the Connecting Nature cities to include all the elements that are required (from the experience, knowledge, and perspective of the Connecting Nature project team) to successfully and effectively scale nature-based solutions at city level. Our first steps in developing and applying the Connecting Nature Framework with the Front-Runner Cities were reported in Deliverable 5 (Hölscher et al. 2019a). In the next phase of our project, we have developed a comprehensive approach for knowledge transfer between Front-Runner and Fast-Follower Cities: as part of the ELF of Work Package 4 that is reported in Deliverable 4.1 (Xidous et al. 2021;

Figure 4). Specifically, the second phase of the knowledge transfer in Work Package 4 was “intended to be an exploration of how expertise emerging from our Connecting Nature cities can be shared through peer-to-peer support; how learning processes captured by reflexive monitoring can be continued for the Fast-Follower Cities and transitioned to a more city-to-city process by the Reflexive monitoring platform; how learning objectives and innovation emerging from the exemplar implementation processes can be explored and solutions shared in the Networks; and how expertise held within consortium (and beyond it) can be mobilised by the Networks” (Xidous et al. 2021: p.7).

The process was intended as an exploration of how expertise emerging from our Connecting Nature cities can be shared through peer-to-peer support. It was designed to build on, and from, the current and previous one-to-one support provided to Front-Runner Cities and Fast-Follower Cities by Connecting Nature Framework element leads, scientific support partners (for example, UVT) and SME support partners. We grouped the Front-Runner Cities with the Fast-Follower Cities based on their phase in the process and their focus on specific elements (see Section 3.2.2.1, in Deliverable 4.1 (Xidous et al. 2021)). The knowledge transfer process was designed so that the Front-Runner Cities could support the Fast-Follower Cities in their reflexive monitoring process. This was to allow a process where more city-to-city exchange takes place in different settings shown in Figure 4: The **Reflexive Monitoring Platform** comprises three different activities starting with the 1-on-1 learning sessions between one Front-Runner City and Fast-Follower City. The notes of these sessions are analysed to abstract learning objectives and innovation emerging from the exemplar implementation

processes (Appendix D). During the Learning Platform Webinars, the learning objectives and innovation are shared, discussed and verified with all cities and scientist in **Knowledge Hubs** resembling different Connecting Nature Framework elements. The resulting learning objectives and innovation can be explored and solutions shared in various **Networks**; and how expertise held within Connecting Nature (and beyond it) can be mobilised by the Networks such as the UrbanByNature programme (Rizzi et al. 2020).

Figure 4: Knowledge Transfer Phase 2



2.3 Analysing innovations

We conducted a cross-city comparative analysis of how the Connecting Nature cities translated the Connecting Nature Framework to their respective contexts. Our main aim was to identify what innovations resulted from the cities' efforts to plan, deliver and steward their nature-based solutions exemplars across the various Framework elements, as well as how and when these innovations emerged. The innovations resemble at the same time different types of outcomes and impacts that were generated for urban planning of nature-based solutions in the cities. Building on this, we sought to generate practice-oriented lessons about how to apply the Framework step-by-step, by identifying how and when innovations can be facilitated and connected, and what opportunities can be mobilised, and which barriers need to be addressed.



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To these ends, in this report, we applied the Connecting Nature Framework primarily as an analytical lens. This means that we have identified for each city and each element of the Framework what has been done to translate the element into the respective city context, in which phase this was relevant and which innovations are embedded in these activities. We have then compared the results across all Connecting Nature cities. Our analysis builds on a wealth of information and data generated and collected throughout our co-production activities (Section 2.2, Appendix C). Additionally, the reports¹ by the Front-Runner (see Deliverable 5) and Fast-Follower Cities (Appendix B) provided valuable data sources by showcasing how the cities applied the Framework.

In a first step, we have identified for each city what has been done to advance nature-based solution planning, delivery and stewardship in reference to each Framework element. This led us to identify the critical conditions or activities that were put in place to implement the Framework elements, marking the overall change in how nature-based solutions are planned, delivered and stewarded. Additionally, we identified the phase in which the activities took place/the conditions were put in place in order to time stamp them.

In a second step, we have identified the innovations that are embodied in the activities or conditions. Following Rogers (2003), we define an innovation as “idea, practice, or object that is perceived as new by an individual or other unit of adoption”. In order to implement the Connecting Nature Framework and plan, deliver and steward nature-based solutions the cities introduce different types of innovations that manifest in changes in existing knowledge, institutional and organisational conditions, relations etc. (Box 2). Digging deeper into the innovations helps understanding how the Connecting Nature Framework is implemented. For example, new knowledge generation about multiple benefits of nature-based solutions broadens the definition of values delivered through such solutions and thus boosts political and societal support and promotes new forms of collaborative financing.

Finally, we have compared the activities and conditions, innovations and connection to Framework elements across all Connecting Nature cities. This analysis is presented in Section 3.1. Importantly, we did not aim to assess the cities in terms of how well they have implemented the Framework compared to other cities. Rather, we sought to learn from the different cities about what they needed to do to implement the Connecting Nature Framework, what were best practices and what are context-specific questions and challenges. Interestingly, we found that different cities pioneered best practices in some Framework elements, whilst they struggled in others – and thus were able to learn from what other cities have done in the peer-to-peer learning sessions (Section 2.2; Xidou et al. 2021).

In addition to the analysis of innovations and building on our complex Knowledge Transfer Phase 2 Methodology (Section 2.2), we have identified the learning questions emerging in cities when applying the Framework. In order to identify and compare the learning objectives of the Fast-Follower Cities, we analysed a survey we conducted for the introductory Learning Platform Webinar #0 and the 1-on-1 learning sessions between Front-Runner Cities and Fast-Follower Cities. In the minutes of these 21 meetings (3 for each fast-follower City), we coded learning objectives per Connecting Nature Framework element, and also marked in which reflexive monitoring category they would fit (rules / relations / practices / discourse (see Deliverable 7 Section 2.2, Hölscher et al. 2022)). Furthermore, we analysed whether the learning objective has received a response or advice from another city, either during one of the 1-on-1 learning sessions, or during a Knowledge Hub meeting or the third Learning Platform Webinar. In addition, we considered the latest versions of the cities’ Dynamic Learning Agendas, but only to give context in times of uncertainty. After making the overview of the learning questions, we subsequently asked the other fast follower cities to mark the learning objectives that they recognised in their own cities.

Examples of key learning questions and responses of how to deal with them are presented in Section 3.2, along with a comparison of main challenges the cities faced when implementing the Connecting Nature Framework as well as how they have overcome them. This provides further insights into the practical application context of the Framework (see Appendix D for the full list of learning objectives). In Deliverable 7, we reflect on the learning process between cities.

Our ultimate aim is to foster peer-to-peer learning in a community of cities about how to implement nature-based solutions on a large scale. In Section 4, we present a starting practical guide about key steps for implementing the Connecting Nature Framework step-by-step for each phase of planning, delivery and stewardship. This guide builds on the identification of relationships between Connecting Nature Framework elements and corresponding innovations per phase of the Framework.

¹ The reports will also be made available on the OPPLA platform.

Box 2: Different types of innovations engendered in nature-based solutions planning, delivery, stewardship (adapted from Hölscher et al. 2019a)

The following types of innovations are both engendered by and necessary to plan, deliver and steward nature-based solutions on a large scale:

Technical innovations (changes in technical design, construction, management and service delivery) that can be used by urban planners or companies result in advanced technology readiness of nature-based solutions. Technical innovations of nature-based solutions consider regionally-contextualised multifunctionality in the design, introduce system-oriented site selection, create interconnections between policy and planning fields (e.g. water management, mobility, urban regeneration), and facilitate long-term legacy focusing on the desired benefits.

Market innovations (the creation of new financing models, markets and business opportunities) set the stage for urban planners, enterprises and other groups (e.g. NGOs) to exploit new financing opportunities to replicate and scale nature-based solutions. They incubate new business opportunities and financial models to develop products and businesses (e.g. green roofs or gardens can generate marketable produce that adds to local economic activity). Market innovations also exploit the financial value of the multiple benefits of nature-based solutions, such as cost savings to water management by flood damage avoidance or energy savings. This helps to overcome fragmented (costs and benefits do not accrue to the same stakeholders) and create multifunctional value chains.

Social innovation (changes in social relations and social practices) activate and empower citizens and place-makers (Avelino et al. 2019; Haxeltine et al. 2016). Social innovations involve people doing things differently, alone or together (Franz et al. 2012). They are often driven by social entrepreneurs or grassroots initiatives, and can be fostered through the active involvement of residents, community leaders, and local businesses.

Governance innovations (new processes of co-planning and co-design and reflexive learning) facilitate the emergence of a new governance paradigm for making nature-based solutions inclusive and multi beneficial and linking nature-based solutions to institutional contexts. The co-production of knowledge and action by residents, local businesses, planners and other relevant professionals is a governance process method for the participatory identification of needs and resources, paying attention to different institutional contexts and empowering diverse actors. Reflexive monitoring and evaluation are a key feature for adaptive policy making and planning to facilitate learning-by-doing and doing-by-learning in view of the intended multiple benefits.

Organisational innovations (new organisational networks, resources and skills) facilitate the new governance processes for collaboration and reflexive learning. Leadership, network structures and provision of resources and skills manifest in the capacities to design, implement, operate and maintain nature-based solutions in a way that provides multiple benefits and connects diverse innovations.

Knowledge innovations (new (processes for) knowledge creation) provide new scientific evidence as well as practical and accessible standards about designs, technical standards, benefits generated, financing and ongoing operation and legacy of nature-based solutions. Knowledge innovation also relates to a new way of science-practice partnerships and new ways of inquiring and generating knowledge such as processes for the co-production of knowledge (Popa et al. 2015; Frantzeskaki and Kabisch 2016).

3 Results: Innovations related to the Connecting Nature Framework during the implementation of nature-based solutions

This section presents our cross-city comparison of how the Connecting Nature cities translated the Connecting Nature Framework to their respective contexts. In Section 3.1, we first present per Framework element which conditions were put in place as well as which innovations these conditions embody and how they relate to other Framework elements. Section 3.2 summarises key challenges and learning questions the cities faced when implementing the Framework as well as possibilities for dealing with them.

3.1 What the cities did to implement the Connecting Nature Framework

Based on our cross-city analysis we describe what the cities did to implement the different Connecting Nature Framework elements. This gives direction on the different kinds of activities and conditions needed to, including the diverse types of



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innovations that are embedded within them to make it happen. We illustrate what the cities did with examples of best practices from the different cities.

3.1.1 Technical solutions

Nature-based solutions bring more nature and natural features and processes into cities, through locally adapted, resource-efficient and systemic interventions that provide multiple benefits (Nesshöver et al. 2017; Raymond et al. 2017). The technical design, including construction and management legacy, of a nature-based solution needs to ensure that the desired outcomes are achieved and sustained in the long-term, and that trade-offs are avoided where possible (Connop et al. 2016; Kabisch et al. 2016). This includes both the practical construction aspects and the broader contextualisation in relation to the character and needs of the locality, region, and landscape into which a nature-based solution is being introduced (Connop et al. 2016; Nash et al. 2019).

All Connecting Nature cities focus on urban formal and informal greenspaces that form the basis of green urban networks and include multiple interventions to transform them into nature-based solutions (see Connop and Georgiou 2021 and Xidou et al. 2022 for an overview of exemplars in the Front-Runner and Fast-Follower Cities, respectively). The entry points to the creation of green urban networks differs. Several cities start from a strategic level. For example, Glasgow focused on the development of its Open Space Strategy that covers the whole city and is being rolled out incrementally through diverse small-scale projects such as the Growchapel community garden. Nicosia aims to design a network of open green spaces on a district level, including nine parks. There will be the physical interventions in the parks themselves and the development of smaller parks, as well as the creation of mobility connections to link the parks to each other by an integrated bicycle and pedestrian network. Other cities focus on a particular urban area or park that are to be transformed into nature-based solutions through multiple interventions. Genk is developing a multi-functional blue-green urban valley – the Stiemer Valley, which has been a neglected corridor of eight kilometres running through the city and suffering from poor water quality. A suite of pilot projects was selected for implementation – including the Gardens of Waterschrei, Slagmolen, SuDS and Soda and the Valleyroute – that range from redeveloping a former mill as an arts and information centre and gateway to the Stiemer, to developing rain gardens and other sustainable urban drainage system (SuDS) features to attenuate rainwater across the Stiemer catchment. Burgas, Ioannina and Pavlos Melas similarly focus on the regeneration of existing under-used or derelict urban parks and post-industrial spaces to transform them into nature-based solutions. Other cities start from small-scale interventions in specific areas that are to be replicated (out-scaled) across the respective cities – including open garden and nature-oriented playgrounds in kindergartens (Poznań), urban gardens for agriculture (A Coruña), urban gardens and sensory parks in schools (Sarajevo) and multifunctional urban gardens to flourish the Lagunillas neighbourhood (Málaga).

The Connecting Nature cities are in different stages of planning, delivery, and stewardship of their nature-based solution exemplars. Table 1 shows what has been done in the different cities, in which phase and what innovations were engendered. Building on the generation of a comprehensive knowledge base, all cities have developed a multifunctional technical design that lays the foundation for the delivery of the exemplars. All Front-Runner Cities and several Fast-Follower Cities have additionally started to ensure long-term co-stewardship and scaling in terms of replicating their exemplar.

The **generation of system's knowledge** building on the introduction of nature-based solution as a transformative concept was a crucial condition for developing a multifunctional design for multiple benefits while balancing local needs and local landscape contexts. An in-depth look at individual spaces and local contexts was found necessary especially when connecting multiple nature-based solutions as in Glasgow, since a one-size-fits-all approach does not fit well (Box 3). In Nicosia, European funds supported knowledge generation and technical studies. For example, a research project currently studies opportunities for improving and extending the Linear Park of Pedieos in the areas of Lakatamia, Strovolos and Engomi Municipalities. Additionally, a landscape competition supported the design the Urban Park of Pallourokampos. Various forms of collaborations – across public agencies and city departments – as well as the inclusion of private actors and specifically local communities contributed to the generation of knowledge and adapting the design to local needs. The generation of in-depth insights was also important for the development of novel nature-based solutions strategies and agendas (see Section 3.1.2) and for generating financing (see Section 3.1.3), which both in turn support the nature-based solution delivery. For example, in Pavlos Melas, following the directions of the Metropolitan Park Strategic Plan, a Special Spatial Plan was prepared to determine land-uses and urban planning of the former camp area. The Special Spatial Plan included a geological suitability assessment, an environmental impact assessment, and a study of economic viability, supporting the planning decisions and approval of the municipal council.

Box 3: Generating a thorough knowledge base for nature-based solutions' planning in Glasgow

In Glasgow, the Open Space Strategy builds on a wealth of data and spatial analysis to identify open space in Glasgow, assess the quality of open space, and assess the needs of the local area. This shows how the strategy and data can be used to develop locally-contextualised nature-based solutions based on *knowledge innovations* to improve open space in Glasgow.

An Open Space Quality Assessment was developed and carried out on all amenity greenspace, parks and public gardens and other open space types that can have multiple uses and are >0.3ha across the city. This provides a foundation for understanding both the current state of open spaces and the future potential. A Geographic Information System (GIS) database enabled quantification of how much open space there is in Glasgow and what is the quality of that space. Local Context Analyses were undertaken to show how to translate the strategic goals into operational projects within 15 areas of the city, with the aim that local communities will be embedded in developing projects at this scale. The open space mapping – in terms of quality, quantity and accessibility – were complemented with information and data on flooding, housing, and economic land. This served to show whether open space is in the right place, whether it needs to be improved if it is in the right place, or whether something else can be done when it is in the wrong place. For example, it has revealed that some spaces that seemed to be of bad quality are actually good. Overall, assessing open space is about asking different questions: Is it in the right place? If so, can it be made multifunctional? If it's in the wrong place, can it be swapped with some of the vacant derelict land that might be more accessible to those communities that are deficient in open space? Or can we look at doing different things that will make it more accessible? The analyses also addressed questions such as whether open space can be used for flood alleviation, heat reduction in the inner city, air quality management, or other issues.

Site visits were found to be a very effective mechanism for evaluating the topography, constraints, access, etc, when planning nature-based solutions. Additionally, site visits can be an effective mechanism for strengthening relationships with, and learning about projects from colleagues from other departments. Such face-to-face conversations provide opportunity for more informal conversations that can strengthen collaboration between colleagues from different departments. Knowledge generation also requires collaboration with local communities through co-production and by using place standards as an additional tool to add information about which parts of the city have no access to any good quality open space.

The Open Space Quality Assessment is now being used by the city government as a tool for understanding the local context needs when planning optimal nature-based solutions design, delivery, and stewardship. The tool is being used across departments/themes including the Development Plan, playspace revitalisation, urban agriculture, water management, and the Woodland Strategy. Building from the spatial database development, Glasgow City Council is partnering with NatureScot, the Scottish Government, and Dark Matters Labs to develop TreesAI: an open-source platform to map, value and finance urban forests. This will underpin better decision-making in relation to tree planting, management, and stewardship. The Open Space Strategy has been developed, peer-reviewed, and adopted by the council. It is now shaping urban planning and development activities across the city.

Knowledge also covers the identification of potential **trade-offs**. This has been challenging for some cities, especially in view of ensuring sufficient expertise on the various topics relating to nature-based solutions. Poznań has sought to balance trade-offs between delivering local benefits (based on the immediate needs of the users and locality) and broader benefits (based on key strategic needs of the city). This has included a design focus on the creation of aesthetics balanced with functional spaces that attract a high degree of activity, daily interactions, and social gatherings. Additionally, Poznań and Málaga raise concerns about gentrification when regenerating urban green spaces and facilitating local economic development. This is why urban regeneration should be supported by community-led activities, focusing on building social and relational capital and strong involvement of non-governmental organisations and bottom-up initiatives in order to counter the exclusion of low-income groups. Poznań also highlights potential conflicts from different user groups, such as increased noise levels during events in the open garden or conflicting opinions and visions of the best solutions for area development. During a family event in the kindergarten, a neighbour complained about the high noise levels. The solution was to better inform the neighbours living in the vicinity of the kindergarten about upcoming events and to organise workshops and events targeted at different neighbour groups to involve them in the garden activities, highlighting the importance of co-production (see Section 3.1.5). In Genk, the Stiemerdeals (Box 14) were created to ensure socio-economic benefits of the Stiemer Valley programme.

Based on the generation of knowledge, the cities developed a **multifunctional technical design** to provide diverse social, environmental and economic benefits, such as climate adaptation, biodiversity protection, pollution reduction, social cohesion and supporting local economic development. For example, the design of the Saint Trinity Park in Burgas aims to deliver multiple benefits while preserving and incorporating existing elements of the park, providing various functions



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(e.g. outdoor games, sport and cultural activities, picnic areas, shared workspace areas) and modern solutions (e.g. innovative surfaces, water effects). The urban network of linked open green spaces in Nicosia aims to create mobility linkages through an integrated bicycle and pedestrian network. Embedded in the multifunctional design are social innovations that provide new types of accessibilities and social interaction spaces (e.g. for education, recreation, work). Cross-generational exchange and education are common themes in many exemplars. In Sarajevo, the design is tailored to and includes educational activities and programmes for different target groups (youth, elderly, children with disabilities), including a weekly agenda for the urban garden (e.g. one day a week dedicated to urban gardening). An aim is also to provide economic opportunities for nature-based enterprises (see Section 3.1.4). The urban garden in Málaga aims to provide a space for education and community activities to promote relationships among neighbours and the community. Several cities further link their nature-based solution exemplar to historical and cultural values and use those to create (new) narratives and foster new human-nature relationships (Box 4). Such narratives are important sources for communicating about the exemplar and obtaining wider societal and political support (see Section 3.1.2).

Box 4: Multifunctional design of the Metropolitan Park of Pavlos Melas to mobilise cultural and historical values for community transformation

The creation of the Metropolitan Park of Pavlos Melas on a former military camp emphasises the park as a place of special historical and environmental value for the city and integrates *technical innovations* and *social innovations*. Since its organisational abandonment in 2006, the ex-camp is declared as an “urban gap”: a space that lacks “the clarity of a specific use in physical and functional continuity” (Pavlos Melas report), while also being a place for spontaneous and informal appropriation. The latter is visible in permanent and scattered activities in the park, such as concerts, open meetings, festivals and educational and sports programmes organised by various associations, organisations and groups. In addition, research on the conditions of poverty in the individual municipal units of Pavlos Melas municipality found the greatest deprivation to be concentrated in the neighbourhoods of the old residential core located in the immediate intervention pocket of the ex-camp. By transitioning the ex-camp into nature-based solutions, Pavlos Melas municipality intends to unlock its potential as a valuable natural resource, historical site, and driving force for economic growth and job creation, social cohesion, and environmental sustainability.

As part of Connecting Nature, many cities have put in place **long-term co-stewardship** of their nature-based solution exemplars. This required organisational and social innovations to embed and ensure the multifunctional use. In A Coruña, new conditions were put in place for granting a plot in the urban garden (e.g. adoption of organic agriculture) and reserving plots for collective management by educational centres, non-profit associations and other groups. Additionally, the urban garden is available to NGOs to develop educational projects and support citizen engagement. A new information point was created by the municipality to provide advice, support, information and workshops for citizens interested in urban gardens. A new pilot project to implement gardens in schools and organise educational activities seeks to integrate the urban gardens into school curricula. Long-term stewardship often marks a shift towards collaborative governance arrangements involving public and private actors, yet for many cities such approaches are still challenging because they are used to more centralised approaches (see also Section 3.1.2).

Additionally, several cities started **scaling their nature-based solution exemplar**. For example, Poznań has successfully replicated (out-scaled) and upscaled nature-oriented playgrounds in kindergartens. To achieve this, additional knowledge was needed to identify suitable areas, partners and funding sources as well as disseminating knowledge about nature-based solutions and the specific exemplars (**Fehler! Verweisquelle konnte nicht gefunden werden.**). In Sarajevo, the aim is to create a replicable model for the design and implementation of urban gardens. To these ends, other centres for healthy ageing, schools, kindergartens etc. were identified as potential places. Additionally, organisational changes are needed to integrate the design concept into existing planning procedures and identify responsibilities for replication. Important for scaling is the showcasing of pilot projects to demonstrate the multiple benefits. In Genk, the SuDS and Soda project is used to build engagement and capacity for SuDS more fundamentally in the region. To these ends, a SuDS engagement and demonstrator is developed as part of the SuDS and Soda project, which is used to increase the visibility of SuDS approaches and acts as a catalyst for the Water Strategy Masterplan, scaling SuDS approaches in all neighbourhoods around the Stiemer Valley. The water company – Aquafin – is financing the installation of the SuDS. As this is a significant shift for them from funding grey to green infrastructure, it is also a key learning experiment for them at a Flemish regional level.

Box 5: Out-scaling open garden and nature-oriented playgrounds in kindergartens in Poznań

The city of Poznań has successfully replicated (out-scaled) and upscaled their nature-based solutions. There are now 46 kindergartens with eco-demonstrators (e.g. insect houses, garden wooden pots/flower beds filled with compost soil for planting, live willow huts) that also include ecological education classes and 21 nature-oriented playgrounds in kindergartens. Additionally, five floating gardens have been completed. There were some interesting collaborations to replicate open garden in kindergartens, but due to lack of finances, organisational barriers and the COVID-19 pandemic it was not possible to open new open gardens in the city.

During every stage of the process it is crucial to spread knowledge and awareness about nature-based solutions in the city, including activities like ecological education, communication among stakeholders, partners, policy-makers as well as entrepreneurs. Additionally, a series of information activities promoting the idea of natural playgrounds were organised. This included a seminar on "Natural playgrounds in pre-school gardens" at the Poznań International Fair as part of a two-day conference "Education for public space". The workshops included activities in which the directors and teachers of nursery schools tried their hand at designing their own natural playgrounds under the supervision of an expert. These events were designed to build awareness of, and demand for, nature-based approaches to playspaces at kindergartens and schools, both at an academic and political level.

Importantly, Poznań found that nature-based solution technical design out-scaling is not a copy and paste approach. Each time the concept is replicated there needs to be consideration of the local context. For example, older children have different learning and playspace needs that need to be reflected through technical designs. This closely links to the co-production of nature-based solutions, which involves multiple actors in the design and implementation as well as in the identification of financing opportunities.

For the operation of the open garden at kindergarten no. 42, it was important to put in place new regulations and safety rules. There are currently no legally binding instruments for the implementation of open gardens and natural playgrounds. Embedding such instruments as well as financing processes into the investment planning for the municipal kindergarten budget could support further replication. To ensure financing, it is also important to clarify long-term visions, strategies and goals in order to identify the activities that will help achieve these goals and diagnose the financial possibilities and opportunities for leading future projects.

Identifying responsibilities to replicate could safeguard against loss of momentum. While the local government is important for the initiation of new projects, the kindergarten management will be responsible for maintaining their preschool garden. Therefore, to ensure delivery, it is recommended to create a financial and management "map" as a tool to support directors and managers of kindergartens.

Table 1: Technical solutions and embedded innovations

What has been done?	Which phase?	Enablers (embedded innovations)
Generation of systems' knowledge (A Coruña, Genk, Glasgow, Málaga, Nicosia, Poznań, Sarajevo) <i>See Box 3</i>	Planning	<i>Knowledge innovation:</i> system knowledge about local needs, landscape context, synergies and trade-offs <i>Knowledge innovation:</i> introduction of nature-based solution as new concept
Multifunctional technical design that balances local needs and local landscape context (all FRCs and FFCs) <i>See Box 4</i>	Planning	<i>Technical innovation:</i> multifunctional design to deliver multiple benefits <i>Social innovation:</i> new types of accessibilities and social interaction spaces (e.g. education, recreation, work) <i>Social innovation:</i> creation of narratives about the nature-based solution
Long-term co-stewardship (A Coruña, Genk, Glasgow, Málaga, Nicosia, Poznań, Sarajevo) <i>See Box 7</i>	Stewardship	<i>Organisational innovation:</i> new conditions for management and operation to ensure sustainability of benefits (A Coruña, Poznań) <i>Organisational innovation:</i> flexible involvement of different types of stakeholders for co-management <i>Social innovation:</i> promoting educational projects and citizen engagement <i>Market innovation:</i> promoting new products for nature-based entrepreneurship



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Scaling the nature-based solution (A Coruña, Genk, Glasgow Poznań, Sarajevo) See Box 5	Stewardship	<i>Technical innovation:</i> implementing pilot projects and experiments to showcase benefits <i>Knowledge innovation:</i> identifying suitable areas and flexible approaches, partners and financing for replicating <i>Knowledge innovation:</i> disseminating knowledge about urban gardens and organic farming <i>Organisational innovation:</i> integrating the design concept into existing procedures and regulations <i>Organisational innovation:</i> identifying responsibilities and roles for scaling
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3.1.2 Governance

Because of the multifunctional benefits that can be achieved from nature-based solutions, their planning, delivery and stewardship requires cross-sectoral, multi-scale and inclusive approaches (Buijs et al. 2018; Pauleit et al. 2017; Kabisch et al. 2017). Facilitating governance for cross-sectoral, multi-scale and inclusive nature-based solutions can be a significant challenge to the ‘business as usual’ way of working within city governments and other organisations, that are used to working in (e.g. departmental) silos and not involving the broader public (Frantzeskaki et al. 2019; Connop et al. 2016). This means that there is a need to re-think the organisation of urban governance, including the organisational and institutional conditions such as skills, legal frameworks, resources and partnerships, to align nature-based solutions with broader social, political and business priorities and goals and facilitate collaboration (Frantzeskaki et al. 2020; Hölscher et al. 2019b).

Governance is a key element of the Connecting Nature Framework, which underlies the implementation of all other Framework elements. Table 2 summarises the key changes in terms of governance that were generated in the Connecting Nature cities. All cities have linked nature-based solutions and their exemplars to strategic goals, agendas and planning documents to gauge political support and leverage financing. Cross-departmental collaboration and public-private partnerships supported the generation of systemic knowledge for the technical design and strategy development and to leverage funding for delivery, stewardship and scaling. Some cities have put in place (Genk and Glasgow) or are planning to develop (Nicosia) new governance models to set-up a clear and formalised structure and clarify responsibilities while combining top-down and bottom-up approaches when planning, delivering and stewarding nature-based solutions. The Front-Runner Cities have further mainstreamed their novel approaches in strategies, regulations and organisational resources. Finally, all cities identified the need for tailored communication strategies to increase societal and political awareness and support.

A critical condition in all cities was **linking nature-based solutions to strategic goals, agendas and planning documents** on urban, regional, national and European levels. This has been crucial to introduce the novel nature-based solutions concept to policy and planning and ensure political support and financing for the exemplars planning and delivery as well as long-term stewardship and scaling. Many cities have integrated their nature-based solutions with urban strategies. In Nicosia, the Local Strategic Sustainable Development Plan and Integrated Spatial Development Strategy (OXA) include the proposal for the urban garden network. As thus, the open garden network is linked to the spatial framework of the area and budgets were ensured. Additionally, the creation of the urban garden network in Nicosia including the development of active mobility connections between plans is aligned with sustainable transport policy, health and wellbeing to ensure links across multiple goals and agendas. Many cities also developed strategic plans for their specific nature-based solution exemplars to set the aims and objectives and ensure implementation. The Pavlos Melas Metropolitan Park Strategy outlines the regeneration of the former military camp towards a green space, marking an important administration mechanism that is legally binding because it is connected to existing policy plans and official documents. For Glasgow, a major transformation point was the adoption of the Open Space Strategy by the city council, making it a key consideration for any development of Glasgow’s open spaces.

The development of the plans closely links to the creation of a profound knowledge base (see Section 3.1.1; Box 5) as well as various forms of communication and collaboration with other departments, public agencies, and private actors. A starting point for linking nature-based solutions to multiple city goals has been the Connecting Nature tool for the strategic alignment with the Sustainable Development Goals (SDGs) (van der Have et al. 2022; Vandergert et al. 2020). The tool helps to present the nature-based solution in alignment with broader social, political and business priorities to capture the multiple benefits, build the case and communicate about it to build alliances with partners who have different interests. In Poznań, it was critical to map the expected benefits of the open garden and nature-oriented playgrounds programme onto key city strategies to demonstrate how the exemplar would deliver these and ultimately to ensure the



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engagement of senior decision and policy-makers. Additionally, a series of information activities promoting the idea of natural playgrounds were organised.

Box 5: Employing strategic environmental assessment to integrate nature-based solutions into legally binding plans in the Caucasus region

Geographic sought to exploit the fact that Strategic Environmental Assessment (SEA) are mandatory in Georgia, and thus an opportunity to specify nature-based solutions as part of the SEA for urban plans. The Connecting Nature impact assessment element has critically supported this process to generate knowledge about the benefits of nature-based solutions as well as catalogues of nature-based solutions. It is very much hoped that, due to the legally binding nature of urban plans and their SEA, the approach would sustain attention to nature-based solutions shaping citywide strategies for scaling nature-based solutions. The integration of nature-based solutions into land-use plans and SEAs was piloted in two cases in Georgia (Kutaisi municipality and small coastal settlement of Grigoleti), and application is in the process for Kazbegi district/municipality and Stepantsminda township. Various Connecting Nature outputs and nature-based solution catalogues developed by Connecting Nature and other European projects were utilised to provide choice of selections for technical solutions as part of the land use plans through the SEA process.

All cities stated siloes and rigid bureaucratic structures as a main barrier to nature-based solutions delivery, yet were able to mitigate those through the **establishment of various forms of cross-departmental collaborations**, formal and informal, for the generation of systemic knowledge for the technical design, linking nature-based solutions to overarching goals and strategies, and to leverage funding for delivery, stewardship and scaling. The Nicosia Development Agency has worked closely with the Directorate General for European Programmes, Coordination and Development of the Ministry of Economy as well as with its member municipalities to find the best possible way to include nature-based solutions as a policy theme in national and local strategies. In A Coruña, collaboration with the education department provided links to schools and kindergarten as places for urban gardens and collaboration with the employment department enabled training courses on urban gardening, thus ensuring multifunctional delivery. The nature-based solutions concept supports opening up discourses for collaboration and combine budgets of multiple departments. In Glasgow, the Open Space Strategy was used to provide a framework for cross-departmental collaboration and financing by formalising meetings with key officers focusing on the 15 themes of the strategy.

All cities also sought to **establish public-private partnerships** for all phases of planning, delivery and stewardship as well as scaling. While such partnerships supported the technical design and delivery and generated financing (see Section 3.1.3), they become especially relevant for long-term stewardship. Co-stewardship is found to ensure multiple functions, for example by collaborating with partners from cultural, sports and educational sectors to organise events and initiatives, and requires clearly defining and formalising roles and responsibilities as well as capacity building to ensure responsibilities are met (**Fehler! Verweisquelle konnte nicht gefunden werden.**). In Sarajevo, for instance, the urban garden and sensory park at the Secondary Vocational Education and Training School is managed by the International Center for Children and Youth Novo Sarajevo, Children's House, which has a right to use this part of the land although it is public land. The centre also maintains this area (e.g. cutting, cleaning) on a voluntary basis. In Málaga, the stewardship use of the garden was split among two associations (Lagunillas Neighbours Association and Association Fantasia) to guarantee activities for schools and the elderly. The lease was set for a year with a calendar of meetings between both associations and the environmental department with the aim to control the development of the activities. Overall, such co-stewardship arrangements need to be flexible depending on the specific nature-based solution. In Nicosia the stewardship arrangement differs for each park, depending on which stakeholders need to be involved, who is responsible and authorised.

Box 7: Towards co-stewardship of urban gardens in A Coruña

A Coruña is aiming to facilitate the self-management of the ecoHortas by its users. This has been supported by an expert trainer and facilitator of collaborative processes and team work who organised workshops and advised users with the objective of facilitating the provision of operation norms and the election of a Management Committee for each of the urban gardens. At the same time, the municipality offered training in the field of organic agriculture to users of ecoHortas, with theoretical classes, practical workshops at the ecoHortas and an online platform in which users can ask their questions. In three municipal urban gardens associations of gardeners were created ("De leira na leira") to manage the plots better (more direct contact, on the ground, with less bureaucracy). There will also be one dedicated person from the municipality to assist the gardeners.

Several cities identified the need to develop **new governance models** for the planning, delivery and stewardship of their nature-based solution exemplar to set-up a clear structure and clarify responsibilities and combine top-down and bottom-

up approaches. Genk pioneered a novel governance model based on an analysis of possible governance models and with the aim to replicate the novel model to other urban planning and policy processes (Box 6). Nicosia, due to the nature of the exemplar comprising multiple parks, plans to establish a semi-governmental body incorporated by law, which will be responsible for planning and delivery, coordinating the involved actors, as well as monitoring and reporting of the nature-based solution and other development projects in the District of Nicosia. The aim is to reform existing centralised governance towards more decentralised decision-making in the municipalities. Glasgow formulated a step-by-step Action Programme that establishes the implementation plan for the next five years with goals, responsibilities, funding sources and time frames. The Action Programme touches on different dimensions of the implementation and the goals of the Open Space Strategy, including the engagement with local communities, identifying opportunities for improving community spaces, reviewing existing landscape designation boundaries and working with children when considering the future distribution of formal play spaces across the city. This should build on a shared responsibility approach to ensure coordination and suitable structures at the local level. The aim would be for community-led projects to put in place their own governance structures to be monitored by those community groups, social enterprises or other actors responsible, while larger scale nature-based solutions will still require some formal institutional governance and facilitation from the Council and strategic partners.

Box 6: A novel governance model for the Stiemer Programme in Genk

In Genk, a novel governance structure was set up in order to realise integrated urban projects in the valley by involving various actors (Figure 5). Specifically, by not considering the Stiemer exemplar as a project anymore, but rather as a process, the governance model was fundamentally transformed towards a horizontal working process bridging multidisciplinary groups in sub-projects, with a clear implementation strategy for integrating across those. Instead of the sum of project structures, this required a clear and integrated governance model characterised by a horizontal, co-creative approach in which involvement and ownership are central principles.

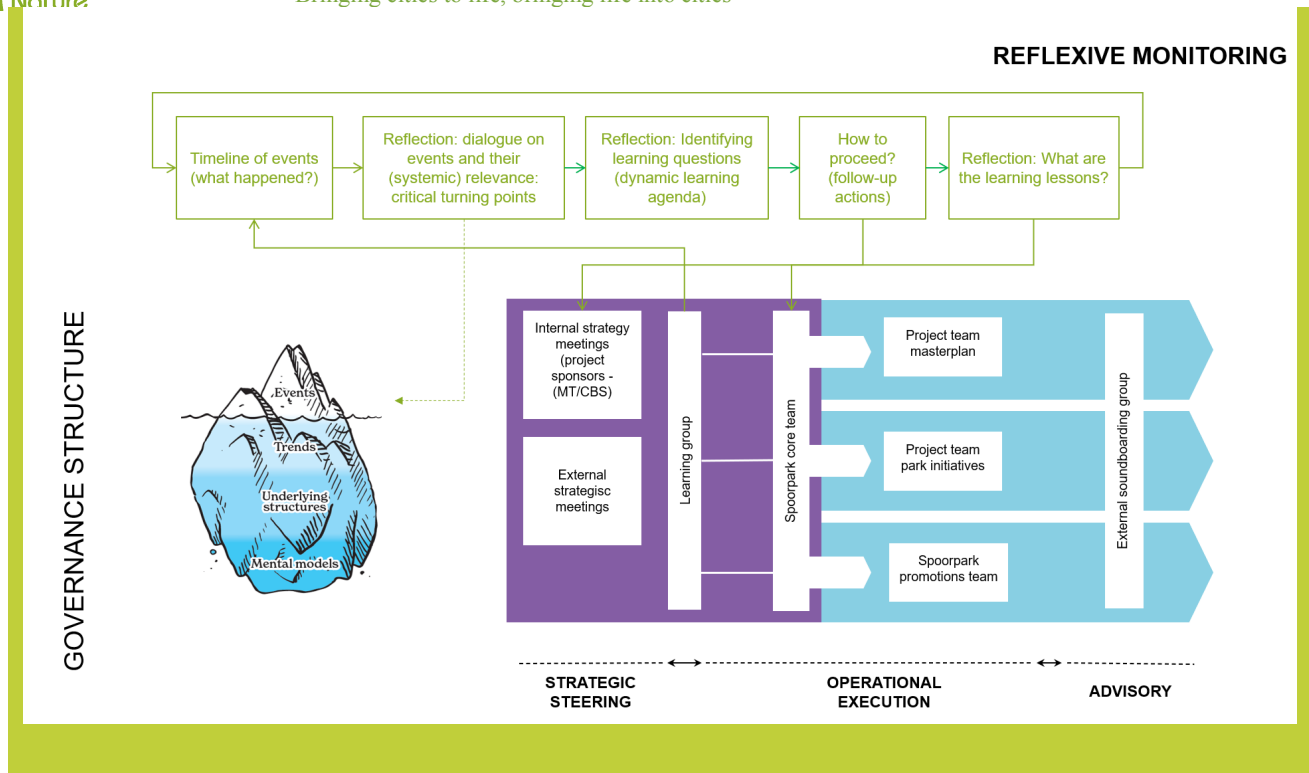
In the beginning of the process there was one project manager for the Stiemer Valley: the manager of the environmental department. Together with a small working group with colleagues from the spatial development and social department the master planning process was managed. To supplement the expertise of the team, internal and external experts from government administration and NGOs were involved to strengthen the strategies on ecology, trajectories, water and public culture. The top-down opportunity-driven approach and bottom-up convergence of small and large projects and visions represented an organisational challenge for the small Environment and Sustainable Development Department within the city of Genk.

The structure is characterised by a working, advisory and steering body. The daily project management is in the hands of two city employees, who take on an equal, active role and come from different departments in light of horizontal project operation. An advisory group composed of internal and external thematic experts, enriches and strengthens the project. They are consulted by the project managers whenever relevant. Finally, a steering committee ensures the monitoring of milestones in the project and strategic management. This steering group is composed of representatives from the policy, management team and external, thematic experts.

For the development of the Stiemer Valley, the following actors play an important role: experts from regional administrations (city, province, and region), experts from universities, experts and volunteers from nature conservation NGO, citizens brought together in the co-production platform 'Friends of the Stiemer', citizens, NGOs, entrepreneurs and others. Representatives of the following four strategic departments of the City of Genk will take up a role in the Stiemer Valley programme: Spatial Department, Social Department, Economy and Tourism Department, and the Sports and Culture Department. The strategic objectives of these departments are closely linked to the objectives of the Stiemer Valley programme. These objectives are related to urban planning, soft mobility, recreation and tourism, nature conservation, climate change/adaptation, social cohesion, economic development and others.

The innovative collaborative governance model developed is now being mainstreamed across other major city programmes (e.g. Energy Sector).

Figure 5: Stiemer Programme governance model



Several activities and conditions were important to establish and nurture the various forms of collaboration. Firstly, it was important to identify the key actors and enablers for collaboration. For example, in A Coruña, an important enabler was the participation of the employment department in an Urbact project on urban agriculture, which made it easy to cooperate with them on urban gardening. It also helped transfer good practices on urban agriculture. In relation to this, it was important to clearly identify the roles and responsibilities of each actor. Moreover, good communication was thought to be key, especially to overcome existing barriers for collaboration such as departmental siloes and diverging goals. In Nicosia, a professional mediator was appointed for these purposes, who was responsible to coordinate the discussion and the communication between the different stakeholders involved in each phase of the project. Keeping actors well-informed was considered significant, so relevant newsletters were sent and short face-to-face meetings were arranged. Depending on the audience, roundtable discussions, workshops or presentations have taken place with clusters of stakeholders (e.g. mayors, engineers). To facilitate good communication and trust building, Sarajevo and Nicosia also employed new methods, namely the EM|Path approach pioneered by Connecting Nature (see Box ; van der Have et al. 2022). For cross-departmental collaboration, high level meetings with key political responsible persons from different departments were important. For example, it can be beneficial to form alliances with senior decision-makers to help navigate budgeting processes that can have unwritten rules and important power relations. Additionally, cross-departmental collaboration is often facilitated by fostering direct relations with individuals from different departments. The Glasgow team organised regular lunchtime slots to present the Open Space Strategy and open up discussion about where to add nature-based solutions, to reach uninterested colleagues and create a shared narrative.

In several cities, especially frontrunning cities, we can witness a **mainstreaming of the strategic nature-based solutions goals and new governance models**. This comprised firstly the mainstreaming of nature-based solutions within city policy frameworks. In Genk, the Stiemer Valley programme was promoted as the flagship project within the adaptation policy of the city: a programme in which new strategies can be tested and demonstrated. Nature-based solutions are now being mainstreamed in the next policy round and social and ecological benefits of nature-based solutions are being increasingly recognised and adopted across city departments. This includes transfer of the nature-based solution concept to a new flagship project climate-proofing the city centre through greening. In Glasgow, the Open Space Strategy has contributed to embedding a place-based approach with nature-based solutions in policy to create a climate adaptive city. Additionally, new working relations were formalised. In Genk, city-wide thematic working groups were established to facilitate discussions with responsible actors in relation to 'safe-guarding' the vision of the masterplan during project development. They also create new working dynamics, creating direct collaborations with external partners that would previously have been managed by another department. Finally, mainstreaming is visible in the investment in organisational capacities. In Poznań, it was found that scaling-up nature-oriented playgrounds also the scaling of skills and 'green agents' were identified across city departments to ensure influence beyond the immediate team. In Genk, recruitment of personnel was



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expanded to work both within and beyond the Stiemer Valley programme. In Glasgow, the Scottish UrbanByNature Hub aims to drive knowledge exchange and build capacity in relation to nature-based solution implementation amongst several stakeholder organisations including statutory nature, environment, and planning organisations, and local authority network representatives.

A final governance element was the **development of a communication strategy** to communicate about nature-based solutions and their benefits to a wide audience. One of the barriers for implementing nature-based solutions is a lack of understanding what the concept actually means. For these reasons, it is important to increase awareness by developing different communication formats tailored to different audiences and building on the narrative of the nature-based solution exemplar (see **Fehler! Verweisquelle konnte nicht gefunden werden.**). All cities stated the use of the Connecting Nature Framework and corresponding reports for communication purposes. In Genk, a professional communication strategy with recognisable visual language was developed to reach out to and involve stakeholders. For example, the logo that was designed for the Stiemer Valley is used by an entrepreneur who is selling Stiemer ice-creams (a Stiemer deal initiative, see Box 14), which contributes to the visibility of the valley. Similarly, Nicosia aims to build a communication strategy and brand name for its exemplar: “Connecting Nicosia”. In Sarajevo, all co-production activities are followed by a journalist who write articles about urban agriculture and promotes urban gardens on social media.

Table 2: Governance and embedded innovations

What has been done?	Which phase?	Enablers (embedded innovations)
Linking nature-based solutions / exemplar to strategies and agendas (all FRCs and FFCs)	Planning, delivery, stewardship	<p><i>Governance innovation:</i> linking nature-based solutions to SDGs</p> <p><i>Governance innovation:</i> linking nature-based solutions and exemplar to local, regional, national and European strategies, agendas and planning documents</p> <p><i>Governance innovation:</i> new strategic plans for nature-based solution and exemplar to set ambitions, objectives and aims (A Coruña, Nicosia, Pavlos Melas, Sarajevo)</p> <p><i>Organisational innovation:</i> collaboration with other departments, public agencies and the public to include nature-based solutions as a policy theme</p>
Cross-departmental collaboration to break silos (all FRCs and FFCs)	Planning, delivery, stewardship	<p><i>Knowledge innovation:</i> identification of key actors for collaboration and engagement and enablers of cooperation</p> <p><i>Organisational innovation:</i> establishing channels, spaces and mechanisms for communication and exchange</p> <p><i>Organisational innovation:</i> High level meetings with key political responsible persons from different areas (A Coruña, Ioannina, Nicosia, Pavlos, Melas, Sarajevo)</p> <p><i>Organisational innovation:</i> involving middle management in collaboration and first build trust and agreement before asking for help</p> <p><i>Organisational innovation:</i> employing new methods for bringing actors from different departments together</p> <p><i>Organisational innovation:</i> appointing a mediator responsible to coordinate the discussion and the communication between the different stakeholders to ensure good communication between the involved actors (Nicosia)</p> <p><i>Organisational innovation:</i> identifying roles and responsibilities and ownership</p>
Public-private partnerships for co-stewardship (A Coruña, Burgas, Málaga, Nicosia, Sarajevo)	Stewardship	<p><i>Knowledge innovation:</i> identify all relevant and involved actors</p> <p><i>Organisational innovation:</i> bringing together relevant actors in formal or informal groups</p> <p><i>Organisational innovation:</i> partnerships with local actors (e.g. cultural, sports, educational) to organise events and initiatives in the park</p> <p><i>Organisational innovation:</i> identify and formalise lease agreements, roles, responsibilities for stewardship and use</p> <p><i>Social innovation:</i> promote educational and neighbourhood activities, e.g. training in public space management, urban garden design, agriculture organic and nature-based solutions</p> <p><i>Organisational innovation:</i> public contact points for self-organisers (A Coruña)</p> <p><i>Knowledge innovation:</i> facilitating capacity building for self-management (A Coruña)</p>

New governance models (Genk, Glasgow, Nicosia)	Planning, delivery, stewardship	<i>Knowledge innovation:</i> analysis of existing governance models (Genk) <i>Governance innovation:</i> combination of bottom-up and top-down approaches for decentralised governance <i>Organisational innovation:</i> setting up clear structure with responsibilities and roles <i>Organisational innovation:</i> replication to other governance processes (Genk)
Mainstreaming nature-based solutions (Genk, Glasgow, Poznań)	Stewardship	<i>Governance innovation:</i> promoting nature-based solutions across multiple strategic agendas <i>Organisational innovation:</i> formalising new working relations and cross-thematic task forces <i>Organisational innovation:</i> investing in organisational skills and resources
Communication strategy (all FRCs and FFCs)	Stewardship	<i>Knowledge innovation:</i> identifying different target audiences <i>Organisational innovation:</i> creating a nature-based solution brand <i>Organisational innovation:</i> hiring communication specialists

3.1.3 Financing and business models

Planning for financing of nature-based solutions is a critical element of nature-based solution implementation and includes both securing financing for capital investment as well as sustainable business models in the long-term to secure return-on-investment and stewardship. In view of increased pressure on public sector resources combined with a shift towards more collaborative governance models, there are calls to shift from primarily public sector financing to innovate financing and business models especially with a long-term view (Sekulova and Anguelovski 2017). Against these backgrounds, key financing questions include: What is the business case for investing in nature-based solutions over other competing public sector priorities? To attract alternative sources of investment what return on investment can nature-based solutions deliver? How should return-on-investment be measured (McQuaid and Fletcher 2020a).

In all cities, still the most dominant financing source comes from public budgets, yet the cities worked to diversify their financing opportunities and business models (**Table**). Ensuring financing is particularly crucial for the delivery of the nature-based solution as well as the long-term stewardship and scaling. It closely links to governance: the creation of political support for nature-based solutions as well as the establishment of cross-departmental collaborations and public-private partnerships to co-finance nature-based solutions delivery, stewardship and scaling.

A first step of all cities was to **identify mechanisms for long-term and collaborative financing** for the nature-based solution exemplar. To support cities for these purposes, Connecting Nature has developed a Business Model Canvas (BMC) tool (McQuaid and Fletcher 2020a), which has been applied in all cities as a co-production method. The cities report that working through the BMC has allowed them to elaborate the wider value propositions of their nature-based solutions and to clarify how these will be delivered through key activities and partners. The broader value propositions open up new financing opportunities by tackling multiple issues simultaneously. Importantly, a BMC needs to be tailored to a specific nature-based solution. In Nicosia, for instance, a BMC was needed for each park that is part of the open park network – each park is a single project with different value propositions and funding sources. A key challenge in the cities was to find personnel with knowledge of both nature-based solutions and financing. Often such knowledge is ‘siloed’ in departments or organisations, so it is important to build collaborations or develop the capacities internally in order to approach new partners and pitch for new sources of funding. Genk stated that the increased knowledge of financing and business planning for nature-based solutions, including a better understanding of formal and informal processes around budget preparation, made them more confident in discussions with other departments and external partners to secure collaboration and financing.

In order to leverage public financing, the cities explored opportunities for **co-financing nature-based solutions with different public sector departments or agencies**. For example, in A Coruña, the cooperation between different municipal departments (urbanism, social services, education, economical promotion) was improved for joint capital investment. In Poznań, the recognition of co-benefits of nature-based solutions facilitated co-financing of nature-oriented playgrounds together with the department of education. Important for leveraging public (co-)financing is also the inclusion of nature-based solutions in strategic agendas. In Burgas, the Saint Trinity Park is included in the Plan for Development of Burgas Municipality 2014-2021, which ensures that it is among the priority sites of the city and will be funded in the coming years. Successful pilots further increase opportunities for co-financing. In Glasgow, the Open Space Strategy provides a mechanism for combining departmental budgets under one umbrella.

Additionally, it is important to **prepare applications or bids for financing**, e.g. European grant financing opportunities



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but also financing from charities and philanthropic organisations. In Pavlos Melas, like most cities, the capital expenditure costs of green infrastructure projects have been financed mainly from national funds and EU structural funds, while the respective ongoing operational costs are included in the annual budget of the municipality. Preparing applications and bids requires identifying suitable programmes and topics relevant to find nature-based solution financial support, such as related to climate mitigation and adaptation, social participation and inclusion and activation of local labour market. In Pavlos Melas, for instance, the financial mechanism of Integrated Territorial Investments also contributes to social, economic and spatial cohesion, which through the simultaneous utilisation of various development axes promotes the territorial capital and the comparative advantages of the intervention area. Nicosia also sought European funds to support technical studies (EU Research and Development funds, LIFE+ Programme). The framing of interventions as pilot projects or “proof-of-concept” approaches facilitates leveraging financial funds. As proof of concept for the Open Space Strategy approach, £500K has been secured from the Scottish Government through the Parks & Operation Department to deliver and update playspaces across the city. The project will be developed as a pilot for the Open Space Strategy approach, with the intention that this will be mainstreamed for the subsequent £5m that the Scottish Government will be investing in open space improvements. For Nicosia, Ioannina and Pavlos Melas, the Connecting Nature Framework Reports were critical to support funding applications – and they were successful in securing large sums for their exemplars. While working on tenders or applications can be challenging for the cities, several cities noted that even failed funding proposals can create new opportunities by leading to new, collaborative ways of working.

Several cities also developed **new instruments to stimulate investment in nature-based solutions** such as taxes and subsidies. For example, Nicosia identified that Pay-as-you-throw schemes (residents are charged for the collection of municipal waste based on the amount they throw away) could provide additional financing for extended waste separation. Ioannina explored alternative financing opportunities such as income from leasing out buildings for cultural events and user fees for certain services, as well as ways to reduce costs through donations, research funds, the work of volunteers or sponsorships. In A Coruña, plot fees for the users of municipal gardens or association fees for the urban gardens create additional income streams.

Many cities explored **hybrid public-private financing models**, building on public-private partnerships and attracting private investment especially for stewardship. Poznań developed a hybrid financing model for the implementation of nature-oriented playgrounds and also look into private sponsorship of nature-oriented playgrounds. Such models involve an agreement with pre-schools to make their grounds available. The planning and upfront development costs are covered by different departmental budgets and community budgets. The costs of ongoing maintenance and management are then taken up by the kindergarten managers who access direct and in-kind contributions from a variety of sources. The Connecting Nature team is now looking for similar opportunities with other departments such as Health or the Department of Business Activity and Agriculture in relation to allotment gardens. Pavlos Melas states that contracts for maintenance services and the employment of individuals in collaboration with social cooperatives, the neighbouring Psychiatric Hospital of Thessaloniki, schools (apprenticeships), university (traineeships, internships) and volunteers can help reduce personnel costs. Burgas and Nicosia identified suitable spaces for private sector involvement, such as by identifying and facilitating new revenue sources (e.g. from cinema, cafeteria, work places). While the reconstruction of the Holy Trinity Park will be financed by the city government, Burgas aims to attract private investors for the landscaping activities in the park, with the responsibility to create and maintain attractive green space, by giving them advertising space. Nicosia is developing a novel approach to facilitate hybrid public-private financing (Box 7).

A more recent innovation to emerge in hybrid financing is **collaboration with intermediary platforms** such as TreesAI (Glasgow) and Reforest-Action (Poznań). These platforms see local government organisations as trusted partners in the identification and implementation of NBS projects at a local level. The platforms aggregate private sector investments and channel these towards suitable projects. The OSS online dashboard in Glasgow provides investors with increased data for decision making and subsequent impact measurement.

Box 7: Adopt a park scheme to attract private investment in Nicosia

The idea for the “Adopt a Park” Scheme in Nicosia was born due to the main challenge that Nicosia faces to involve the private sector, as larger parks in Cyprus are all financed and operated by the government (Ministry of Agriculture, Rural Development, and Environment – Department of Forest and Department of Environment). The identified opportunity was the existence of lots small green spaces, most of them underused or abandoned, in the neighbourhoods, which had the potential for pocket parks. These spaces are owned and supposed to be designed and maintained by local authorities (Municipalities) which are more open to private sector involvement in investing and developing these smaller green spaces. A key opportunity for this scheme was the culture of organisations in Nicosia, using outdoor spaces for social staff events.

The scheme is developed to promote long-term partnerships between local businesses and local governments, in order to maintain and beautify the small/medium-sized neighbourhood parks. The specific objectives of the interventions in the parks are to provide shady areas in summer, involve actively the private sector, facilitate co-design with citizens and increase the sense of ownership.

200 suitable small green spaces have been identified and the adoption scheme for these parks is being developed. Nicosia Development Agency is currently developing guidelines (in collaboration with the Forest Department and the heads of the Environmental Development Departments in the municipalities) that need to be followed by the applicants for the scheme. Responsibilities are to plan, plant and maintain the selected green space and commit to its ongoing care for a 5-years period. The municipalities along with the Nicosia Development Agency will set a team to monitor all the phases of the process.

It is also possible to engage commercial enterprises to co-finance nature-based solutions through **linking civic budgets with corporate responsibility/sponsorship processes**. Nicosia and A Coruña aim to link sponsorship of companies to Corporate Social Responsibility (CSR) strategies and reporting to incentivise companies to invest in nature-based solutions. Both cities thus explored cooperation with the private sector and specifically with officers responsible for companies' CSR policies to inform them about the nature-based solution, engage with them and try to build a win-win situation. The Nicosia team contacted CSR Cyprus to access all large companies in the area of intervention. Similarly, the Poznań Connecting Nature team has met with the CSR departments of a chain of grocers interested in green development and is putting together a database of other interested private sector partners.

Table 3: Financing and business models and embedded innovations

What has been done?	Which phase?	Enablers (embedded innovations)
Identifying mechanisms for long-term and collaborative financing (all FRCs and FFCs)	Planning	<i>Knowledge innovation:</i> wider value propositions for nature-based solutions <i>Knowledge innovation:</i> identification of funding sources and financing partners, including local, regional and national public financing, European funds and private companies <i>Knowledge innovation:</i> identification of how to reduce costs <i>Organisational innovation:</i> Connecting Nature Business Model Canvas tool <i>Organisational innovation:</i> new partnerships and collaborations
Co-financing nature-based solutions with different public sector departments or agencies (all FRCs and FFCs)	Delivery, stewardship	<i>Market innovation:</i> new collaborative business models <i>Knowledge innovation:</i> recognition of co-benefits <i>Governance innovation:</i> including nature-based solution in strategic city plans <i>Organisational innovation:</i> cooperation between the different municipal departments/jurisdictions for capital investment
Prepare applications / bids for financing (all FRCs and FFCs)	Delivery, stewardship	<i>Knowledge innovation:</i> identifying suitable programmes and topics <i>Technical innovation:</i> seeking financing for 'proof-of-concept' pilot projects <i>Organisational innovation:</i> new partnerships and collaborations
New instruments to stimulate investment in nature-based solutions (A Coruña, Burgas, Genk, Glasgow, Ioannina, Málaga, Nicosia)	Delivery, stewardship	<i>Knowledge innovation:</i> identifying new revenue sources and ways to reduce costs (e.g. from cinema, cafeteria, work places, volunteers) <i>Organisational innovation:</i> changing rules and regulations for additional revenue (e.g. taxes, fees)
Hybrid public-private financing models (Burgas, Glasgow, Nicosia, Pavlos Melas, Poznań, Sarajevo)	Delivery, stewardship	<i>Knowledge innovation:</i> identifying opportunities for private sector involvement <i>Organisational innovation:</i> public-private collaborations and formal agreements for hybrid financing <i>Organisational innovation:</i> collaboration with intermediary platforms (Glasgow, Poznań)
Linking civic budgets with corporate responsibility (A Coruña, Nicosia, Poznań)	Delivery, stewardship	<i>Market innovation:</i> linking sponsorship to CSR strategy and reporting to incentivise private companies <i>Knowledge innovation:</i> identifying commercial enterprises and responsible officers working with CSR policies

Organisational innovation: developing an incentives plan and guidelines for the private sector

Organisational innovation: meetings and collaborations with CSR departments of companies

3.1.4 Nature-based entrepreneurship

A nature-based enterprise (NBE) is defined as “[a]n enterprise, engaged in economic activity, that uses nature sustainably as a core element of their product/service offering” (Kooijman et al. 2021, cf. McQuaid et al 2021: 1). NBEs engage nature either “directly by growing, harnessing, harvesting, or sustainably restoring natural ecosystems, and/or indirectly by contributing to the planning, delivery or stewardship of nature-based solutions” (ibid.). NBEs can be very diverse, including creative enterprises using nature as inspiration for the organisation of arts or cultural activities, eco-tourism enterprises, not-for-profit community allotments, and environmental consultants or green infrastructure companies. The common denominator is that each NBE contributes positively to biodiversity and ecosystem services. NBEs can support public financing in view of increasing pressures on public sector resources and the increased outsourcing of public sector services to third parties (Osborne 1993; Pestoff et al. 2006). These changes present opportunities for market innovation both in the form of new public-private governance entities such as Community Interest Companies (CICs) and the emergence of product and service innovation.

The concept of nature-based entrepreneurship is highly novel in all Connecting Nature cities. The identification and facilitation of NBEs has been considered a key value in order to facilitate the delivery and long-term stewardship of the nature-based solution exemplars (Table 3).

Important for facilitating nature-based entrepreneurship is first of all the **identification of nature-based enterprises and related services and products**. This was important in all cities because lack of pre-existing knowledge and awareness. The introduction of the NBE concept facilitated the identification of NBEs in the cities and raised awareness about their potential contributions to delivery and stewardship of nature-based solutions. The cities identified a large diversity of NBEs and related products and services, including environmental protection and ecology in all segments (e.g. lifestyle, nutrition, horticulture, logistics, energy and technology, landscape architects, retail, craftsmanship, healthcare, tourism) that can contribute to multifunctional delivery and long-term stewardship while promoting local economic development (**Fehler! Verweisquelle konnte nicht gefunden werden.** and 11). For instance, in A Coruña and Málaga, an opportunity for NBEs rests on the commercialisation of products of the urban gardens to re-invest money in maintenance or expansion of urban gardens. In Glasgow, a novel collaboration with the nature-based enterprise Urban Good is able to show uses of open spaces. Urban Good also produced offline paper maps, making them accessible to different audiences.

Box 80: Nature-based Entrepreneurship in Poznań

Poznań creates conditions for the development of entrepreneurship in the sector of nature-based solutions, basing on pilots projects implemented in the city. One of the flagship projects is the network of natural playgrounds in Poznań kindergartens. By carrying out this activity, the city has learned together with subcontractors about how to implement this specific nature-based solution, what are the challenges and needs of this enterprise. To capitalise on this knowledge, Poznań organised pilot training programme in the frame of NBS Academy dedicated to natural playgrounds in the public space. Training was conducted in various formats (meeting, webinar, videos, technical materials) by Anna Komorowska, a landscape architect from “pracownia.k” company in Krakow. Anna Komorowska is the author of the majority of natural playgrounds projects in Poznań and was deeply involved in co-design process of them. Her experience does not only include designing, but also consultation and cooperation with kindergartens, schools and city hall. In the coming months and years other examples of nature-based solutions will be promoted and shared with potential contractors and ordering parties.

Box 91: Linking nature-based entrepreneurship to outdoor workplaces in Burgas

Burgas explores the opportunity to provide outdoor workplace in the Saint Trinity Park. This draws from the recognition that the need for a physical workplace is decreasing, because of digitalisation and underscored by the Covid-19 pandemic: “The workplace is the laptop and the phone and is in no way limited by city, building and office” (Burgas city report). At the same time, while companies look for attractive working conditions, it has been proven that spending more time outside in nature has multiple benefits for people’s physical and mental health. Therefore, Burgas embeds the promotion of work, entertainment, sport, etc, in the concept for the renovation of Saint Trinity Park.

An important condition for facilitating nature-based entrepreneurship is **integrating the development of nature-based solutions with economic priorities** to enhance political support and create demand for products. In all cities, main barriers for NBEs were a lack of critical mass to sustain especially SMEs, lack of awareness and demand for nature-based solutions and resistance from competing companies. Poznań’s communication activities (**Fehler! Verweisquelle konnte nicht gefunden werden.**) thus also sought to address these barriers through eco-education and branding nature-based entrepreneurship along nature-based solutions. Pavlos Melas highlighted the connection between promoting NBEs and providing evidence of the effectiveness of nature-based solutions (see Section 3.1.7). Similarly, A Coruña stated that decision-makers needed to be made aware about local NBEs and set up new collaborations with the municipal Department of Entrepreneurship to identify and connect with NBEs. Noted as a key lesson learned by Genk, NBE creation, incubation, and acceleration is a unique challenge requiring sector specific understanding.

All cities aim to **facilitate connection and networking of nature-based enterprises** in view of the current fragmentation of the sector and the difficulty to reach NBEs. A main mechanism for doing so has been the launch of the Connecting Nature Enterprise platform², an online marketplace connecting potential buyers with suppliers of nature-based solutions who can help to plan, deliver and steward nature-based solutions (McQuaid et al. 2020). According to the cities, the platform is a useful tool to register NBEs, facilitate networking and cooperation of local and supra-local NBEs. Several cities expanded on the platform and created local versions: In Pavlos Melas, a Cluster of Metropolitan Park NBEs was set up, Glasgow ran a successful NBE accelerator pilot (Box 12) and Málaga sought to establish a nature-based solutions accelerator La Bocaná de Lagunillas Project (Box 13).

² This platform is a stand-alone innovation developed in the Connecting Nature project: <https://www.naturebasedenterprise.eu>. It is a sustainable platform that will continue after the Connecting Nature project ends in May 2022.

Box 102: NBE accelerator pilot in Glasgow

Glasgow's Nature-Based Accelerator is a 6 month fully funded programme for early-stage nature-based ideas and enterprises that could create positive environmental, social, or economic change in Glasgow. The Nature-Based Accelerator was developed by Good Ideas and Glasgow City Council. It's all about encouraging local and resilient nature-based economies, creating more green jobs, and helping achieve net-zero targets.

In the NBE accelerator pilot, starting nature-based entrepreneurs were taken through:

- 6 month fully funded programme.
- A facilitated process using design thinking methodology.
- 18 interactive workshops (online and in person).
- Working closely with other nature-based enterprises.
- A final launch event connecting you with key stakeholders.
- Expert advice and ongoing support.

By the end of the programme they:

- Have a clear value proposition and unique selling point (USP).
- Understand who your potential customers are.
- Have a strong peer network of support with others working in a similar field.
- Understand your business model and how your enterprise can be financially viable.
- Have learned from entrepreneurs and experts within the field.
- Identify the social, environmental, and economic benefits your enterprise can have.
- Have access to business support throughout the programme.
- Connect into the wider ecosystem.
- Launch to a network of key stakeholders.

The cohort have continued to meet up as a support network; have joined the Nature Based enterprise platform and have linked in with other networks. Based on the success of this pilot, Glasgow was able to secure funding to run a second mainstream programme.

Box 113: Planned Lagunillas Incubator in Málaga

Málaga sought to develop a comprehensive, incubation program for social entrepreneurs, based on IUCN Global Standard for nature-based solutions, and the principles of economic localisation, as defined by the non-profit organisation Local Futures. Planned activities include the identification of nature-based enterprises, providing training on nature-based solution and economic localisation and co-design projects. The proposal for the incubator also had some extra interesting activities to be executed outside in nature, including a day of Sustainable Mediterranean Entrepreneurship and a day of Youth-led Eco-entrepreneurship at University of Málaga's Green Ray business incubator. The programme includes key partners including for example IUCN & IUCN-Med for a learning platform, knowledge, and compliance with Global Standard for NbS, the NbS Cluster, the University of Málaga and Local Futures for knowledge on economic localisation.

It is very difficult to launch a new product specially one that is not yet well known so many difficulties arose to try to disseminate this program and to have students willing to do it. Because of the pandemic and low subscriptions the incubator was cancelled. A future goal for the accelerator is to find a physical place for an NBS incubator and accelerator in the Lagunillas Neighborhood. The idea is to create an incubator with office space for the NbS cluster from Málaga and for startups and SME.

Several cities **created support mechanisms** (e.g. schemes, funds, grants and trainings) to make NBEs more competitive compared to conventional enterprises and ensure that new and existing NBEs meet the market demand. A very successful example to facilitate NBE is the Stiemerdeals developed by Genk (Box 14). A Coruña stated that it was necessary to change tenders, because tenders and contracts requiring more specific knowledge and experience tend to be more accessible to local SMEs. For instance, the education department signed a contract for the preparation of the school garden with a new SME (hortaECORuña) with experience in specifically school gardening, as opposed to all-purpose landscaping companies. Interestingly, the set-up of the new SME hortaECORuña was stimulated by a training programme on organic agriculture and urban gardening provided by the city's Employment Department – thus showing the effectiveness of such training initiatives. In Poznań, the Entrepreneurship Programme launched at the Connecting Nature Enterprise Summit comprised next to awareness raising of decision-makers also training on good practice for contractors/NBEs. A NBE was used as leader of this training. In addition, technical training materials were produced that



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could be shared with city and district councillors responsible for making budget decisions on a district level. This is further supplemented with an additional training cycle in relation to animating and maintaining natural playspaces. This approach to engaging entrepreneurship with nature-based solutions is being expanded to include other type of NBS (e.g. floating gardens).

Box 14: The Stiemerdeals – using nature-based solutions to stimulate social innovation in Genk

The Stiemerdeals programme adopted an entirely novel social innovation approach for the city: a voluntary agreement between the City of Genk and other partners from across the city (other city services, citizens, organizations, companies) in relation to delivering mutually aligned ambitions associated with the Stiemer Valley. The Stiemerdeals are an effective mechanism for unlocking ‘dormant’ capacity but require a novel way of governing by the city team (e.g. with regards to the contact point and facilitating the network) and collaboration with the purchasing department. As thus, the Stiemerdeals also represent a new approach to collaborative governance (see Section 3.1.2).

Through city Stiemerdeals, other actors – citizens, organisations, knowledge institutions, companies, project developers – are invited to play an active role in the development of the Stiemer Valley. Stiemerdeals are used for a social, cultural and economic upgrading of the valley. For example, Crème Le Lis & Nostalgie, an ice cream company from the Stiemer Valley developed a Stiemer-ice-cream inspired by a Friend of the Stiemer. This was a great success for the ice-cream entrepreneur, who became an ambassador for the Stiemer Programme. Stiemerdeals can also contribute to the spatial transformation of the valley through thematic interventions in terms of experience, use, ecology and hydrology. In this way, besides the urban projects, other projects are also started by stakeholders. For example, Aquafin optimises the sewerage infrastructure.

The roles and task distribution between city and stakeholders are made explicit in the deal. A light and flexible project structure is custom designed and depending on the deal, this can be a facilitating, inspiring, connecting or supervising role. This experiment required additional resources and capacity. The active search for deals is done by the social innovation project leader for deals with citizens, associations, civil society etc. by the business development consultant for deals with companies, governments, investment companies, etc. These 'deal makers' work closely with the Neighbourhood Development and Economic Department. If the experiment is successful, the aim is to anchor this approach in these city services.

Table 3: Nature-based entrepreneurship and embedded innovations

What has been done?	Which phase?	Enablers (embedded innovations)
Identification of NBEs and related services and products (all FRCs and FFCs)	Planning, delivery	<i>Knowledge innovation:</i> introduction of NBE concept <i>Knowledge innovation:</i> identifying new revenue sources, nature-based enterprises and mechanisms to support them <i>Market innovation:</i> stimulating new products and services relating to nature-based solution (e.g. organic products)
Integrating nature-based entrepreneurship with economic priorities (A Coruña, Genk, Glasgow, Pavlos Melas, Poznań)	Planning, delivery	<i>Governance innovation:</i> integrating nature-based solutions with economic priorities <i>Knowledge innovation:</i> awareness raising, communicating about NBEs <i>Organisational innovation:</i> cross-departmental collaborations <i>Organisational innovation:</i> skills development in local governments about NBEs
Facilitate connection and networking of NBEs (all FRCs and FFCs)	Delivery, stewardship	<i>Organisational innovation:</i> NBE platform to register NBEs and provide opportunities for cooperation <i>Organisational innovation:</i> participating companies pay a fee that supports the funding of the accelerator programme (Málaga) <i>Social innovation:</i> linking urban gardens and commercial organic agriculture producers (A Coruña)
Support mechanisms for NBEs (Glasgow, A Coruña, Genk, Málaga, Nicosia, Poznań)	Delivery, stewardship	<i>Organisational innovation:</i> provision of schemes and incentives to strengthen start-ups and local SMEs (Glasgow) <i>Knowledge innovation:</i> setting up educational activities for potential businesses (A Coruña, Málaga)

3.1.5 Co-production

Co-production is a novel form of collaborative governance, which allows for deep participation to leverage and weave together local, expert and tacit knowledge and ultimately to address complex urban problems in an inclusive way. By bringing together diverse actors – for example, civil servants, practitioners, social innovators, scientists, entrepreneurs and citizens – co-production can support the generation of transformative nature-based solutions addressing local needs (Frantzeskaki 2019; van der Jagt et al. 2019; Mees et al. 2018). In addition, the collaborative nature of co-production generates novel and shared problem framings and visions, spurs new relationships between actors (for example between local government and citizens, across city departments) and triggers the (re-)definition of roles and responsibilities and empowerment of actors (Frantzeskaki and Kabisch, 2016; Hölscher et al. 2019c).

Most cities did not have prior experience with co-production, yet found it valuable to learn about relevant stakeholders, including those who are not usually involved in urban planning, and to generate more localised and contextualised knowledge about as well as support for the nature-based solution planning and long-term stewardship (**Table 4**). More detail on how the cities have applied co-production is provided in Deliverable 7 (Hölscher et al. 2022). In general, co-production closely links to facilitating new collaborative governance and long-term co-stewardship (see Section 3.1.2) as well as collaborative financing (see Section 3.1.3).

The cities first **set the scene for using co-production** in working on their nature-based solutions, including the identification of goals and actors to be involved. Notably, most Fast-Follower Cities sought to use co-production to get public feedback on their plans and strategies for nature-based solutions. Co-production was novel to all cities: they were used to develop the plans on their own. Other cities, especially the Front-Runner Cities, who used more far-reaching approaches to co-production, sought to generate a sense of community and empowerment as well as new relations between humans and between humans and nature. Corresponding to the goals, the cities identified diverse types of actors to be involved in their co-production processes. All cities emphasised the importance of identifying the right people, which are motivated and can contribute to the project, irrespective of their function or level of hierarchy. Stakeholder mapping workshops and tools were considered critical to find out which actors are operating where and identify unusual suspects. Such workshops can also raise awareness about the value of partnerships. For instance, in Sarajevo, the workshops conducted by Osmos to create Open Innovation Teams led to the conclusion that partnerships will be essential for their project delivery and financing. They differentiated between a relatively small group of actors who will be involved directly in planning, delivery and stewardship and a larger communications network to engage new actors in the long-term.

Most cities employed **strategic co-production** to develop strategic agendas for nature-based solutions and connect them to broader city strategies and agendas. Strategic co-production involved mainly actors from different city departments or jurisdictions to build cross-departmental collaboration and alignment towards shared goals, while the wider public is involved through consultation processes. For example, the Open Space Strategy, which serves as an overarching framework for open space implementation in Glasgow, was developed together with multiple strategic partners and engaged the wider public through online questionnaires, public exhibitions, and key questions on postcards. Partners and local communities were involved in the identification and assessment of open spaces, building on participatory data collection and citizen science approaches to develop an interactive map. Similarly, Burgas sought feedback from the public on the concept for the Saint Trinity Park renovation and conducted a sociological survey in which people stated that they want more green areas in the city. Additionally, a temporary office in the park was set up for citizen consultation. In Ioannina, a public consultation process was conducted through the city's internet platform.

In many cities, **tactical co-production** was used to specify action agendas and build local coalitions and networks between public and private actors. Such tactical co-production has become embedded in formalised groups of engaged citizens with strong connections to the city government. For example, in Genk, the Friends of the Stiemer is a group of engaged citizens that are ambassadors of nature-based solutions in their city and mediate between the city government and citizens using the Stiemer Valley. In A Coruña, Local Group on Urban Agriculture including urban gardeners, teachers, trainers, representatives of municipal departments, NGOs, SMEs has been set up to exchange knowledge and experience on urban gardening and facilitate co-stewardship (see **Fehler! Verweisquelle konnte nicht gefunden werden.**).

Finally, several cities employed **operational co-production** to design concrete initiatives and projects. In operational co-production, local communities are directly engaged in the co-design of the nature-based solution. In Genk, operational co-production activities included bicycle tours, neighbourhood dialogues, Stiemer quizzes, and the engagement of a Junior Team of local school children as child ambassadors (Hölscher et al. 2019d). In A Coruña, an open participatory process involved meetings with citizens, associations, architects and gardeners in the planning and delivery of the urban garden in the Adolfo Suarez Park. The gardeners of the existing urban gardens made a special emphasis on the fact that they don't



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have a dedicated area for gathering or even a shadowed area where to sit for a rest. This is why the new project includes a small building with a multifunctional common room and an outside area with a pergola to facilitate social interactions. In Glasgow, local communities are engaged in the development of nature-based solutions in specific areas. Co-production has led to the co-development of Every Tree Tells a Story: a social cohesion and lived experience project to capture and map tree stories across the city. Co-designed with Strathclyde University and GCC Education Improvement Service, it seeks to empower communities to use creativity to capture stories about the trees and the spaces in which they sit. In Poznań, a visioning workshop with children, teachers and parents contributed to the design of a natural playground at a kindergarten: The participants made models of what they would like in the natural playground. This knowledge was then used by the designer to further shape the nature-based solution.

The cities **applied collaborative methods and workshop designs** for stakeholder engagement. Several innovative methods for co-production were pioneered by the Connecting Nature team, including the BMC (McQuaid and Fletcher 2020a, see Section 3.1.3) and the EM|Path approach (Xidou et al. 2022; van der Have et al. 2022). Such methods gave structures and tools to identifying key actors and goals, building partnerships and developing a common understanding and trust. Specifically, the arts-based and created EM|Path approach was applied by A Coruña, Nicosia and Sarajevo, adapting it to their respective contexts and needs (Box 15). A main value in all cities was that it unlocked new perspectives and experiences, build a common understanding and language as well as new relations also between people and nature. Outputs in terms of sketches, videos, and records could be used for the communication materials. The cities stated that the innovative methods they learned will also be used for other projects.

Box 15: The EM|Path approach to unlock new perspectives and relations in A Coruña, Nicosia and Sarajevo

The EM|Path approach was pioneered in Connecting Nature as a novel co-production method that support preparing the ground for working on nature-based solutions by identifying local values, embedding the local narrative in the project, building new relationships and reconnecting with nature. The process invites creative encounters with the past, present and future and inspires imaginative and innovative storytelling to support the design, delivery, and stewardship of nature-based solutions. The process builds on a process skeleton including methods like memory work, immersion-in-nature and embodied reflection, eco-therapy, body mapping and art map. It was first piloted in Sarajevo and then brought to Nicosia and A Coruña – each implemented the process in a contextually adapted manner.

Reflecting on the outputs from the pilot testing of the process in March 2020, the idea of 'circularity' continues to persist as a driver for framing the intangible elements that are at the foundation of the tangible aspects of the Sarajevo NBS exemplar (i.e. their focus on sensory gardens, and fostering intergenerational exchange seems to be bringing this idea of a circle (on two fronts) centre stage – the metaphorical circle as a garden – from seed, to plant, to seed again; and then the circle of exchange between and among generations. Furthermore, the memory works that were produced in Sarajevo still carry an emotional element worth exploring, particularly as it relates to how co-production can help shed light on what is meaningful and important in peoples' lives (and how this can then be threaded through the various phases of planning, delivery and stewardship of NbS). The EM|Path Approach, as a co-production process, is valuable for uncovering the meanings that people carry with and in themselves, with respect to their relationship to, and with, nature; this can also help in further understanding individuals' motivation for engaging in co-production processes, as well as reinforcing a sense of connectedness, care, and ownership specific to outcomes of the process

In Nicosia, the method was employed to facilitate team building amongst the members of the Nicosia Development Agency working on the open parks network. Even though in the beginning of the process, the team did not fully understand the reasons and the scope behind this exercise; during the process' development the team started realising the significant benefits that could arise in two dimensions. The first concerned the implementation of the exemplar, as the team had the opportunity to spend quality time in the parks included in Nicosia's exemplar. The second was related to the ways that Nicosia's team members worked together. Through the process, the participants had the opportunity to work in a very different manner. Art and nature helped the team to unlock a new perspective, utilise personal experiences and memories, approach the project and express in a very fruitful way, thus contributing to the overall team's tasks. After the three days session, Nicosia's team saw the exemplar in a very different perspective. There are several arts-based outputs (sketches and videos), with an illustrator and filmmaker working alongside the group, which have been important dissemination material.

In A Coruña, application of the EM|Path approach has reinforced the values underpinning their urban garden network (Connecting Nature NBS exemplar) – namely, ideas and reflections specific to attachment, memories, and heritage; the EM|Path Approach has brought these words (and their meanings) into sharper focus. Furthermore, in follow-up discussions with A Coruña, the city shared that the urban gardeners are not motivated to have an urban garden because of the NbS benefits (be they related to health and well-being, environmental or economic), but rather, it is primarily

because the gardens offer the gardeners an opportunity to re-connect with their childhood and the happiness and joy that they connect with nature, and that particular moment in their lives.

The EM|Path approach was found a useful method that will be applied again in the cities. In Sarajevo, the method will be implemented to enable key stakeholders to tell the story of nature and nature-based solutions in Sarajevo, to engage with citizens to tell their stories and to use these stories to design nature-based solutions. The process will be tested during public consultations on the exemplar and implemented within exemplar implementation with multiple purposes: to provide inclusiveness of the specific target groups into society (children with disabilities/other marginalised groups), to provide intergenerational exchange (youth and elderly people) and to raise awareness on nature importance for health and well-being. In Nicosia, EM|Path approach is planned to be used to engage other groups of people as well such as professionals working on nature (e.g. people working for the Forest Department or the Department of Environment), who are often lost in the paperwork, screens and offices and rarely have the opportunity to connect with nature through their work.

The experiences of the Connecting Nature cities with co-production also underscore that co-production is not a panacea and required **developing new conditions for co-production**, including skills, institutional space and partnerships. For example, actor mapping tools supported the identification of actors (see e.g. van der Have et al. 2022 for applied methods for actor analysis and unusual suspect mapping). In Poznań, the green classroom was developed in a district the team didn't know well before, therefore the team asked the kindergarten management and voluntary district council for contacts. In Glasgow, Greenspace Scotland had contacts with a variety of relevant organisations and actors to be included. Several cities sought to ensure there are the right skills by engaging professional facilitators or community engagement experts. They emphasised that it was important to have facilitators who are charismatic, trusted, objective and embedded or knowledgeable about the local context. It has been stated in the cities that sometimes there is just no time for participation in general, because decisions have to be made soon. In addition, there are multiple competing priorities with insufficient time, so that there is no time to learn about, discuss and trial new methods of work such as co-production. It takes time to integrate it into the everyday design. Genk has succeeded in mainstreaming co-production across all elements of the Stiemer Programme, thus ensuring political and institutional support.

Table 4: Co-production and embedded innovations

What has been done?	Which phase?	Enablers (embedded innovations)
Setting the scene for co-production (all FRCs and FFCs)	Planning	<i>Knowledge innovation:</i> identifying actors and goals for co-production <i>Organisational innovation:</i> creation of Open Innovation Teams with key stakeholders
Strategic co-production (all FRCs and FFCs)	Planning, delivery, stewardship	<i>Knowledge innovation:</i> new insights about local needs and ideas for design <i>Organisational innovation:</i> public-private collaboration in design, delivery and stewardship with various city departments and private actors
Tactical co-production		<i>Organisational innovation:</i> temporary office in the park for citizen consultation (Burgas)
Operational co-production		<i>Organisational innovation:</i> local citizen groups on exemplar issue <i>Knowledge innovation:</i> exchanging knowledge and experience <i>Social innovation:</i> new relations and commitment <i>Organisational innovation:</i> public-private collaboration in design, delivery, and stewardship with various city departments and private actors <i>Social innovation:</i> empowerment of, and buy-in from, local communities
New methods for co-production	Planning, delivery, stewardship	<i>Organisational innovation:</i> new collaborative methods (e.g. Business Model Canvas, EM Path approach) <i>Knowledge innovation:</i> identification of new value propositions, goals, actors, funding sources and prioritisation <i>Knowledge innovation:</i> unlocking new perspectives, utilising personal experiences and memories <i>Social innovation:</i> building common understanding and language <i>Social innovation:</i> new relations, also between people and nature <i>Knowledge innovation:</i> learning innovative methods also for other projects (Nicosia)

		<p><i>Organisational innovation:</i> innovative technique for stakeholder engagement that is planned for more engagement processes</p> <p><i>Social innovation:</i> empowerment of and buy-in from local communities</p> <p><i>Knowledge innovation:</i> development of skills for co-production (e.g. facilitation)</p>
Developing capacities for co-production (all FRCs and FFCs)	Planning, delivery, stewardship	<p><i>Organisational innovation:</i> investing in skills and new personnel for co-production</p> <p><i>Organisational innovation:</i> mainstreaming co-production as a governance approach (Genk)</p> <p><i>Knowledge innovation:</i> learning about co-production about new governance method</p> <p><i>Governance innovation:</i> new partnerships with professional co-production experts</p>

3.1.6 Reflexive monitoring

Reflexive monitoring is a participative and dynamic monitoring and learning process that enables urban practitioners to gain insight into the progress and direction of their nature-based solution project in real time, not just retrospectively (van Mierlo et al. 2010; Bussels et al. 2013). It is about taking a reflexive mindset: reflexivity is the ability to interact with and alter the environment within which one operates (Beers and van Mierlo 2017). As a method, reflexive monitoring enables systematic embedding of continuous and collaborative learning into urban policy-making, planning, and other project management practice from the start. Specifically, the reflexive monitoring methodology helps to identify (institutional) barriers that block the desired structural change of the project, and to formulate actions to address, navigate, and mobilise these (Arkesteijn et al. 2015). Reflexive monitoring thus becomes an instrument for learning that helps to evaluate the day-to-day activities, decisions and progress, and how these align with the long-term ambitions of the nature-based solution.

Reflexive monitoring has been another novel method and process for all cities. Taking a step back and facilitating ongoing learning and adaptation in real time, not retrospectively, has facilitated all steps of nature-based solution planning, delivery and stewardship (Table 6). More detail on how the cities have applied reflexive monitoring is provided in Deliverable 7 (Hölscher et al. 2022).

The cities **set up reflexive monitoring processes** with dedicated reflexive monitoring teams, meetings and tools. The extent of reflexive monitoring differed between Front-Runner and Fast-Follower Cities. The Front-Runner Cities got introduced to reflexive monitoring by workshops and webinars in September 2018 and started to work with reflexive monitoring in their own team. They participated in (bi)monthly learning sessions with the Connecting Nature elements leads and reflected upon their learning outcomes during the biannual learning experience webinars. They additionally facilitated in the 1-on-1 learning sessions with the fast follower cities and participated in the Knowledge Hub sessions during the learning platforms webinars. The Fast-Follower Cities got introduced to reflexive monitoring in the Knowledge Transfer workshops and webinars as of January 2019. They started working with reflexive monitoring in their own team since October 2020 and participated in 1-on-1 learning sessions with their Front-Runner City in November 2020, February/March/April 2021 and June/July/August 2021. They reflected upon their learning objectives during the Learning Platform Webinars (June 2019, March 2020, June 2021, September 2021).

As part of the set-up, all cities defined reflexive monitoring teams, including roles within that team such as a reflexive monitor responsible for keeping the overview of the process (Lodder et al. 2022; Hölscher et al. 2022). Some cities set up teams including the Connecting Nature city teams, other cities set up broader teams including actors from different departments and key private actors. For example, in Sarajevo, participants in the reflexive monitoring process included actors from other departments in City of Sarajevo, SERDA, University of Sarajevo, NGOs and the Children's House that are partners of the exemplar. In A Coruña, reflexive monitoring included people from other departments and the Local Urban Garden group to raise awareness and get more people on board.

To implement reflexive monitoring, the cities **employed various methods**, including recording of important events and analysing critical turning points, to identify main challenges and opportunities, formulating learning questions as well as follow-up actions (Box 16; Lodder et al. 2022). The reflexive monitor is in charge of preparing an overall timeline of all important events related to the implementation of the exemplars. The timeline is used to structure the reflexive monitoring meetings for further discussion and planning. A Dynamic Learning Agenda identifies the critical turning points that



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brought about change in how certain situation were handled, for instance in the communication with other actors or in the internal and external collaboration. According to the cities, these reflexive monitoring methods support the daily work by revealing different perspectives, pro-actively anticipating and solving problems and mobilising opportunities and ensuring short-term actions are aligned with long-term goals. Many learning outcomes exceed the nature-based solution exemplar and sit at the organisational levels of the cities, thus reflexive monitoring is primarily a method for organisational learning.

Box 16: Reflexive monitoring in Ioannina

In Ioannina, regular bi-weekly project meetings are held with the participation of all the members of the city's Connecting Nature team, where the status of the project is discussed and the critical turning points are formulated. The reflexive monitor is responsible for updating the dynamic learning agenda with contributions of all the members of the team. Updates are made when a significant event happened. Since the Connecting Nature team in Ioannina consists of members from almost all departments of the municipality, all follow-up actions in the project are known to a member of different departments.

One of the most important critical turning points was related to "Designing the key elements of the Exemplar" and its learning question "How do we determine the key design elements to include in the restoration of the Park?". The follow up actions in essence reveal all the methodology that was followed and involved internal and external meetings, city board decisions and public participation.

Setting up reflexive monitoring in Ioannina was challenging due to the novelty of the process, which is quite different from the usual way of managing a project. In the beginning, every member involved in the project had to be persuaded of its value. Eventually, with everyone on board, reflexive monitoring was appreciated. Through the identification of critical turning points and the formulation of learning questions, the team can be more proactive and anticipate possible problems, in contrast to the traditional way of managing a project, where a substantial amount of time is dedicated in dealing with problems after their appearance.

Applying reflexive monitoring required all cities to **make space for and embed a reflexive way of working** in order to integrate it into daily practice. Reflexive monitoring embodies a new way of working, which is reflexive, collaborative and adaptive. The cities highlighted that such an explicit learning process requires a considerable time effort and communication, though that nonetheless it is worth it. Since the method was considered complex, it was important to simplify it and adapt it to the existing decision-making context. Genk set-up the Stiemer Conclave that takes place every six months next to their regular reflexive monitoring meetings to allow reflexivity and zooming out for a longer period of time. During this conclave, Genk focusses with the Stiemer Programme team in the Stiemer loft (a physical space they created to work on the Stiemer Valley) for two days full-time on the Stiemer Programme. The agenda is determined in advance focussing on a number of fundamental aspects of the Stiemer Programme that need specific attention. For example, the new governance model (Box 6) and the Stiemer deals (Box 14) originated from one of the Stiemer conclaves. Genk also used reflexive monitoring for other process/projects. They designed a novel structure based on their reflexive monitoring meeting structure in Connecting Nature and applied this to a project on energy. They did use other terminology, to make it easier for other colleagues to get introduced to the method. For example, using the term: "learning sessions" instead of reflexive monitoring.

A specific Connecting Nature innovation was the use of reflexive monitoring to facilitate knowledge transfer and **peer-to-peer learning** between Connecting Nature cities. During the 1-on-1 learning sessions the Front-Runner Cities and Fast-Follower Cities exchanged their knowledge and experience about how they worked with the different Connecting Nature Framework elements in their exemplar. For example, Malaga learned about Glasgow's NGOs that organize clean-ups. Ioannina reported that they learned from Poznań how to make the reflexive monitoring method fit their everyday work and implement it more actively in their exemplar. For the Learning Platform Webinars, we created a miro board to share and verify the learning objective analysis with the scientists and the cities in the project. This worked well to select the most important learning objectives to discuss in smaller groups facilitated by the Connecting Nature element leads in the Knowledge Hubs.

The Front-Runner Cities started **analysing the reflexivity of own learning outcomes** during the second part of their learning sessions. They learned how to formulate their learning using the reflexivity categories rules, relations, practices, discourses and connecting their learning to the Connecting Nature Framework elements.

Table 5: Reflexive Monitoring and embedded innovations

What has been done?	Which phase?	Enablers (embedded innovations)
Setting up reflexive monitoring (all FRCs and FFCs)	Planning	<p><i>Organisational innovation:</i> set up reflexive monitoring team and define roles</p> <p><i>Social innovation:</i> involving people from other departments (Genk, Poznań, Glasgow, A Coruña, Sarajevo) and NGO's and/or university (A Coruña, Sarajevo)</p> <p><i>Organisational innovation:</i> new way of working included into daily activities, in collaboration and in real time, provides a big picture</p>
Employing reflexive monitoring methods (all FRCs and FFCs)	Planning, delivery, stewardship	<p><i>Knowledge innovation:</i> identification main challenges, barriers and opportunities in real time</p> <p><i>Knowledge innovation:</i> learning about diverse tools for reflexive monitoring</p> <p><i>Organisational innovation:</i> eye-opener workshop in Genk and Poznań to introduce the concept of nature-based solutions for other departments</p>
Making space for and embedding reflexive way of working (all FRCs and FFCs)	Planning, delivery, stewardship	<p><i>Organisational innovation:</i> making time and space for reflexive monitoring</p> <p><i>Organisational innovation:</i> Stiemer Conclave meeting of 2 days in Genk</p> <p><i>Organisational innovation:</i> Genk uses reflexive monitoring (learning sessions) for energy project</p>
Peer-to-peer learning (all FRCs and FFCs)	Planning, delivery, stewardship	<p><i>Knowledge innovation:</i> learning about tools or processes other cities worked with.</p> <p><i>Organisational innovation:</i> learning sessions with Connecting Nature cities for knowledge exchange</p> <p><i>Governance innovations:</i> learning platform webinar as a tool to facilitate peer-to-peer learning by cities</p>
Analysing reflexivity of own learning outcomes (all FRCs and FFCs)	Planning, delivery, stewardship	<p><i>Knowledge innovation:</i> learning how to recognise the reflexivity of their own learning outcomes, formulate them connected to the reflexivity categories and connecting them to the Connecting Nature Framework elements</p>

3.1.7 Impact assessment

Nature-based solutions have been proposed as a promising policy approach to simultaneously provide social, environmental and economic benefits (Haase et al. 2014), such as climate change mitigation and adaptation, improved quality of life, physical and mental health (Kabisch et al. 2017), social cohesion, well-being (Brink et al. 2016), and a sense of belonging and place (Hartig et al. 2014; Sullivan, Kuo & de Pooter 2004; Keniger et al. 2013; Gulrud et al. 2018). However, the evidence for their multiple benefits is rather scarce and highly fragmented, as evaluations often fail to plan for the assessment of multiple outcomes across different categories of impacts (i.e. environmental, social, economic, etc) (Brink et al. 2016; Raymond et al. 2017; Samuelsson et al. 2018).

The cities struggled with, yet appreciated, learning about how to clearly delineate the impacts of their nature-based solutions, including synergies and trade-offs between different types of impacts (Table 6). Robust, flexible and cost-effective methods for their monitoring and evaluation are essential to building an evidence base for the performance of nature-based solutions to guide urban policy-making.

All Connecting Nature cities developed an impact assessment plan for their nature-based solutions exemplar, with support from Connecting Nature researchers. As a first step, this included **the selection of appropriate and robust indicators** to capture impacts across multiple categories. In order to select indicators, the cities first linked city strategic objectives to expected outcomes of their nature-based solution exemplars. This also provided opportunity to think over potential co-benefits and multiplier effects or potential trade-offs between objectives. To measure the expected results, the cities selected some of the Connecting Nature indicators across multiple categories including environment, health and wellbeing, social cohesion, economic and participatory planning and governance (see e.g. European Commission 2021 and the CO-IMPACT platform³). Important was conducting a search whether baseline data was available that allows measuring the different indicators. For instance, A Coruña analysed which data was available, including the source and year of the baseline, the granularity (specifying the level the baseline data refers to: street, district, neighbourhood or the entire city) and periodicity. In addition, it was indicated whether new data will be collected for the indicators. In terms of environmental indicators, it was found that the city council had a number of meteorological stations distributed around the

³ <https://co-impact.app/>



city. One of them was relocated next to one of the urban gardens to provide very precise data like air temperature, humidity, wind. Similarly, it was found that the city council has already very accurate mathematical models to measure noise and air quality levels. The council has a lot of GIS data that is not necessarily organised in a user-friendly way, but the Connecting Nature team of A Coruña is in contact with the relevant department in order to access this data and include it in the assessment plan. Other identified indicator sources related to existing local implementation plans such as the Spanish Urban Agendas and REDS Indicators (Spanish Network for Sustainable Development).

The cities highlighted the importance of **specifying indicators and impacts across scales and for different target groups**. For example, in Glasgow, the uniqueness and geographical coverage of the Open Space Strategy means that the indicators need to allow measurement of the impact of the enhancements at each open space site both at neighbourhood and street level, as well as at the city as a whole. Glasgow has therefore worked to develop a suite of indicators to evaluate the impact of nature-based solutions at both a city level (to monitor the incremental impact of the Open Space Strategy) and at a local level (to monitor the impact of individual nature-based solution pilots). In Poznań, the nature-based solution exemplars like pre-school gardens, open garden and pocket parks represent small-scale interventions. Thus, it was important to adapt the indicators to the scale of nature-based solutions implemented in Poznań. A challenge is that, because of this, the effects of this type of intervention are difficult to capture on the scale of the whole city. This means that the monitoring of the impact of small green interventions on the environment, wellbeing and social cohesion in dynamic terms can only be implemented on a site scale.

After the final selection of indicators, the **data collection methods were defined**. This includes the identification of existing data gathering methods and possible data gaps where new data collection would be needed, as well as needed technologies and software. Collaboration, especially across city departments, is an important condition for ensuring data collection and dealing with data gaps, because different departments already undertake evaluations and other actors such as from academia can further support impact monitoring. In Glasgow, collaboration with colleagues within the city council and other organisations has been essential to identifying the right data sources. For example, the National Health Service (“NHS”) Greater Glasgow and Clyde is a critical source of social and health data, which are collected for nine areas across Glasgow. Internal departments within Glasgow City Council are instrumental in identifying economic data, such as numbers and locations of businesses, or biological species data after liaising with the Biological Records Centre. For some indicators, it was not possible to identify a partner able to supply the data. For these, it was necessary to implement new evaluation processes. In A Coruña, as a part of the EidusCoruña urban sustainable development strategy a new Urban Observatory will be created to collect indicators on urban sustainability. Existing indicators will be ordered and put together, new indicators are being collected and a new webpage and a software application are under development. Additional data on indicators where data is not readily available – like place attachment, trust in community, mental health and wellbeing – was collected by the UDC Connecting Nature team (academics), who conducted surveys with schools and gardeners’ associations.

A next crucial step is **integrating the collected evidence into the policy process** to facilitate adaptive management of the nature-based solution exemplars. Impact assessment was considered vital for capturing benefits, synergies and trade-offs as well as communicating the effectiveness of nature-based solutions to decision-makers and external stakeholders. Impact assessment supports cities in building the case for investments in nature-based solutions, by providing evidence regarding the types of impacts they are able to deliver and it provides an essential tool to make adaptations in real time, thus increasing their performance. So far, several cities stated that the list of indicators has been useful at producing template-like list of topics that may be relevant to nature-based solutions allowing for organised data-gathering. This also contributed to systematise knowledge about links between city’s strategies and priorities and nature-based solutions. Explicating the links between different goals contributed to engage different stakeholders and actors from different city departments. In Glasgow, the Scottish UrbanByNature Hub is envisioned to focus on impact assessment to align with the Scottish Government priorities in relation to Digital Planning and Data. By bringing disparate datasets together into a central resource it is possible to also support more integrated and targeted decision-making by promoting data sharing and interdepartmental working.

Box 17: Impact assessment dashboard in Glasgow

As part of Glasgow City Council’s (GCC) work on building a baseline of health, social, economic and environmental data for impact assessment purposes, it became evident that data were not widely available between teams. In order to increase awareness of existing and newly collected data, a dashboard with graphical and mapping elements was created. ESRI’s ArcGIS Online platform was customised by Connecting Nature’s GIS Officer so that the dashboard provides a visualisation of commonly needed datasets across these topics. This has allowed non-technical colleagues to access and interrogate data that were previously out of their reach along with raising awareness of the data gaps and

data quality issues present. The dashboard has helped raise awareness of the importance of data sharing and evidence-based decision making, within GCC's teams.

Overall, the cities stated that implementing impact assessment requires the **development of new skills and expertise**. The cities found that, due to their limited experience with indicators and monitoring, developing an elaborate monitoring strategy has been a challenging task, especially given the wide spectrum of objectives. The Glasgow Connecting Nature team brought in a GIS officer to support the impact indicator and dashboard development. Now that the value of this position has been demonstrated, work is ongoing to secure the legacy of this GIS position to ensure continuity of the spatial analysis and impact evaluation components of the Open Space Strategy through the Glasgow City Dashboard.

Table 6: Impact assessment and embedded innovations

What has been done?	Which phase?	Enablers (embedded innovations)
Selecting indicators	Planning	<i>Knowledge innovation:</i> linking city strategic objectives to expected outcomes of their nature-based solution exemplars <i>Knowledge innovation:</i> identifying benefits and trade-offs <i>Knowledge innovation:</i> learning about diverse indicators for different scales and target groups
Defining data collection methods	Planning	<i>Knowledge innovation:</i> identifying existing data methods, available baseline data and gaps <i>Organisational innovation:</i> cross-departmental collaboration to identify data sources <i>Organisational innovation:</i> public-private partnerships for data collection
Integrating evidence into policy process	Stewardship	<i>Knowledge innovation:</i> capturing and communicating benefits, synergies and trade-offs <i>Organisational innovation:</i> producing templates about relevant indicators to organise and systematise data gathering <i>Organisational innovation:</i> collaboration and linkages to communicate evidence
Building skills and conditions	Planning, delivery, stewardship	<i>Organisational innovation:</i> development of new skills and expertise for impact assessment, hiring additional human resources <i>Organisational innovation:</i> cross-departmental collaboration and partnerships

3.2 Learning questions, challenges and opportunities when implementing the Connecting Nature Framework

While implementing the Connecting Nature Framework, the cities have experienced several challenges and raised specific learning questions about how to implement the different elements vis-à-vis their existing urban planning contexts. These challenges and questions, as well as how these could be addressed, give additional indications to other cities about how to implement the Framework and, ultimately, nature-based solutions.

Overall, all challenges relate to the novelty of the Framework, including concepts and tools, which often have been at odds with traditional urban planning approaches in the cities. While some challenges are about coming to grips with the Framework, others relate more specifically to barriers relating to existing planning contexts. For each challenge, we give examples of learning questions and corresponding responses that arouse in the cities. The full overview of learning questions raised is provided in Appendix D, and Deliverable 7 reflects further on the knowledge transfer and peer-to-peer exchange between the cities (Hölscher et al. 2022).

Introducing the nature-based solutions concept: novel and complex, yet an opportunity for multiple benefits and collaboration

The nature-based solution concept itself was considered a challenge in all cities, mainly due to its novelty and thus limited awareness about, support for, and experience with nature-based solutions. A main barrier for working with nature-based solutions has been that policymakers and policy officers were not sufficiently aware of the meaning and implications of nature-based solutions – including the Connecting Nature city teams. Because of the concept's novelty, nature-based solutions have not yet been recognised as a priority in local and regional strategic documents or development plans, often resulting in lack of political support and success in leveraging private financing and promoting NBE. The limited



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familiarity with the term also hindered communication between the involved actors, as it was not easy to convey and comprehend the meaning of the concept from the outset. To some extent, this could be mitigated by actively linking nature-based solution to strategic documents and diverse communication formats (see Section 3.1.2). Box 18 provides an example how to specifically wage political support for nature-based solutions based on the peer-to-peer exchange.

Box 18: How to wage political support for nature-based solutions?

Learning question: *Sarajevo raised the question about how to wage political support for nature-based solutions. In Sarajevo it is very sensitive working with politicians, so they wanted to be smart and wise about this.*

Response: *Reach out to political parties and invite the local media; politicians love to raise their profile, and simultaneously will gather local attention.*

Glasgow waged political support by reaching out across political parties. In Scotland, politicians love having their picture taken with a project like this. In Glasgow, there is a formal process for communicating with politicians, but they advise to ask your contacts how to go about getting cross-party political support and to invite the local media at the same time. This, they add, can be an avenue for additional funding.

Additionally, Glasgow strategically used high-level initiatives such as COP26 in Glasgow and the Climate Emergency announcements to increase awareness around the multiple benefits of nature-based solutions. Technical demonstrators are also an effective way to raise the profile of nature-based solutions by demonstrating what can be achieved in a local context.

At the same time, all cities valued how the comprehensive nature of nature-based solutions' thinking opened up thinking towards multiple functions and benefits, and facilitated collaboration across different departments and with other stakeholders. This is, for example, illustrated by the multifunctional design elements, especially including social innovation elements, of all nature-based solution exemplars (see Section 3.1.1), as well as the provision of multiple benefits for delivering on several political and societal goals and agendas. Poznań has developed a nature-based solution catalogue that was shared during the 1-on-1 sessions with Fast-Follower Cities. By creating such a catalogue it is possible to raise awareness about how nature-based solutions are already embedded in the city delivering on strategic objectives, rather than being an entirely new concept. The holistic thinking also helped the cities in thinking about how to combine the nature-based solutions with the commercialisation of urban spaces in order to create an opportunity for revenue generation, thus easing the municipal budget for subsequent stewardship and scaling (see Section 3.1.3). An important challenge though for such holistic approaches is ensuring sufficient expertise on diverse planning elements and paying attention to trade-offs, as illustrated by the learning question and response presented in Box 19.

Box 19: How to design nature-based solutions to enhance biodiversity?

Learning question: *Sarajevo and Burgas raised the question about how to better design for biodiversity from the beginning.*

Response: *Generate knowledge about biodiversity and involve experts in planning.*

Glasgow faced a similar problem, because they did not always consider the timing for planting until later stages. They responded that through their Open Space Strategy they are now able to map where existing habitats are and how different habitats can be connected. Additionally, they state that it would be beneficial to consult biodiversity experts or ecologists for advice. To further support this learning question, a knowledge exchange [webinar](#) was organised through the NBO community of the CN enterprise platform to give cities a space to share learning on this topic

Applying the Connecting Nature Framework: a new language and approach that challenge business-as-usual, while providing a valuable communication format

In addition to the nature-based solutions concept, also the Connecting Nature Framework has posed many challenges to the cities. Specifically, the terminology of the Framework was considered complex and academic, so that the Connecting Nature city teams struggled to explain it to colleagues or external stakeholders. This was further exacerbated by the fact that the only reference language was English, including that of the guidebooks and City Framework Reports. The latter was overcome by several cities and partners translating the Framework Reports or handbooks (for example on the BMC) into local languages to support uptake.



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Nonetheless, the Connecting Nature Framework and the cities' reports on them was valued as a communication tool. All cities stated the need for extensive communication about nature-based solution and the Framework as a new way of working. As such, the Framework itself and writing up the report, as well as several workshops with the Connecting Nature partners, aided them in building a narrative of nature-based solutions and their way of working (Box 20). In addition to providing a means to have all the information about their exemplar registered and organised, this helped the cities to generate shared understanding and convey their story in a more accessible way, which was a good starting point to create synergies and collaborations, leverage political and societal support, and secure funding. Some cities used their reports as a basis to apply for financing or to enter award competitions. A Coruña used the Connecting Nature Framework to apply for a national award for Best Local Practices on Climate from the Spanish Federation of Municipalities and Provinces (FEMP) and the Spanish Network of Cities for Climate. Having all the information written and organised in the Framework document made it easy to write the application for the award, and thanks to this the city managed to prepare quite a strong entry that won the prize.

Box 20: How to use the Connecting Nature Framework as a communication tool?

Learning question: *A Coruña, Nicosia and Pavlos Melas raised the question about how to use the Connecting Nature Framework as a communication tool.*

Response: *Have a light version of the Framework Report for transmission.*

Ioannina, Genk and Nicosia thought that the Framework was a good source for strengthening proposals. Genk added that the Framework makes proposals more professional and credible for the administrations involved. In order to make it suitable for communication, they made a 'light version' with more visuals and less text. Additionally, Genk translated the Framework Report into Flemish, the local language.

Applying the Connecting Nature Framework tools challenges business-as-usual planning practice and requires investing in new organisational resources

The cities considered the Connecting Nature Framework as a new way of thinking and practicing governance and planning. The many different elements of the Framework as well as the diverse concepts and tools – including nature-based entrepreneurship, co-production, reflexive monitoring and impact assessment – that were new to the cities required various expertise and skills, as well as the creation of space to experiment with such novel ways of working. This was often at odds with the existing working environments in the cities that tend to be more rigid, hierarchical, and bureaucratic. For example, most cities did not have experience with co-production and reflexive ways of working. Additionally, many cities governments faced budget cuts and were understaffed and underfunded.

Nonetheless, because of the support by the Connecting Nature partners and the peer-to-peer exchange and the intensive efforts of the city teams to communicate and convince colleague about the new approach, the cities became convinced of the value of the approach. Many learning questions evidence questions about how to adapt and implement specific aspects of the Framework elements, such as co-production (Box 21), reflexive monitoring (Box 22) and impact assessment (Box 23). The learning journeys of the cities further evidenced the constant commitment by the city teams to learn something new and acquire new knowledge and skills. Many cities stated that the Framework and methods will be applicable to other urban planning processes also beyond nature-based solutions.

Box 21: How to encourage stakeholders to join the initiative, engaging “outsiders” or when people are not committed?

Learning question: *Burgas, Málaga, Nicosia, Pavlos Melas, and Sarajevo raised the question about how to encourage stakeholders to join the initiative, engaging "outsiders" or when people are not committed?*

Response: *Partner with well-known/established organisations to find a way to get people on board.*

Glasgow recognised this challenge; they partnered with the Royal Horticultural Society and organised events with them. During the first event, they gave the participants seeds to share with colleagues – this generated a lot of interest.

Nicosia also advises to partner with well-known or established organisations and calls them ‘ambassadors’. These ambassadors build a common language, step by step. Nicosia starts with the people who work directly with them, who are most open-minded and happy to talk about nature-based solutions with them. Then these ambassadors talk to others to make the case for nature-based solutions.

Box 22: How to integrate reflexive monitoring into daily practice?

***Learning question:** Burgas, Ioannina, Malaga, Nicosia, and Sarajevo raised the question on how to integrate Reflexive monitoring into daily practice?*

***Response:** Scale back the reflexive monitoring process to make it more approachable/tailored.*

Glasgow also found reflexive monitoring complicated to begin with; it has taken them a long time to understand how it works. Then they decided to streamline the process: only a few people review the Dynamic Learning Agenda and create an agenda – and they use that to frame the discussions. Now, they are finding it useful as they are getting individuals in meetings they wouldn’t normally get.

Box 23: How to find impact assessment expertise within the city?

***Learning question:** A Coruña, Málaga, and Pavlos Melas raised the question on how to find impact assessment expertise within the city?*

***Response:** Look to form partnerships with local academic institutes/universities (particularly students), and then frame it as a mutually beneficial relationship.*

Glasgow advised to work with senior level students and to frame it as a mutually beneficial relationship: they are getting ‘real life’ experience, and the project benefits from the assistance. In Glasgow, the relationships with municipalities and universities are established for a long time. They advise to see where the university has expertise; this will facilitate relationship building - and agree on (mutual) benefits. Sarajevo subsequently took this advice on consulting with the university. Now co-production with the university is happening and they find it a nice cooperation.

Transformative nature-based solutions with multiple benefits require and prompt breaking siloes in the city government

A key starting challenge in all cities have been siloes within the city governments, characterised by hierarchical municipal structures and lack of collaboration between different departments that hinders the implementation of integrated strategies. This is exacerbated by some inter-departmental rivalry, lack of clear responsibilities and of trust, as well as competition for political support and resources. As a result, there is no sharing of knowledge and distributed expertise, no wide awareness about nature-based solutions and limited collaborative financing.

All cities realised that the implementation of the Connecting Nature Framework and multifunctional nature-based solutions requires profound collaboration between multiple departments for knowledge sharing, co-financing etc. Applying the Connecting Nature Framework preconditions but also facilitates overcoming siloes and in many cities became a best-case example of how to collaborate across multiple departments (see Section 3.1.2). Such collaborations have been facilitated by linking nature-based solutions to overarching strategic goals and agendas, continued communication and trust building efforts and the establishment of formalised thematic working groups.

Complex and rigid regulations and fragmented ownership over land

Another central barrier the cities faced while implementing the Connecting Nature Framework related to complex or fragmented ownership structures and rigid bureaucratic processes, manifesting in some levels of inflexibility and challenging permission-seeking procedures. This could be mitigated by strategically selecting sites for the nature-based solutions, changing regulations and tendering processes, and establishing collaborations across multiple levels of governments and public-private partnerships. For instance, in Ioannina, Pirsinela Park was selected because the municipality is the sole managing authority and it isn’t governed by strict laws that don’t allow significant changes, which may restrain the possibilities for intervention. In Glasgow, a barrier is that some abandoned open spaces across the city



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are not owned by the municipality. Stalled spaces has been a successful project to collaborate with communities and solve conflicts with the uses of the plots. In Poznań, it has been necessary to put in place new safety rules for the operation of the open garden at kindergarten no. 42, because there have not been any previous legally binding instruments for the implementation of open garden and natural playgrounds.

Mobilising financial resources and co-financing for nature-based solutions on a large scale and for long-term stewardship

All cities struggled with securing financing for the nature-based solutions – especially for the implementation of nature-based solutions at a large scale and for ensuring long-term stewardship – due to limited budget and limited cross-departmental collaboration and partnerships with private actors. Generally, the cities most heavily rely on public budgets for financing while external financing is not extensively used (Section 3.1.3). However, while public agencies often invest heavily in the initial phases of planning and capital investment for delivery, they need to look for opportunities to reduce their ongoing financial commitment by engaging with other actors in the operation and stewardship phase. Additionally, sources of public financing such as grants are subject to varying restrictions and conditions which create uncertainty. A key challenge identified by the cities has been political will (relating to the awareness about the multiple benefits of nature-based solutions) (Box 24) and difficulty in quantifying benefits, further highlighting the need for impact assessment (Section 3.1.7). Relating to the need for cross-departmental co-financing, the cities did not find it easy to secure funding and decide who is going to pay for what. Additionally, it has been challenging to establish contact and collaboration with the private sector, linking to the need for new hybrid co-financing models, limited awareness about and contacts to the private sector and no well-developed market for green services.

Box 24: How to increase the prioritisation of nature-based solutions on funding agendas?

***Learning question:** A Coruña, Burgas, Nicosia, and Pavlos Melas raised the question about how to increase the prioritisation of the Nature Based Solution on funding agendas.*

***Response:** Use the historical and/or cultural significance of the nature-based solution strategically.*

Ioannina had a similar challenge; they did not know if their mayor was willing to spend €10 million on a new green park. Later they were able to secure the funding, partly because they realised that the park had historical significance and used this insight in a strategic way.

A first step has been to identify potential companies and involve private actors in the joint planning, delivery and stewardship. Generally, the BMC exercise and nature-based solutions accelerator have been helpful to open up views on co-financing (Sections 3.1.3 and 3.1.4). In the cities, new sources of private and blended financing are emerging. Setting up a NBE accelerator has become a key strategy in some cities to incubate nature-based entrepreneurship (Box 25).

Box 25: How to set up a nature-based enterprise incubator?

***Learning question:** Glasgow raised the question about how to set up a nature-based enterprise incubator?*

***Response:** Form a cluster of companies related to nature-based solutions.*

Glasgow was looking at establishing a nature-based enterprise incubator. The idea was to identify NBEs and to help them establish themselves. Málaga responded that they did this by creating a cluster of 30 companies on nature-based solutions: some private companies (landscaping, gardening, water treatment, topology), and some institutional, like the University of Málaga. Málaga created the cluster for several reasons: to disseminate the importance of nature-based solutions and to litigate in municipal calls (municipal procurements). The University of East London's Sustainability Research Institute also provided guidance for Glasgow by sharing their experience of setting up the ARENA NBE accelerator/incubator in London.

The COVID-19 pandemic slowed down implementation processes, but offered opportunities for consolidation and experimentation

The COVID-19 pandemic hit mid-way through the Connecting Nature project. Due to the pandemic, priorities shifted (making nature-based solutions a lower priority), planning and delivery of physical interventions has paused or become slower, urban gardens and school gardens closed and pressures on the private sector increased (making it harder to secure private funding). It has also been more challenging to collect data for impact assessment, especially on social indicators



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that heavily relied on surveys of human interactions. Moreover, collaboration was slowed down as no in-person meetings could be held. In particular, co-production was heavily affected by the Covid-19 pandemic because it was more challenging to approach groups, especially vulnerable groups.

Despite these drawbacks and barriers, the cities persisted and succeeded in keeping their projects on track, even with some delays. Some cities even stated that the pandemic provided opportunities for consolidation. In Poznań, the open garden had to be closed to residents, but this provided space for the team to develop new ideas for nature-oriented playgrounds at kindergartens. Similarly, the focus of work has shifted: when implementation has not been possible, the Poznań team sought to build capacity instead. For example, it developed multimedia resources showcasing the eco-demonstrator approach to unlock broader rollout and ensure the quality of the approach. Additionally, while face-to-face meetings were not possible, many cities experimented with new online formats for co-production. Glasgow continued collaboration with their “Friends of” groups in a virtual or hybrid way and created videos to support capacity building with a different legacy compared to one-off workshops (Box 26). Finally, the cities found that while immediate priority has shifted away from nature-based solutions, the lock-down experience highlighted the benefits of green and open spaces for mental and physical health and wellbeing.

From a project perspective, the COVID-19 pandemic required partners had to reflect on and imagine new ways of working (shifting from face-to-face to online engagement), to meet objectives, particularly in relation to knowledge transfer activities. The collaboration between work packages 2, 3 and 4 in the development of Knowledge Transfer – Phase 2 created a permeability between work packages which allowed for knowledge transfer activities to be delivered in a holistic manner (and in this way, served to reinforce the holistic nature of the Connecting Nature Framework itself) (Xidou et al. 2021).

Box 26: How to carry out effective co-production with stakeholders in COVID times?

Learning question: *A Coruña, Burgas, Málaga, Nicosia, Pavlos Melas, Sarajevo raised the question about how to carry out effective co-production with stakeholders in COVID times?*

Response: Simpler solutions are often more effective

Glasgow has found that going back to basics, like a ‘stall on the street’ to share information works well. Also, simple solutions like newsletters are a good way to keep in touch with people. Furthermore, they set up a couple of digital mapping engagement tools, which allowed people to click on areas and discuss issues online.

4 Towards a practical guide: What needs to happen, when

Based on our analysis of what innovations resulted from the cities’ efforts to implement the Connecting Nature Framework, as well as how they were connected across Framework elements, we sought to generate practice-oriented lessons about how to apply the Framework step-by-step per different phases of nature-based solutions planning, delivery and stewardship.

Overall, the different elements of the Framework challenge the traditional urban planning practice and provide new ways to support integrated, collaborative and adaptive approaches. We identify the following key innovations to implement the Framework:

- Knowledge innovation: Urban planners are able to **generate systems’ knowledge** about landscape conditions at various scales, involved actors and stakeholders, multiple benefits and trade-offs, financing opportunities and impacts. This knowledge is generated through collaborative processes involving other urban stakeholders.
- Technical and social innovation: **Linking the technical design of nature-based solution to social innovations** such as environmental education, cultural values, new human-nature relationships, which foster socio-cultural values, include environmental awareness raising and education and facilitate (intra-generational) exchange.
- Governance innovation: **Generating political support** through widely communicating nature-based solutions, linking nature-based solutions to strategic agendas, piloting examples of nature-based solutions and measuring the benefits.
- Organisational innovation: **Establishing cross-departmental collaboration and public-private partnerships** in order to generate systems’ knowledge, facilitate co-financing and co-stewardship, and increase awareness, support and empowerment.
- Organisational innovation: **Employing new methods and tools for co-production** such as actor mapping, the

Business Model Canvas and envisioning exercises to generate systems' knowledge, increase awareness, support and empowerment for co-stewardship.

- Organisational innovation: Developing and implementing a **communication strategy** about nature-based solutions and the exemplar in different formats tailored to diverse target audiences.
- Organisational innovation: **Creating space for reflexive monitoring and impact assessment** to keep track on the progress in real-time and facilitate adaptive decision-making, mobilise opportunities and address barriers in view of long-term goals.
- Organisational innovation: **Investing in organisational conditions** to ensure human resources, skills and institutions for taking up integrated, adaptive and inclusive ways of working and mainstream nature-based solutions.
- Market innovation: Identifying and facilitating **provision of new products and services** related to the nature-based solution and supporting NBEs.

The Framework distinguishes three phases of development for a nature-based solution: planning, delivery and stewardship. From the perspective of these phases and based on our cross-city analysis, it is possible to define in more detail how and when the mechanisms and conditions can be put in place. Importantly, our Framework and the steps are not meant as a static process; the starting points and order of steps being determined by the cities' contexts and needs.

In the **planning phase**, it is important to define the goals of the nature-based solution, start developing the innovations needed to realise the nature-based solution and define which activities are needed to deliver it:

- Develop a systemic understanding of the landscape context and ecosystem service needs of the nature-based solution;
- Identify the key actors and stakeholders including roles, responsibilities and levels of involvement;
- Co-define goals and impacts of the nature-based solutions, connect these to strategic goals and agendas and select indicators and baselines;
- Formulate value propositions for the nature-based solutions, identify financing opportunities and nature-based enterprises for delivery and long-term stewardship and prepare bids, instruments and models for financing;
- Review existing regulations and institutional conditions that influence the nature-based solutions delivery and stewardship;
- Establish cross-departmental collaboration and public-private partnerships for joint delivery, stewardship and financing;
- Communicate about the goals and impacts of nature-based solutions to create awareness and support;
- Ensure organisational space and skills for diverse elements associated with nature-based solutions' planning, delivery and stewardship (e.g. technical design, ecology, financing, co-production, reflexive monitoring and impact assessment).

The **delivery phase** refers to the process of implementing the nature-based solution including all its innovations. Again, the approach will be different per city but some characteristics are that:

- Setting in stone partnerships and collaborations and identify roles and responsibilities for joint delivery and stewardship, including financing and impact assessment;
- Develop a hybrid governance model and co-financing mechanisms for ensuring delivery and stewardship;
- Facilitate nature-based entrepreneurship by setting up NBE accelerators;
- Continue to involve various stakeholders in the delivery of nature-based solutions and communicate about the story and achievements;
- Put in place impact assessment plans and data collection methods;
- Continuously reflect on and monitor the process and impacts and adapt if needed, including indicators;
- Implement organisational and institutional changes to facilitate nature-based solutions delivery and stewardship.

The third phase in the Connecting Nature Framework is the **stewardship phase**. The stewardship of a nature-based solution describes the long-term management and maintenance of the nature-based solution.

- Put in place partnerships for co-stewardship, including organisational conditions for management and operation;
- Promote social activities (e.g. education, events), new products and services related to the nature-based solution and NBEs;
- Establish tactical citizen groups to become ambassadors of the nature-based solution and mediate between the city council and citizens;
- Continuously monitor and assess the impacts of the nature-based solution and linking results to decision-making;
- Identify proof-of-concept lessons, integrate design concept into existing procedures and regulations and showcase the nature-based solution as pilot for replicating and scaling;
- Identify suitable areas, partners, roles and responsibilities for replicating and scaling.

5 Conclusions and outlook

We have collaboratively developed and implemented the Connecting Nature Framework as a new reference tool for urban planning to facilitate the large-scale implementation of nature-based solutions. The application in and learnings from the Connecting Nature cities yielded in-depth insights about how to apply the Framework in different city contexts, address barriers and challenges and what the impacts and benefits are for urban planning.

Benefits of the Connecting Nature Framework

Despite the challenges of adopting such a novel and complex approach, all cities considered the Connecting Nature Framework a valuable tool to support the implementation of their nature-based solutions and urban planning more generally. A main value was found in the structured and comprehensive methodology that can be used to develop any nature-based solution and that can also be transferred to other urban planning issues.

The main benefits and impacts of the Connecting Nature Framework for the cities are as follows:

- **A holistic and integrated approach to generate multiple benefits and break silos:** By encompassing multiple elements, the Connecting Nature Framework supports urban planners in creating a 360° picture of planning, delivery and stewardship of nature-based solutions with transformative impact. The cities stated that this comprehensiveness allows them to expand their imagination and expertise, consider their exemplar from more angles and connect all contributors and stakeholders to stay focused on the same goals.
- **Keeping track of the progress and results with a long-term perspective:** The Framework helped the urban planners from the Connecting Nature cities keep a register of all steps and considerations of the process, while identifying key learnings and integrating those in the next activities. In this way, the process can also serve as a model for future implementations of nature-based solutions.
- **Innovative methods to generate knowledge, involve multiple actors, leverage financing, facilitate learning and evaluation:** The Framework encompasses multiple innovative methods, including reflexive monitoring, co-production, the BMC and impact assessment, which were for the first time incorporated by the teams in the Connecting Nature cities in the development of a project. While requiring new organisational conditions and resources, the methods helped change urban planning practices towards more integrated, adaptive and collaborative approaches.
- **Identifying needs for organisational capacity-building:** By promoting multiple new practices, relations and rules, the Framework application requires – but also guides – the development of new organisational conditions and resources to cover expertise, time and skills for implementing all Framework elements.
- **Building a narrative of nature-based solutions and the novel way of working:** A key value of the Framework and the city reports was that the cities are enabled to tell their story about what they have done in an impactful way to colleagues within the city council, to external stakeholders and to other cities. In this way, they can create awareness, establish new collaborations and further scale nature-based solutions. Using the principles of storytelling, considering your audience is, and identifying a key message creates a convincing narrative to serve this purpose (Georgiou et al. 2022).

Facilitating peer-to-peer learning about how to apply the Connecting Nature Framework

Our knowledge transfer approach has proven extremely valuable to facilitate peer-to-peer learning between the Connecting Nature cities. In a very real way, through the dialogue fostered during the sessions, it is evident that both Front-Runner and Fast-Follower Cities benefit from each other's experiences with the Connecting Nature Framework (as a whole, and also when discussing specific elements that the cities have found challenging). As described in Deliverable 4.1 (Xidou et al., 2021) and Deliverable 7 (Hölscher et al., 2022), the Learning Platform Webinar structure helped the cities to prepare themselves to look at the learning objectives of the other cities per Connecting Nature Framework element and flagging which objectives they recognise as well. This helped the Knowledge Hubs leads to select the learning objectives to discuss per Connecting Nature Framework element in small break-out groups with several cities together. This started a discussion about specific examples and innovations the cities developed in both ways as the Front-Runner and Fast-Follower Cities both attended these break-out groups.

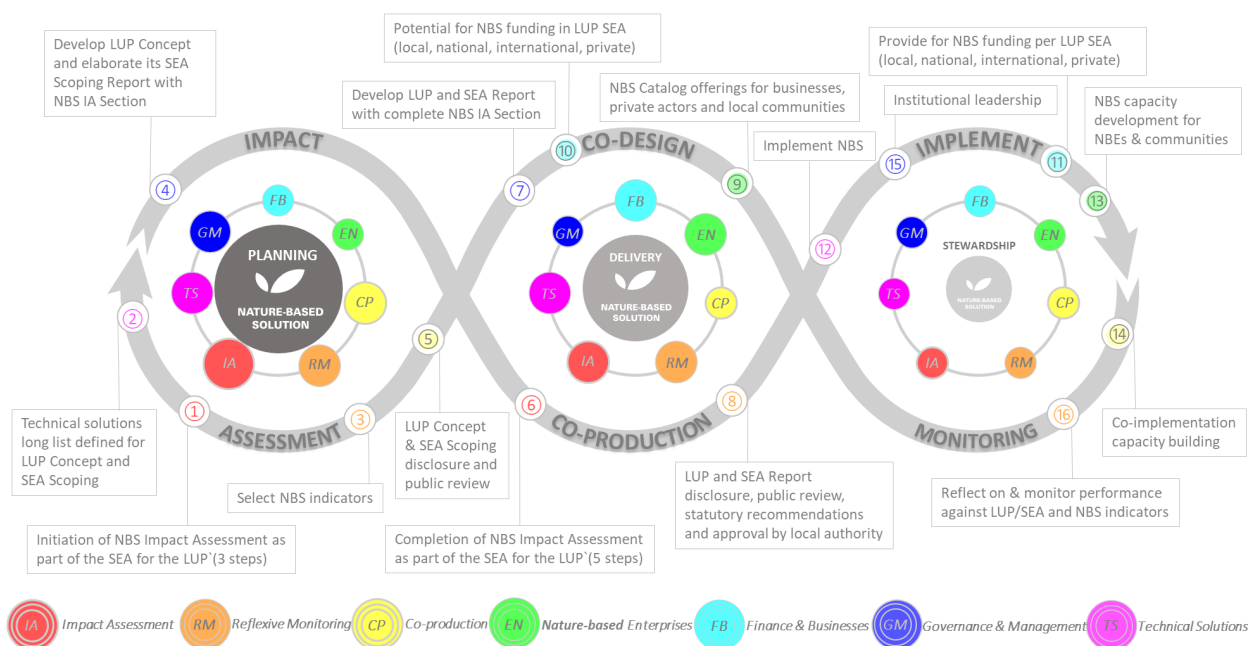
We want to emphasise the importance of going this process going to facilitate inter-city dialogues and knowledge exchange at less formal levels. These topics have been picked-up for follow-up by the cities themselves, or by the Knowledge Hubs leads who organise webinars to share the innovation with all the cities. For example, Genk gave a webinar about their governance model March 8th, 2021. Additionally, the Nature-based Organisations (NBO)

Transferability of the Connecting Nature Framework

As part of the UrbanByNature programme⁵, the Connecting Nature Framework has been brought to multiplier cities in four regional hubs – Brazil, the Caucasus, Korea and China – building on an analysis of the landscape of implementation conditions for nature-based solutions and the Connecting Nature Framework (Rizzi et al. 2020, see also Box 1 on webinar recordings to introduce the Framework to a larger audience).

As one example of a regional hub, the Connecting Nature partners in the Caucasus region (CENS and Geographic) have worked with the Connecting Nature Framework. For example, the Connecting Nature Framework figure was adapted to the Strategic Environmental Assessment of Land Use Plans (Figure 6, see also Box 6 above). Through the UrbanByNature programme, for instance, dialogue with potential NBEs in the region is catalysed and there are initial agreements with some NBEs that help ensure the sustainability of the Caucasian hub. The impact assessment approach supports ongoing research by CENS to assess the role of the installed green wall in a kindergarten as a barrier preventing the penetration of dust and pollutants. In general, it was found that the Connecting Nature Framework elements suitably reflects the phases of the implementation of the green wall. Additionally, the Connecting Nature guidebooks were utilised to develop workflow for mainstreaming nature-based solutions into urban land use plans and gauge an understanding and relevance of locally appropriate solutions (see Box 6 above).

Figure 6: Connecting Nature Framework for Strategic Environmental Assessment of Land Use Plans



Outlook: advancing the Connecting Nature Framework beyond Connecting Nature

Sadly, the Connecting Nature project is about to end in May 2022. However, this does not mean that all the innovations produced by the project will end, too. To the contrary: we have been working to put in place several mechanisms to ensure the long-term sustainability of the Connecting Nature Framework – in particular to continue to spread knowledge about the Framework and how to apply it in cities.

First of all, the separate elements of the Connecting Nature Framework will continue to be used and made available in different ways (Table 8). The main stakeholders addressed through these initiatives are urban planners and practitioners, who are interested in different aspects of nature-based solution planning, delivery and stewardship. Some initiatives target researchers, that can build upon the knowledge developed in this process (e.g. through collaboration in Taskforce 6 etc).

⁴ <https://www.naturebasedenterprise.eu/communities/nature-based-organisations>

⁵ <https://connectingnature.eu/urbanbynature>



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Along these lines, it is worth noting that the guidebooks are going to be translated into local languages in Sarajevo (Bosnian, Serbian and Croatian). Additionally, several partners and organisations have already translated the BMC guidebook into local languages (e.g. Spanish).

Table 8: Long-term sustainability of Connecting Nature Framework elements

Element	Initiatives for advancing and disseminating the Connecting Nature Framework beyond Connecting Nature
Technical solutions	<ul style="list-style-type: none"> • A guidebook on Technical solutions for nature-based solutions will be openly available via the OPPLA platform • A practical guidebook for working through the Technical Solutions element based on the Connecting Nature city experiences is in development • Knowledge Hub resources developed to support Connecting Nature cities in addressing Technical Solutions challenges will be made open access
Governance	<ul style="list-style-type: none"> • A guidebook on Governance for nature-based solutions and a guidebook on creating narratives for nature-based solutions will be openly available via the OPPLA platform.
Finance & Business models	<ul style="list-style-type: none"> • A guidebook on financing and business models for nature-based solutions, and a Nature-based business model canvas guidebook are openly available via the OPPLA platform
Nature-based entrepreneurship	<ul style="list-style-type: none"> • Nature-based enterprise platform • A Nature-based enterprise guidebook will be openly available via the oppla platform
Co-production	<ul style="list-style-type: none"> • A practical guide for using co-production for nature-based solutions is openly available via the OPPLA platform and DRIFT website. This guide can be used by city-makers considering to use a co-production approach to working on nature-based solutions. • DRIFT courses and course materials on Co-production will be used and offered to new clients. The course series on Just Sustainability transitions contains a lecture on co-production, which will benefit from the course materials and the guidebook created during the project. • The EM Path approach will be continued to offered as co-productive series of method to prepare the ground for working on nature-based solutions through reconnecting people with nature and unlocking personal and local narratives (www.empathway.org). • The knowledge developed on co-production will be integrated in a guidebook prepared by Task Force 6 on Co-creation of nature-based solutions for an inclusive nature-based urban regeneration. In this document content form different H2020 projects on co-creation are gathered and shared.
Reflexive Monitoring	<ul style="list-style-type: none"> • A practical guide for using Reflexive monitoring for nature-based solutions is openly available via the OPPLA platform and DRIFT website. This guide can be used by city-makers considering using a co-production approach to working on nature-based solutions. • DRIFT courses and course materials on reflexive monitoring will be used and offered to new clients and networks. The course series on Just Sustainability transitions contains a lecture on reflexive monitoring. Also a recurring training solely focused on Reflexive monitoring will benefit from the course materials and guidebooks created during the project • The knowledge developed on how to use reflexive monitoring to monitor co-production processes, will be integrated in a guidebook prepared by Task Force 6 on Co-creation of nature-based solutions for an inclusive nature-based urban regeneration. In this document content form different H2020 projects on co-creation are gathered and shared.
Impact Assessment	<ul style="list-style-type: none"> • A guidebook on impact assessment for nature-based solutions will be openly available via the OPPLA platform • A mini-guidebook on evaluating the impact of nature-based solutions on biodiversity is in development. The evidence collected in the Front-Runner and Fast-Follower Cities when developing evaluation and monitoring plans, as well as evaluating the

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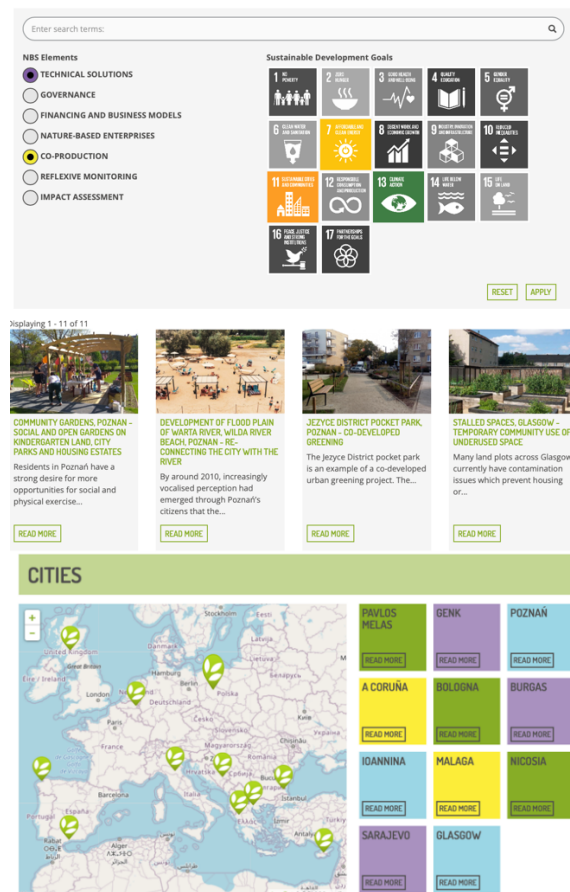
real impact of the nature-based solution, can be consulted for future reference in Deliverable 2 (Dumitru et al. 2022a)

- Deliverable 3 (Dumitru et al. 2022b) will constitute an online toolkit where all the resources generated on Impact Assessment will be available to users in a simple and intuitive way. These resources will include: Impact Assessment Guidebook, assessment results in Connecting Nature Cities, Indicator Reviews and CO-IMPACT.
- The collaboration effort will be maintained with Task Force II to develop new indicators and/or update the scientific knowledge of existing ones.
- The open use of the indicators generated in Connecting Nature will be facilitated, through the free CO-IMPACT tool. CO-IMPACT is a decision-support tool allowing officers and cities to create impact assessment plans for their nature-based solutions. The main objective is to make the process of building a baseline and impact assessment plan straight forward and simple for anyone who wishes to do so, with the final report providing advice around suitable methodologies based on scale and project characteristics.
- The city of Glasgow developed the “Glasgow Connecting Nature Dashboard”, a GIS based platform where data from different sources can be visualized. This online tool does allow users to check the status of indicators in the city in an open and intuitive way. As more data will be incorporated into this Dashboard, more comparative qualitative analyses may be carried out between different areas of the city and facilitate the identification of intervention needs, or the most suitable areas to implement a Nature-based Solution.

Second of all, several initiatives foster the overall connectedness of these elements, as the Connecting Nature Framework describes:

- **Oppla platform:** The Oppla platform is the EU repository for nature-based solutions. It provides a knowledge marketplace, where the latest thinking on natural capital, ecosystem services and nature-based solutions is brought together. Its purpose is to simplify how we share, obtain and create knowledge to better manage our environment. On this platform a dedicated Connecting Nature Resource Centre has been established presenting a attractive, user-friendly and searchable interface to sustain project outcomes and share them with wider audiences. Specific search criteria guide users to resources related to the different elements of the framework, such as guidebooks, publications, video testimonials and case studies of the cities. To date 120 key project outcomes have been identified for inclusion in this knowledge repository. 1 of the most important outputs of the Connecting Nature project are shared. This fosters the overall connectedness in different ways, including the different guidebooks that introduce the Connecting Nature Framework and its elements.

Resources



The screenshot displays the Oppla platform interface. At the top, there is a search bar with the placeholder text "Enter search terms:". Below the search bar, the "NBS Elements" section lists various categories: TECHNICAL SOLUTIONS (selected), GOVERNANCE, FINANCING AND BUSINESS MODELS, NATURE-BASED ENTERPRISES, CO-PRODUCTION, REFLEXIVE MONITORING, and IMPACT ASSESSMENT. To the right, the "Sustainable Development Goals" section shows 17 icons representing different goals. Below these sections, there are four project cards, each with a title, a brief description, and a "READ MORE" button. The cards are: "COMMUNITY GARDENS, POZNAN - SOCIAL AND OPEN GARDENS ON KINDERGARTEN LAND, CITY PARKS AND HOUSING ESTATES", "DEVELOPMENT OF FLOOD PLAIN OF WARTA RIVER, WILDA RIVER BEACH, POZNAN - RECONNECTING THE CITY WITH THE RIVER", "JEZYCE DISTRICT POCKET PARK, POZNAN - CO-DEVELOPED GREENING", and "STALLED SPACES, GLASGOW - TEMPORARY COMMUNITY USE OF UNDERUSED SPACE". At the bottom, there is a "CITIES" section featuring a map of Europe with green location pins and a list of cities with "READ MORE" buttons: PAVLOS MELAS, GENK, POZNAN, A CORUNA, BOLDUNA, BURGAS, IOANNINA, MALAGA, NICOSIA, SARAJEVO, and GLASGOW.

- **UrbanByNature (UbN):** The UrbanByNature programme will continue to facilitate expertise-sharing and capacity-building of local governments, civil society and businesses in Europe and around the world about how to implement nature-based solutions on a large-scale. Specifically, four UrbanByNature regional hubs (Korea, China, the Caucasus and Brazil) and three new European hubs (led by Connecting Nature partners in Spain, Scotland and Belgium) will continue to promote nature-based solutions and the Connecting Nature Framework. The UbN hubs have developed regionally-specific NBS roadmaps along the Connecting Nature Framework reflecting future possibilities in the regional hubs post-Connecting Nature and linkages with Network Nature, the Connecting Nature Enterprise Platform, Oppla and other strategic partners and collaborators. The roadmaps will be published on an online interface that allows users to navigate to each of the UrbanByNature hubs and to access content via the Connecting Nature Framework. Through collaboration with other H2020 projects such as Clever Cities these activities will be sustained and expanded after the end of the project.
- **Connecting Nature Enterprise Platform:** Many Connecting Nature partners are actively engaged in this platform which features multiple communities of practice from sustainable agriculture to community engagement. Nature-based enterprise partners such as Bioazul and Helix are ambassadors for the communities of practice in water management and green buildings for example and these communities will be sustained through other H2020 projects such as GoGreenRoutes and NICE after the end of the project. The City of Bologna also leads a community of practice for other city councils and public organisations interested in supporting nature-based solutions. This community has facilitated the continuation of learning on key challenges identified through the learning platform. For example, UEL have delivered a webinar recently on biodiversity planning with webinars on co-production and financing challenges planned.

- Arkesteijn, M., van Mierlo, B., & Leeuwis, C. (2015). The need for reflexive evaluation approaches in development cooperation. *Evaluation*, 21(1), 99–115. <https://doi.org/10.1177/1356389014564719>
- Beers, P. J., & van Mierlo, B. (2017). Reflexivity and Learning in System Innovation Processes. *Sociologia Ruralis*, 57(3), 415–436. <https://doi.org/10.1111/soru.12179>
- Brink, E., Aalders, T., Adam, D., Feller, R., Henselek, Y., Hoffman, A., Ibe, K., Matthey-Doret, A., Meyer, M., Negrut, N.L., Rau, A., Riewerts, B., Schuckman, L., Tornros, S., Wehrden, H., Abson, D.J., Wamsler, C. (2016). Cascades of green: a review of ecosystem-based adaptation in urban areas. *Global Environmental Change*, 36, 111-123, <https://doi.org/10.1016/j.gloenvcha.2015.11.003>
- Buijs, A., Hansen, R., Van der Jagt, S., Ambrose-Oji, B., Elands, B., Rall, E. L., ... & Möller, M. S. (2018). Mosaic governance for urban green infrastructure: Upscaling active citizenship from a local government perspective. *Urban Forestry & Urban Greening*.
- Bussels, M, Happaerts, S & Bruyninckx, H 2013, Evaluating and monitoring transition initiatives. Lessons from a field scan. Research paper 5, Policy Research Centre Transitions for Sustainable Development, Leuven, Belgium, <https://steunpuntrado.be/documenten/papers/trado-rp-5- evaluating-and-monitoring.pdf>.
- Connop, S., Georgiou, P. (eds.) (2021) Report on progress of nature-based solution implementation – Front Runner City progress. Connecting Nature Deliverable 11.
- Connop, S., Nash, C. (2020) Technical Solutions Guidebook. Connecting Nature. ISBN Number: 978-1-9161451-1-5. <https://connectingnature.eu/sites/default/files/images/inline/Tech%20Solutions.pdf>
- Connop, S., Vandergert, P., Eisenberg, B., Collier, M. J., Nash, C., Clough, J., & Newport, D. (2016). Renaturing cities using a regionally-focused biodiversity-led multifunctional benefits approach to urban green infrastructure. *Environmental Science & Policy*, 62, 99–111. <https://doi.org/10.1016/J.ENVSCI.2016.01.013>
- Dumitru, A., Tomé-Lourido, D. (2020) Impact Assessment Guidebook. Connecting Nature. ISBN Number: 978-1-9161451-4-6. <https://connectingnature.eu/sites/default/files/images/inline/Impact%20Assessment.pdf>
- Dumitru A, Improta R L, Connop S, Nash C, Haase D, Dushkova D, Frantzeskaki N, Lodder M, Sillen D, Sulea C, Macsinga I, Albulescu P, Rhodes ML, McQuaid S, Collier C, Dick G, Martin G, Mowat L. (2018). Deliverable 1.1. Report on the contributions of Tasks 1.1 to 1.4. Report on the outcomes of Task 1.1 (database), 1.2 (map), 1.3 (outcomes of the workshop), and 1.4 (organizational processes and criteria).
- Dumitru, A., Tomé-Lurido, D., Peralbo Rubio, E., Quartier, M., Vos, P., Van de Sijpe, K., Sermpezi, R., Dick, G., Zwierzchowska, I., Lupa, P., Mikula, Ł., Poniży, L., Fagiewicz, K., Dziubała, A., & Dymek, D. (2022a). *Deliverable 2. Report on the outcomes of the lessons learned, mapping of emerging experiments and expert workshops, leading to a synthesis of the most promising indicators for nature-based solutions*. Connecting Nature, Grant Agreement number 730222.
- Dumitru, A., Tomé-Lourido, D., Peralbo Rubio, E., Sermpezi, R., & Dick, G. (2022b). *Deliverable 3. Interactive, online toolkit containing innovative evidence-based demonstrations for nature-based solutions deployment in cities*. Connecting Nature, Grant Agreement number 730222.
- European Commission, Directorate-General for Research and Innovation (2021) Evaluating the impact of nature-based solutions: a handbook for practitioners, Publications Office, <https://data.europa.eu/doi/10.2777/244577>
- Frantzeskaki, N. (2019). Seven lessons for planning nature-based solutions in cities. *Environmental Science & Policy*, 93, 101–111. <https://doi.org/10.1016/J.ENVSCI.2018.12.033>
- Frantzeskaki, N., & Kabisch, N. (2016). Designing a knowledge co-production operating space for urban environmental governance—Lessons from Rotterdam, Netherlands and Berlin, Germany. *Environmental Science & Policy*, 62, 90-98.

- Frantzeskaki, N., McPhearson, T., Collier, M., Kendal, D., Bulkeley, H., Dumitru, A., Walsh, C., Noble, K., van Wyk, E., Ordóñez, C., Oke, C and Pintér, L (2019) Nature-Based Solutions for Urban Climate Change Adaptation: Linking Science, Policy, and Practice Communities for Evidence-Based Decision-Making. *BioScience* 69(6), Pages 455–466.
- Frantzeskaki, N., Vandergert, P., Connop, S., Schipper, K., Zwierzchowska, I., Collier, M., Lodder, M., (2020). Examining the policy needs for implementing nature-based solutions in cities: Findings from city-wide transdisciplinary experiences in Glasgow (UK), Genk (Belgium) and Poznań(Poland). *Land Use Policy*, 96. <https://doi.org/10.1016/j.landusepol.2020.104688>
- Georgiou, P., Gonzáles, G., Gherase, P. (2022). Activity book- Creating effective Narratives for Nature-based Solutions. *Connecting Nature*
- Gulsrud, N. M., Hertzog, K., & Shears, I. (2018). Innovative urban forestry governance in Melbourne?: Investigating “green placemaking” as a nature-based solution. *Environmental research*, 161, 158-167.
- Haase, D., Larondelle, N., Andersson, E., Artmann, M., Borgstrom, S., Breuste, J., Gomez-Baggethun, E., Gren, Å., Hamstead, Z. & Hansen, R. (2014): A quantitative review of urban ecosystem service assessments: concepts, models, and implementation. *Ambio*, 43(4), pp. 413-433.
- Hartig, T., Mitchell, R., de Vries, S., Frumkin, H., 2014. Nature and health. *Annu. Rev. Public Health* 35, 207–228. 1386 doi:10.1146/annurev-publhealth-032013-182443
- Hölscher, K., Lodder, M., Collier, M. et al. (2019a) Nature-based Solutions Framework for frontrunner cities. *Connecting Nature Deliverable 5*.
- Hölscher, K., Frantzeskaki, F., McPhearson, T., Loorbach, D. (2019b). Tales of transforming cities: Transformative climate governance capacities in New York City, U.S. and Rotterdam, Netherlands. *Journal of Environmental Management*, 1(231): 843-857. doi: 10.1016/j.jenvman.2018.10.043
- Hölscher, K., Wittmayer, J.M., Avelino, F., Giezen, M. (2019c). Opening up the transition arena: An analysis of (dis)empowerment of civil society actors in transition management in cities. *Technological Forecasting and Social Change*, 145: 176-185. <http://dx.doi.org/10.1016/j.techfore.2017.05.004>
- Hölscher, K., Frantzeskaki, N., Lodder, M., Sillen, D., Notermans, I. et al. (2019d) Report on outcomes of meetings, consultations, webinars and workshops leading to the publication of a ‘Co-creation for cities’ guidebook and infographics. *Connecting Nature Deliverable 4*.
- Hölscher, K., Lodder, M., Janssen, A., van der Have, C., Allaert, K., Kindlon, D. (2022) Final report of all meetings, consultations, webinars and workshops and the publication of a co-production guidebook for cities consisting of 2 guidebooks: ‘A practical guide to using co-production for nature-based solutions’ and ‘A practical guide to using reflexive monitoring for nature-based solutions’ (including infographics). *Connecting Nature Deliverable 7*
- Kabisch, N., Frantzeskaki, N., Pauleit, S., Naumann, S., Davis, M., Artmann, M., Haase, D., Knapp, S., Korn, H., Stadler, J., Zaunberger, K and Bonn, A (2016) Nature-based solutions to climate change mitigation and adaptation in urban areas: perspectives on indicators, knowledge gaps, barriers, and opportunities for action. *Ecology and Society* 21(2):39.
- Kabisch, N., Strohbach, M., Haase, D., & Kronenberg, J. (2016). Urban green space availability in European cities. *Ecological Indicators*, 70, 586-596.
- Kabisch, N., van den Bosch, M., and Laforteza, R., (2017), The health benefits of nature-based solutions to urbanization challenges for children and the elderly – A systematic review, *Environmental Research*, 159, 362-373, <http://dx.doi.org/10.1016/j.envres.2017.08.004>
- Keniger, L.E., Gaston, K.J., Irvine, K.N. & Fuller, R.A. (2013). What are the benefits of interacting with nature? *Int. J. Environ.Res. Public Health*, 10, 913–35. doi:10.3390/ijerph10030913
- Kooijman, E., McQuaid, S., Rhodes, M.-L., Collier, M., Pilla, F. (2021) Innovating with Nature: From Nature-Based Solutions to Nature-Based Enterprises. *Sustainability*: 13, 1263.



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- Lodder, M., Allaert, K., Mulders, W. (2022). A practical guide to using reflexive monitoring for nature-based solutions. <https://oppla.eu/product/23324>
- McQuaid, S., Fletcher, I. (2020a). Financing and Business Model Guidebook. Connecting Nature. ISBN Number: 978-1-9161451-9-1. <https://connectingnature.eu/sites/default/files/images/inline/Finance.pdf>
- McQuaid, S., Fletcher, I. (2020b). Nature-based Enterprises Guidebook. Connecting Nature. ISBN Number: 978-1-9161451-6-0. <https://connectingnature.eu/sites/default/files/images/inline/Enterprise.pdf>
- McQuaid, S., Fletcher, I., Kooijman, E. (2020) Progress report on the establishment of enterprise accelerator programmes in front-runner cities and fast- follower cities, and recommendations for uptake in multiplier cities. Connecting Nature Deliverable 20.
- McQuaid, S., Kooijman, E.D., Rhodes, M.-L., Cannon, S.M. (2021). Innovating with Nature: Factors Influencing the Success of Nature-Based Enterprises. Sustainability: 13, 12488. <https://doi.org/10.3390/su132212488>
- Mees, H., Alexander, M., Gralepois, M., Matczak, P., Mees, H. (2018). Typologies of citizen co-production in flood risk governance. Environmental Science and Policy: 89: 330-339. <https://doi.org/10.1016/j.envsci.2018.08.011>
- Nash, C., Ciupala, M.A., Gedge, D., Lindsay, R. & Connop, S. (2019). An ecomimicry design approach for extensive green roofs. Journal of Living Architecture, 6(1), 62-81.
- Nesshöver, C., Assmuth, T., Irvine, K. N., Rusch, G. M., Waylen, K. A., Delbaere, B., ... & Krauze, K. (2017). The science, policy and practice of nature-based solutions: An interdisciplinary perspective. Science of the Total Environment, 579, 1215-1227.
- Osborne, D. (1993). "Reinventing Government." Public Productivity & Management Review, Fiscal Pressures and Productive Solutions: Proceedings of the Fifth National Public Sector Productivity Conference (Summer, 1993) 16(4): 349-356.
- Pauleit, S., Zölch, T., Hansen, R., Randrup, T. B., & van den Bosch, C. K. (2017). Nature-based solutions and climate change—four shades of green. In Nature-Based Solutions to Climate Change Adaptation in Urban Areas (pp. 29-49). Springer, Cham.
- Pestoff, V., et al. (2006). "Patterns of co-production in public services." Public Management Review 8(4): 591-595.
- Raymond, C.M., Berry, P., Breil, M., Nita, M.R., Kabisch, N., de Bel, M., Enzi, V., Frantzeskaki, N., Geneletti, D., Cardinaletti, M., Lovinger, L., Basnou, C., Monteiro, A., Robrecht, H., Sgrigna, G., Munari, L. & Calfapietra, C. (2017). An Impact Evaluation Framework to Support Planning and Evaluation of Nature-based Solutions Projects. Report prepared by the EKLIPSE Expert Working Group on Nature-based Solutions to Promote Climate Resilience in Urban Areas. Centre for Ecology & Hydrology, Wallingford, United Kingdom. ISBN: 978-1-906698-62-1
- Rizzi, D., Utkarsh, S., Vallejo, R.R. (eds.) (2020). The UrbanByNature Programme in Brazil, the Caucasus, Korea and China; Recommendations on the Implementation Conditions for Nature-based Solutions in 4 Regional Hubs. Connecting Nature Deliverable 15.
- Rogers, Everett M. (2003). Diffusion of innovations (5th ed.). New York: Free Press. ISBN 0-7432-2209-1. OCLC 52030797
- Samuelsson, K., Giusti, M., Peterson, G.D., Legeby, A., Brandt, S.A., and Barthel, S., (2018), Impact of environment on people's everyday experiences in Stockholm, Landscape and Urban Planning, 171, 7-17, doi.org/10.1016/j.landurbplan.2017.11.009
- Sekulova, F., & Anguelovski, I. (2017). The Governance and Politics of Nature-Based Solutions. Deliverable 1.3: Part VII. NATURVATION project. Retrieved from https://naturvation.eu/sites/default/files/news/files/naturvation_the_governance_and_politics_of_nature-based_solutions.pdf
- Sullivan, W.C., Kuo F.E., & De Pooter S.F. (2004). The fruit of urban nature: Vital neighborhood spaces. Environment and Behavior, 36, 678–700.



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van der Have, C., Hölscher, K., Lodder, M., Alleart, K., (2022). A practical guide to using co-production for nature-based solutions. ISBN: 978-1-7397420-1-0

Van der Jagt, A.P.N., Smith, M., Ambrose-Oji, B. et al. (2019) Co-creating urban green infrastructure connecting people and nature: a guiding framework and approach. *Journal of Environmental Management* 233: 757-767. <https://doi.org/10.1016/j.jenvman.2018.09.083>

Van Mierlo, B. C., Regeer, B., van Amstel, M., Arkesteijn, M. C. M., Beekman, V., Bunders, J. F. G., ... & Leeuwis, C. (2010). Reflexive monitoring in action. A guide for monitoring system innovation projects. Communication and Innovation Studies, WUR; Athena Institute, VU.

Vandergert, P., Hölscher, K., McQuaid, S. (2020) Governance Guidebook. Connecting Nature. ISBN Number: 978-1-9161451-5-3. <https://connectingnature.eu/sites/default/files/images/inline/Governance.pdf>

Williams, J. (2016) Can low carbon city experiments transform the development regime? *Futures*, 77: 90-96.

Xidous, D., Gonzalez, A.P., Gonzalez, M.M. et al. (2022) Report on implementation of Connecting Nature Frameworks in the Fast Follower Cities. Connecting Nature Deliverable 14.

Xidous, D., Tomé-Lourido, D., Lodder, M. et al. (2021). Report on Knowledge Transfer Between Front Runner Cities and Fast Follower Cities, taking into account the proceedings of the knowledge transfer workshops and mentoring process. Connecting Nature Deliverable 12 (4.1).

Appendix A: A practical guide to using the Connecting Nature Framework

The guide is enclosed in a separate document and can be accessed here:

https://drive.google.com/file/d/16GJBLqVZs1sEN_gqfUWApv172eFSKujc/view?usp=sharing

Appendix B: The Fast-Follower City's Connecting Nature Framework Reports

The reports are enclosed in separate documents and be accessed on the OPPLA platform:

- A Coruña: <https://oppla.eu/product/24731>
- Burgas: <https://oppla.eu/product/24732>
- Nicosia: <https://oppla.eu/product/24734>
- Pavlos Melas: <https://oppla.eu/product/24735>
- Sarajevo: <https://oppla.eu/product/24736>
- Ioannina: <https://oppla.eu/product/24738>
- Málaga: <https://oppla.eu/product/24733>

Appendix C: Overview of workshops and activities

The appendix is enclosed in a separate document and can be accessed here:

<https://drive.google.com/file/d/1UpLtwcRcAIX1OGcBStwIjttF77j63j62/view?usp=sharing>

Appendix D: Learning questions FRCs and FFCs per Connecting Nature Framework element

The appendix is enclosed in a separate document and can be accessed here:

<https://drive.google.com/file/d/1AiZbmkGJZQwOUHwpSMNZIR4j0kADoWfT/view?usp=sharing>

How to tell your city's story Connecting Nature framework



STEP 1 Identify the city context

- What is the status quo of your city with regards to implementation and scaling of nature-based solutions?
- What are challenges and opportunities for implementing and scaling nature-based solutions in your city?



STEP 2 Define the goals of your nature-based solution

- What (city) goals do you intend to achieve with your exemplar?
- Describe the main aims, benefits and co-benefits of your exemplar.
- How does the exemplar connect to and deliver on existing urban agendas?
- What makes your nature-based solutions' strategy legally binding, e.g. by connecting it to existing policy plans?

The connection to strategic agendas comes back in the Governance section so you can be brief here!

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How to tell your city's story Connecting Nature framework



STEP 3 Identify your target audience and other relevant actors

- For whom is this document?
- Who has been involved in developing it?
- How did you engage/plan to engage with all quintuple helix actors (see figure to the right) across all of the different elements for your nature-based solutions exemplar? Please explain why you have chosen the actors and how you will engage with them.

Keep it general - you will be asked more detailed questions on stakeholders involved in the 'Governance' and 'Co-production' section.



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STEP 4 Introduce your nature-based solution exemplar

- What is the nature-based solution exemplar about?
- How was the concept developed?
- What is the timeline for planning, delivery and stewardship and what is the current status?

Focus here on the general description and main aims. You will go more in detail on these questions in the sections on 'Technical solutions' and 'Impact' assessment'



STEP 5 Position this report

- Explain the big picture
- Why do you find the Connecting Nature framework necessary?
- How do all Connecting Nature framework elements come together to facilitate nature-based solutions implementation and scaling?

- Identify the innovations
- What is innovative about your approach?
- What is different in your way of working compared to conventional urban planning?
- What are the different types of innovations that you have developed from the Connecting Nature framework?
- How has the Connecting Nature project helped the development of the exemplar?

You can keep the reference to the Connecting Nature project to a minimum – we will provide a one-pager to be included in the Connecting Nature framework reports of all cities.

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How to tell your city's story Technical solutions

STEP 1 Define the nature-based solution

- What is the name of the nature-based solution exemplar?
- What type(s) of nature-based solution does it include?
- Where is the location that the project is being delivered?
- What is the size of site?
- Give a brief description of the technical design of the project and supplement with plans/images.



STEP 2 Develop an understanding of the landscape context and ecosystem services needs

- Landscape scale:**
- What is the broad landscape context (e.g. watershed, ecosystems, geology of the peri-urban and rural areas surrounding the city)?
 - What challenges does the broad landscape face (environmental, social, economic)?
- City scale:**
- What is the city landscape context (e.g. watershed, ecosystems, geology)?
 - What challenges does the city face as a whole (environmental, social, economic)?
- Local scale:**
- What is the local landscape context of the site of the nature-based solution exemplar (e.g. watershed, ecosystems, geology)?
 - What are the needs of the locality of the nature-based solution exemplar (e.g. what are the environmental, social, economic needs)?
- Exemplars that cover multiple local scales:**
- If your exemplar is being delivered across multiple local scales, how does your technical design balance variation across local scales (in terms of variation in social, economic, and environmental needs of place)?
 - How does the technical design improve biodiversity and ecological connectivity in relation to local habitats/city-wide connectivity strategies/the broader landscape across the multiple local scales?



Step 2 involves generating info on the locality. After completing the guiding questions, you can feed this back into Step 1 to iteratively improve the design.

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How to tell your city's story Technical solutions

STEP 3 Embedding multiple functions into the planning, delivery and stewardship of the nature-based solution

- How are you targeting benefits, co-benefits and trade-offs related to the landscape/city/local scale through the nature-based solution exemplar technical design?
- How are you managing the transition from technical planning to technical delivery of the nature-based solution?



Step 3 involves implementing the finalised design. The finalised design depends on your input to step 1 and 2!

If you need more support, have a look at the guiding questions for this step in the appendix.

STEP 4 Monitoring and evaluation

Stewardship management

- How was a stewardship plan developed for managing and maintaining the nature-based solution?
- What technical and operational tools are needed/being used for stewardship management?
- Who is delivering the exemplar stewardship management?
- Was there an appropriate skillset available for such management or was a training/apprenticeship scheme needed? If so, how was this established?
- Were local residents involved in maintenance through employment/enterprise opportunities or volunteer friends of stewardship schemes? If so, how were these schemes established?

Provision of benefits

- How are benefits expected to change over time?
- How is monitoring being used to inform management to ensure that technical performance is retained/enhanced?
- How flexible is the nature-based solution management to future demands? How was flexibility built into the design of the nature-based solution?
- Are any mechanisms in place to change the design if the expected benefits are not delivered?



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How to tell your city's story Technical solutions

STEP 5 Build an evidence base to promote nature-based solutions to a wider catchment



- Are key technical barriers remaining in relation to the stewardship management? If so, what are they?
- How is the knowledge creation from addressing technical barriers associated with stewardship being captured and shared within and beyond the project stewardship management team?
- What were the key lessons learned from the technical solutions planning, delivery and stewardship/operation in relation to the exemplar and its implementation?
- What additional skills and capacities could the team develop to strengthen your effectiveness in developing nature-based solutions?

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How to tell your city's story Technical solutions APPENDIX

STEP 3 Embedding multiple functions into the planning, delivery and stewardship of the nature-based solution

Technical design for benefits, co-benefits, and trade-offs

Benefits

- How are social benefits related to the landscape/city/local scale being targeted through the nature-based solution exemplar technical design?
- How are economic benefits related to the landscape/city/local scale being targeted through the nature-based solution exemplar technical design?
- How are environmental benefits related to the landscape/city/local scale being targeted through the nature-based solution exemplar technical design?
- How are biodiversity/ecological benefits related to the landscape/city/local scale being targeted through the nature-based solution exemplar technical design?

Co-benefits

- What co-benefits (non-target/non-designed for benefits) are expected from the exemplar and how will the technical design help to deliver each one?
- Were any co-benefits upgraded to benefits through the technical design process (e.g. incidental co-benefits changed to benefits through change in technical design)? How was the design changed to deliver this?
- What is the expected scale of these benefits and co-benefits (spatial and timescale)?

Trade-offs

- Were any trade-offs identified in terms of benefits and co-benefits? If so, how were these balanced in the technical design (e.g. how did you prioritise the demands of the community vs broader city strategic objectives in relation to the technical design)?
- Are any identified local needs not targeted through the technical design of the nature-based solution exemplar? Were any benefits not considered? Why?

Note: Step 3 involves implementing the finalised design. The finalised design depends on your input to step 1 and 2.



STEP 3 Embedding multiple functions into the planning, delivery and stewardship of the nature-based solution (continued)

General technical planning issues

Technical design

- How was baseline data used to inform the design?
- What technical and operational tools did you need/use to design the exemplar (e.g. spatial mapping, iTREE, SUDS planning tool)?
- Who were the key stakeholders for informing the technical design? How were they engaged in a shared vision?
- Was any expertise lacking in relation to the technical design? If so, how was this skills gap addressed?
- How is long-term resilience to future climate change built into the technical design?
- How has accessibility been considered in relation to technical design?

Knowledge sharing

- How are experiences of technical implementation of other nature-based solution projects in your city being used to shape the exemplar?
- Did you compare your project to other EU/global examples? If so, which ones?
- How is the knowledge creation from addressing technical planning barriers being captured and shared within and beyond the project planning team?

Planning the technical design

- What were the timelines for planning? Were these sufficient for achieving a suitable design? If not, why not?
- What, if any, key technical barriers remain unresolved in relation to the nature-based solution technical design planning?

Note: Step 3 involves implementing the finalised design. The finalised design depends on your input to step 1 and 2.



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Technical solutions APPENDIX

STEP 3 Embedding multiple functions into the planning, delivery and stewardship of the nature-based solution
(continued)



- Delivery status

- What is the current status in relation to delivery?
- What are the timelines for delivery?
- How was the timeline for delivery determined?
- Were there any unforeseen delays in delivery? If so, how were

- ## Delivery preparation

- Was an environmental impact assessment (EIA) carried out for construction?

- Did the results of the EIA impact delivery of technical aspects of the design?

- Were contractors available that had expertise in this type of nature-based solution design? If not, did they need training? How was this delivered?

- During delivery

- What technical and operational tools were needed/used for

- delivery?

- Was there scope to react to new opportunities for benefits during delivery? If so, how was this achieved?

- How were benefits prioritized if benefits were lost/reduced during delivery?

- Were any other unforeseen challenges related to technical delivery experienced during delivery? If so, how were these dealt with?

- What key technical barriers remain in relation to the exemplar

- How is the technical knowledge creation from delivery, particularly delivery?

the process of addressing barriers to delivery, being shared within and beyond the project delivery team?

Note: Step 3 involves implementing the finalised design. The finalised design depends on your input to step 1 and 2.

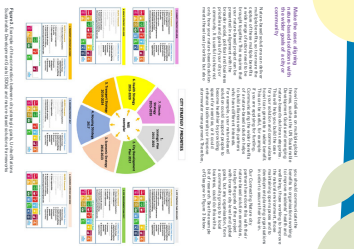
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How to tell your city's story Governance

STEP 1 Make the case: aligning nature-based solutions with the wider goals of a city or a community

- Identify the home of the exemplar within the city departmental structure and which other departments are needed for successful implementation
- Identify the legal framework within which the exemplar will be implemented, for example by being formally integrated into the city spatial plan, climate resilience plan
- Identify the city strategic goals at various scales (local/ city/national/larger) that the exemplar helps to achieve



STEP 2 Current status of the location: identify the current use, ownership and management of where you want to implement your nature-based solution

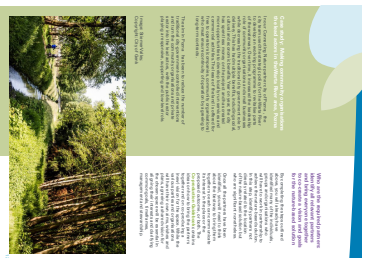
- Who currently uses the space?
- Who owns the space?
- Who manages the space?



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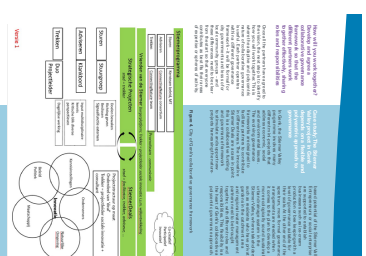
How to tell your city's story Governance



STEP 3 Who are the required partners: identify all relevant partners and bring everyone together to co-create a vision and goals for the nature-based solution

- Map required partners, stakeholders and beneficiaries according to the phases of exemplar delivery – planning /delivery/stewardship
- How did you bring the required partners together?
- How did you use co-production tools to build trust and agree a shared vision?

Look back at your quintuple helix analysis in the Connecting Nature Framework section for input!



STEP 4 How will you work together? Develop and agree a collaborative governance framework so that the different partners work together effectively, sharing roles and responsibilities

- What roles and responsibilities will each partner have?
- Who will be accountable and to whom?
- What is new in how this project is governed compared with your historic case studies?
- What does the city department have to do in order to ensure success?
- What can the city department let other partners be responsible for?

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Governance

STEP 5 What will you need to succeed? Identify conditions, skills and reflexive learning capacities to ensure ongoing success

- Analyse existing nature-based solution experiences, barriers and opportunities to understand your organizational culture
- Think about how you will work with colleagues to open-up silos, enhancing multi benefits
- What personal/team qualities are needed to create and maintain effective collaborations?
- What advocacy and evidence can you use to make the case for collaborative working?
- What strategies can you use with colleagues who are resistant to collaboration?
- What additional skills and capacities could the team develop to strengthen your effectiveness in dealing with colleagues and partners? How can you develop those?
- Can a neutral bridging organisation help build trust between partners?



Photo credit: Green City
The City of London has been working with Green City to develop a nature-based solution to improve the city's resilience to climate change. The project involves creating a network of green spaces and water features that will help to reduce the city's carbon footprint and improve the quality of life for its residents.



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How to tell your city's story Financing and business models

Following the Business Model Canvas workshop, you have drafted already this section of the Connecting Nature Framework on Finance and Business Models for your exemplar. Since then, you have had several quarterly calls with the element lead to review progress.

You can submit the most recent version of this for your Connecting Nature Framework report.

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How to tell your city's story Nature-based enterprises

STEP 1 Awareness and strategic alignment

- What are the priorities for economic development in your city? E.g. priority sectors for development, priority geographical areas for economic development, other economic priorities?
- How can the planned NBS contribute to these economic development priorities?
- For each NBS exemplar please consider, how could NBEs contribute to the planning, delivery, maintenance and sustainability of these solutions?
- What are the challenges and enablers from a city perspective in involving NBEs in the implementation of NBS?



STEP 2 Building alliances

- From an NBE perspective what are the challenges and enablers to start-up and growth of NBEs? Do NBEs face specific challenges or enablers?
- Who are the main actors in the innovation ecosystem in each city (see figure)?
- How can these actors be engaged to stimulate a culture of nature-based entrepreneurship and support the emergence and growth of nature-based enterprises?
- What is the level of knowledge and skills of the Connecting Nature team in your city in terms of supporting the emergence and growth of NBE? If skills gaps have been identified, how do you plan to address them.



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How to tell your city's story Nature-based enterprises



- STEP 3 Planning, implementing and monitoring a customised support programme**
- What are the primary objectives of your NBE strategy?
 - How will NBE contribute to the implementation of your NBS?
 - What measures are you putting in place to stimulate the emergence of a culture of nature-based entrepreneurship and to support the emergence and growth of NBEs?
 - What innovation ecosystem actors have been engaged in the development of your NBE strategy and what actors are engaged in the implementation of the strategy?
 - How will you know if your NBE objectives have been achieved? How will impact be measured?
 - How did you translate your NBE strategy into an actionable implementation plan?
 - Who will be following up with ecosystem actors and on specific measures to support the emergence and growth of NBEs? Within what timeframe?

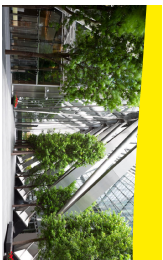


- Planning a programme to support nature-based enterprises**
- What are the goals of a nature-based enterprise support plan? How do these align with broader strategic goals, in particular the large-scale implementation of nature-based solutions?
 - Who needs to be involved to deliver this plan? How will innovation ecosystem stakeholders be involved?
 - Who is going to lead on planning, development and monitoring? Have an adequate budget and resources for piloting or full-scale implementation been assigned?
 - What specific support measures will be put in place locally to address challenges and enablers? How will these connect with national or international support measures and platforms?
 - How will success be measured? What are the impact indicators?

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How to tell your city's story Co-production



3 | How to design and implement co-production

Figure 1: The co-production process
The co-production process is a collaborative process where different actors (public, private, and civil society) work together to co-produce a service or a product. It is a process that is designed to be inclusive, participatory, and transparent. The process is designed to be inclusive, participatory, and transparent. The process is designed to be inclusive, participatory, and transparent.

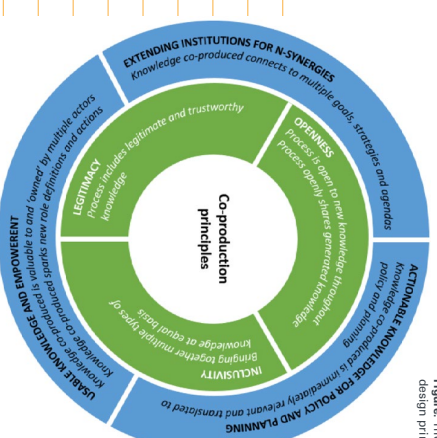
- STEP 1 Define the goals of the co-production process**
- What are the (different) goals for co-production? *Think for example of: adapting plans to local needs, mobilising and empowering local actors, legitimacy, ... You might want to think of different co-production processes, which address different co-production goals.*
 - Who do you involve in your co-production activities? How will you engage them?
 - What are the different roles and responsibilities for organising the co-production process, and who will take them up? *Think of roles and responsibilities in terms of process design, facilitation, aggregating the generated knowledge, communicating results etc.*

STEP 2 Use the design principles to flesh out the co-production goals and structure

- How do you approach each design principle in your co-production projects? For example, looking at inclusivity, who will you involve and who will you not involve overall, and why? What types of knowledge do you want to generate? How do you ensure the design principles? E.g., how do you ensure that the quality criteria for the principles are being met?



Figure: The co-production design principles



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How to tell your city's story Co-production

STEP 3 Plan the co-production steps and activities

- What are your different co-production steps and activities?
- Which of the goals does each step/activity address?
- Who will be involved in each step/activity?



You can present this in form of a timeline of activities from the start and highlighting the different steps, when and where they took place, which tools you used and who was involved.

It would be nice if you could include pictures from your co-production activities (also at later stages as the document evolves). Please include dates that the pictures are taken and acknowledge sources or copyrights when applicable.

STEP 4 Select the co-production tools

- Which tools do you use for each co-production step? How do you use the tool?
- Which materials, skills and other requirements (e.g. room, atmosphere, time) are needed for the tool?
- Which results did the tool generate?



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Co-production

STEP 5 Reflect on the co-production process and results



- Which of your intended results did you achieve?
- Which other (unintended positive/negative) results were generated?
- What are the main opportunities and barriers you experienced throughout your co-production process?
- How did you adapt the process to address the opportunities and barriers?
- What are key lessons learned for future co-production processes?

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How to tell your city's story Reflexive monitoring



STEP 1 Rethink what learning process you need to achieve the goals of the nature-based solution

- What are the (different) goals of your nature-based solution?
- What are the main learning questions that need to be addressed to achieve these goals? Think what needs to change for a successful implementation of the nature-based solution compared to a regular planning process. Which barriers or challenges are expected? Can these be translated into things your team or other actors in the process need to learn?
- Which actors have a role in this process and how can they be activated to contribute to answer your learning questions?
- How to create a learning environment and plan for additional time to get acquainted with the reflexive monitoring method for the reflexive monitor and the team members involved?



STEP 2 Define the roles within the project team

- Who is involved in the reflexive monitoring process?
- How are the roles divided over the team? It is possible to divide the different tasks of the reflexive monitor over multiple team members but important to explicate who is responsible for what. In case the project manager takes the (or parts) of the role as reflexive monitor: How do you ensure there is no conflict between these two roles?
- How do you ensure there will be enough space for the reflexive monitor to familiarize his-/herself with the reflexive monitoring tools and the capacities required for this role?

reflexive
monitor:

reflexive
monitoring
coach:

other
participants in
the reflexive
monitoring
process:

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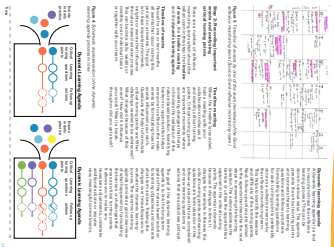
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How to tell your city's story Reflexive monitoring

STEP 3 Recording important events and analysing critical turning points

- How do you track the important events in time? When do you discuss what happened with your team and formulate to critical turning points? Is it connected to 'regular' project meetings? Do you organise an additional meeting for this step and if yes, who is involved in this 'timeline meeting'?
- Who is involved in updating the dynamic learning agenda? How often are the updates made? With whom is this agenda shared?
- How to you keep track on the follow-up actions, especially when they are executed by colleagues who are not (closely) involved in the reflexive monitoring process?
- Can you give 2-3 example(s) of follow-up actions and describe who was responsible for them and how they relate to the critical turning points and learning questions?

Depending on your team parts of the process can be done together or alone. The reflexive monitor is responsible to produce the dynamic learning agenda and the other team members can be involved at different levels. However, the different responsibilities and the planning needs to be transparent and clear for all people involved in order to ensure everybody is contributing in time and follow-up actions are implemented in practice. This to avoid parallel processes between 'regular' project meetings and the reflexive monitoring process.



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STEP 4 Use learning sessions to identify learning outcomes

- What are the main opportunities and barriers you experienced throughout your reflexive monitoring process (including working with the reflexive monitoring tools)?
- How did you include the reflexive monitoring process into your daily activities?
- What came up during the learning sessions that influenced the planning, co-production and/or implementation of your nature-based solution?



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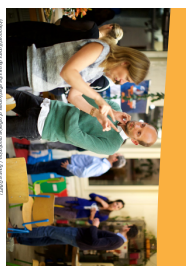
How to tell your city's story Reflexive monitoring



STEP 5 Share your findings with others

- What lessons on reflexive monitoring did you learn from the other cities? And what lessons did you share with other cities?
- Did you organise an eye-opener workshop and what did you and the participants gain from it?
- How was it to write a learning history narrative? Did the learning history narratives from other cities inspire or surprise you and in what way?
- What are the main take ways from the peer-to-peer learning sessions you participated in (these are the knowledge transfer workshops and learning platform webinars)?

not obligatory for first draft December 2020, but good to start thinking about how you will answer these for the final reporting



STEP 6 Reflecting on the method and peer-to-peer sharing

- How is reflexive monitoring new/different from your usual way of working?
- How does this method help you in the process of co-producing and scaling nature-based solutions?
- Did it influence your change existing relations, rules, social practices and discourses for the co-production and scaling of nature-based solutions (reflect upon why or why not)?
- What are the main lessons learned for the internal organisation of the exemplar?
- Did the applied reflexive monitoring tools help you with the analysis of key barriers and opportunities for the co-production and scaling of nature-based solutions (if yes, explain how)?
- Did the applied reflexive monitoring tools help you with enabling third party learning, i.e. transferring the lessons learned in the project to project outsiders (if yes, explain how)?

not obligatory for first draft December 2020, but good to start thinking about how you will answer these for the final reporting

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How to tell your city's story

Impact assessment



STEP 1 Engage in structured reflection on NBS impacts, pathways and trade-offs

- How are the strategic objectives of the city related to the United Nations Sustainable Development Goals?
- What are the objectives of your NBS and its expected results?
- How are the objectives related to the NBS actions and the expected results?
- Are there possible synergies or trade-offs between the expected results?

STEP 2 Choose appropriate indicators

- Please list which core and feature indicators you have selected for each category
- Based on your exemplar's expected results, what are the reasons for selecting those indicators?

This step can be skipped for the 1st draft of your Connecting Nature framework report in December 2020. You will complete it later, by April 2021.

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How to tell your city's story

Impact assessment

STEP 3 Develop a data plan for impact evaluation

- Do you have data available for the selected indicators?
- Please describe their sources and years.
- Based on your exemplar, what is the granularity of this data?
- Please describe by which method this data is collected, and how often.

This step can be skipped for the 1st draft of your Connecting Nature framework report in December 2020. You will complete it later, by April 2021.

STEP 4 Implement the data plan

- Please describe the selected methods to measure each indicator and why.
- In which indicators will the city be able to perform causality analysis?
- Please describe the plan for the collection of new data

This step can be skipped for the 1st draft of your Connecting Nature framework report in December 2020. You will complete it later, by April 2021.

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How to tell your city's story

Impact assessment

STEP 5 Integrate evidence into the policy process

- What type of data (quantitative or qualitative) will you have for each indicator?
- Please list for which indicators you will be able to geolocate the data.
- How will you disclose the results for each indicator?
- Please describe to which stakeholders you will disclose the results of each indicator.

This step can be skipped for the 1st draft of your Connecting Nature framework report in December 2020. You will complete it later, by April 2021.

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CONNECTING NATURE FRAMEWORK
A CORUÑA:
AN URBAN GARDENS GREEN NETWORK



Contents

Summary.....	5
CONNECTING NATURE FRAMEWORK.....	6
STEP 1 City context	6
STEP 2 Project goals.....	8
1. Increase biodiversity and boost ecology.....	8
2. Boost resilience against perturbations.	8
3. Provide a sustainable public space offering healthy recreational opportunities for people.....	8
4. Protect and reinforce ethnographic and cultural values of environment.	8
5. Increase social cohesion and community engagement.....	9
6. Provide a space for environmental education.....	9
7. Boost new economic opportunities.....	9
STEP 3 Target audience and actors.....	10
STEP 4 Nature-based solution exemplar: an urban gardening network in a coruña	12
STEP 5 Position this report	16
TECHNICAL SOLUTIONS.....	18
STEP 1 Definition of the nature-based solution	18
STEP 2 Develop an understanding of the landscape context and ecosystem services needs	22
1. Landscape scale:	22
1. City scale:.....	23
2. Local scale:.....	23
3. Exemplars that cover multiple local scales:	24
STEP 3 Embedding multiple functions into the planning, delivery and stewardship of the nature-based solution.....	25

STEP 4 Monitoring and evaluation	25
STEP 5 Build an evidence base to promote nature-based solutions to a wider catchment ..	26
GOVERNANCE.....	26
STEP 1 Alignment of nature-based solutions with the wider goals of the city:	26
1. Home of the exemplar within the city departmental structure and other departments needed for successful implementation	26
2. Legal framework within which the exemplar will be implemented, for example by being formally integrated into the city spatial plan, climate resilience plan	26
3. City strategic goals at various scales (local/city/national/larger) that the exemplar helps to achieve	26
STEP 2 Current status of the location	32
STEP 3 Who are the required partners	32
STEP 4 How will we work together. Developing a collaborative governance framework	33
FINANCING AND BUSINESS MODELS	34
STEP 1 Lessons learned from how NBS has been financed in each city to date.....	34
STEP 2 Explore opportunities for innovation in financing, governance and business models	35
STEP 3 Planning the financing and business model of Connecting Nature NBS exemplars.	38
1. Value proposition: how will your exemplar create environmental, social, economic or any other type of value?.....	40
2. Value creation:	41
3. Value capture.....	44
4. Consider trade offs.....	44
STEP 4 Implementation of financing and business model plans for specific NBS exemplar	44
NATURE-BASED ENTERPRISES	46
STEP 1 Awareness and strategic alignment	46
1. Contribution of NBS to the city economic development priorities	46

2. Contribution of NBEs to the planning, delivery, maintenance and sustainability of the exemplar.....	46
3. Challenges and enablers in involving NBEs in the implementation of NBS.....	46
STEP 2 Building alliances.....	47
1. Challenges and enablers to start-up and growth of NBEs:.....	47
STEP 3 Planning, implementing and monitoring a customised support programme	48
STEP 4 Planning a programme to support nature-based enterprises.....	48
COPRODUCTION.....	50
STEP 1 Define the goals of the co-production process.....	50
1. Goals for co-production:	50
2. Key actors to be involved in the co-production activities:.....	51
3. Some engagement tools we have put in practice:	51
STEP 2 Use the design principles to flesh out the coproduction goals and structure	51
STEP 3 Plan the co-production steps and activities.....	53
STEP 4 Select the co-production tools.....	55
STEP 5 Reflect on the co-production process and results.....	60
REFLEXIVE MONITORING	62
STEP 1 Rethink what learning process you need to achieve the goals of the nature-based solution	62
STEP 3 Recording important events and analysing critical turning points.....	64
STEP 4 Use learning sessions to identify learning outcomes.....	65
IMPACT ASSESSMENT	67
STEP 1 Engage in structured reflection on NBS impacts, pathways and trade-offs.....	67
Step 2. Choosing appropriate indicators.....	70
Step 3: Developing a data plan for impact evaluation	71
Step 4: Implementing the data plan.....	72
Step 5: Integrating evidence into the policy process	72

Summary

A Coruña is a seaside city located in the Ártabro Gulf, north-west of Spain, with a population of 244,000 inhabitants, stunning landscapes and built on over two thousand years of architectural heritage. A Coruña has a diverse economy, mainly based on the service sector, ranging from tourism to port activities, and together with its metropolitan area it houses the headquarters of several major multi-nationals. It is a densely populated and compact city, with a territory of under 40 km², and with a scarcity of green areas.

The nature-based solution that the city has been working with is about urban gardening and creating a network of Urban Gardens that can help connect green areas and provide multiple environmental, economic, and social benefits.

At the time the exemplar was selected, there were different options being considered, including the creation of a new park in the periurban area, or the restoration of a river course in the outskirts of the city. However, the local government changed after the elections on May 2018. This meant some of the political priorities shifted, and there was a risk that some of the potential projects might not be developed in the short term. This is why it was decided to opt for a project whose implementation had already started, which was also backed by another EU project (Urbact Ru:rbán), and which had a pressing citizen demand, with long waiting lists and proposals for more gardens being selected in the participative budgets.

Urban gardens are small-scale projects that can be up scaled to a citywide level; they're cost-efficient and they're aligned with wider scale agendas. They are able to provide benefits at many different levels – enhancing biodiversity and fighting climate change, improving health and wellbeing of citizens, promoting social cohesion, and offering new economic opportunities. They can also help recover and preserve the historical and ethnographic agriculture heritage of the region, which is gradually disappearing in urban areas, and increase the community's sense of belonging towards the public space.

Some of the societal challenges addressed by this NBS are strengthening social cohesion and public culture, recovering and preserving for the collective memory the historical and ethnographic agriculture heritage and increasing the community's sense of belonging towards the public space. There is also a will to increase social cohesion, promoting intergenerational and intercultural relationships and helping develop the social skills of people in situations of vulnerability and social and/or labour exclusion. All of these goals are aligned with wider agendas, like the Spanish Urban Agenda or the UN Sustainable Development Goals.

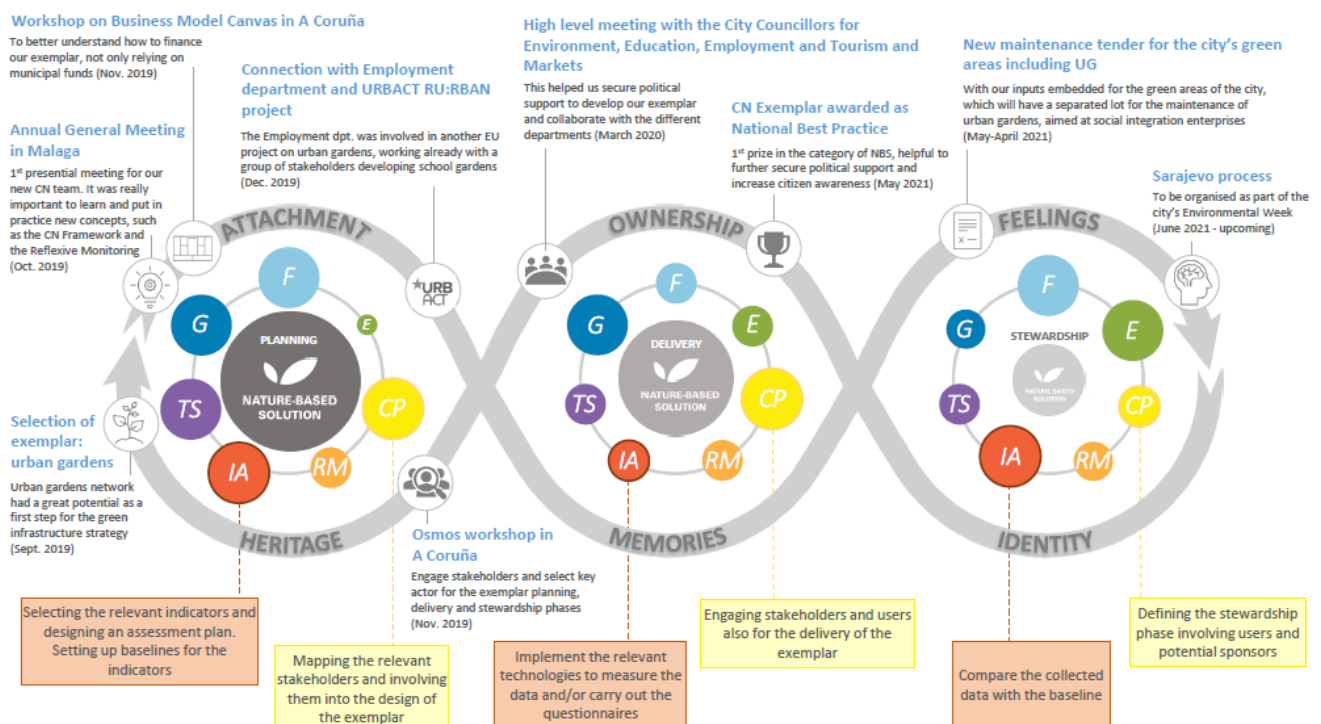
The CN Framework, together with the valuable support from project partners, has provided the city with the tools to successfully develop the CN Exemplar in the three phases of Planning, Delivery and Stewardship.

CONNECTING NATURE FRAMEWORK

The Connecting nature Framework is a process tool to help cities and other organizations navigate the path towards the large-scale implementation of nature-based solutions. It does so through an interactive process with three distinct phases of development: Planning, Delivery and Stewardship. Throughout each phase, there are seven separate elements to be considered by cities to help us shape our nature-based solution exemplar:

- Technical solutions
- Governance
- Financing and business model
- Nature based enterprises,
- Co-production,
- Reflexive monitoring
- Impact assessment.

In the figure below, you can see how we used the different elements and tools during the three phases of the development process, with some of the main transformation points. You can also see how we used some of the tools like the impact assessment measuring indicators, or coproduction involving stakeholders throughout the three phases.



STEP 1 City context

A Coruña is an extremely compact city: surrounded by the ocean and densely populated, the municipality occupies a territory of less than 40 km². Scarcity of space has driven buildings upwards, with many buildings of over 6-10 stories by the seafront and up to 20 or more stories as the city grew further away. This resulted into a reduced number of open green areas, poor biodiversity and a high rate of soil sealing in the city centre, which in turn can lead to heat stress and surface water flowing episodes. Nowadays, the city is experiencing a declining demography, with many citizens moving to the less densely populated metropolitan area. This contributes to an excessive dependence on private transport, creating important traffic problems and lowering the air quality.

The city wishes to introduce alternative forms of transport which can free up more space for green areas ("cars replaced by trees on streets"), aiming for a softer, slower mobility system that leaves space for greener surfaces, pedestrians and bicycles: a green infrastructure that is compatible with cultural heritage and will have a positive impact on the citizens' wellbeing levels and also on tourism. During the last 5 years, the total kilometers of urban bike lanes have doubled — the city has now over 35 kilometers of bike lanes, about 14 kilometers per 100,000 inhabitants, matching the ratio of the city of Barcelona, and surpassing many other Spanish cities such as Madrid or Bilbao. A Coruña also wants to become an even more walkable city, with a new, ambitious mobility model which includes a 30 km/h urban speed limit in effect since September 2020, and projects for more pedestrian routes connecting the different neighborhoods.

The exchange of experiences with partner cities within projects like Connecting Nature provides the city with new valuable tools to advance on the path towards a new integrated lifestyle based on ecosystems, sustainable urban planning and health. The use of NBS solutions, as opposed to grey infrastructures, can help the city mitigate climate change effects, improve air quality, reduce surface water flowing and boost biodiversity, while at the same time offering new opportunities for leisure activities, outdoor recreation or food growing.

Generally, the concept of nature-based solutions is relatively new in the city, as opposed to the traditional approach of parks and green areas. There were some highlights in the decades of the 90's and 00's like the transformation of the city's main garbage dump into one of the biggest parks in the city, or the conversion of old military lands into a coastal green area.

In terms of blue infrastructure, the city has one of the longest coastal promenades in Europe, which was also built during the 90s and 00s. However, municipal competences regarding coastal spaces are limited, as the regional and national governments are the main responsible bodies for managing those spaces. There are ongoing projects to gradually renaturalize the sea promenade and extend it to the periurban areas and connecting it with neighboring municipalities. Additionally, the city will have a huge opportunity in the future to define blue NBS areas with the reurbanization of the old harbor. However, these are long-term, very complex projects, with different administrations and government levels involved.

In the last few years there has been a shift on policies towards a more NBS-focused approach with the approval of a preliminary Green Infrastructure Plan in 2018, the re-naturalization of some rivers and ponds and the realization of new, multifunctional projects like urban gardens.

The city has recently developed an integrated strategy for sustainable urban development (EIDUS) whose implementation is supported by ERDF funds, and is one of the pioneer cities in Spain to adopt the local implementation of the new Spanish Urban Agenda, which is aligned with the European Urban Agenda and the UN Sustainable Development Goals.

However, the hierarchical municipal structure and the lack of coordination between the different departments (Urbanism, Infrastructures, Environment, Education, etc.) can be a barrier for an effective implementation of an integrated strategy that can break silos, as opposed to the traditional approach of various self-standing projects promoted by each department, sometimes duplicating efforts and other times blocking each other.

STEP 2 Project goals

The main goals of the projects are the following:

- 1. Increase biodiversity and boost ecology.**
 - Transform abandoned areas and degraded or underused green spaces into productive plots able to host more life, more biodiversity, more uses and activities.
 - Promote the installation of roof gardens and green roofs and walls, starting with municipal-owned buildings, in order to create new green areas that help connect parks and natural spaces with one another and act as green reservoirs which will help boost biodiversity.
- 2. Boost resilience against perturbations.**
 - Mitigate climate change effects maximizing CO₂ absorption, increasing vegetative coverage, permeability and water retention, combating urban heat islands and providing areas which can retain flood water and contribute to thermal isolation.
 - Allow self-production and self-consumption of vegetables, providing a stable access to healthy food that increases food security and promotes sustainable consumption and help reduce carbon footprint.
- 3. Provide a sustainable public space offering healthy recreational opportunities for people.**
 - Promote and increase the contact of citizens with nature, with the potential gains on their physical and psychological health.
 - Promote urban gardening as a moderate physical activity which can combat a sedentary lifestyle.
- 4. Protect and reinforce ethnographic and cultural values of environment.**

- Strengthen social cohesion and public culture, recovering and preserving for the collective memory the historical and ethnographic agriculture heritage and increasing the community's sense of belonging towards the public space.

5. Increase social cohesion and community engagement

- Increase social cohesion, promoting intergenerational and intercultural relationships and helping develop the social skills of people in situations of vulnerability and social and/or labour exclusion.
- Promote models of active citizenship, increasing engagement, community self-organization and involvement in social life. Engage citizens to play an active role in the maintenance and managing of the public space.

6. Provide a space for environmental education.

- Promote educational activities linked to the Urban Gardens that contribute to maximize the social return on investment.

7. Boost new economic opportunities.

- Increase the attractiveness of city areas which are lacking valuable green space.
- Identify and promote new sustainable economic activities and business models which can arise linked to urban gardening and greening of buildings.

Connection to existing urban agendas

The city has developed an integrated strategy for sustainable urban development (EIDUS) approved in 2016, whose implementation has been supported by ERDF funds and which specifically includes the funding of urban gardens. It also one of the pioneer cities to adopt the local implementation of the Spanish Urban Agenda (2018), aligned with the European Urban Agenda and the UN Sustainable Development Goals. The local action plan is being developed and is expected to be approved within this year (2022).

Nature-based solutions have the potential to bring multifunctional benefits, potentially addressing many of the UN SDGs at once. Thus, the Urban Gardens Network project fits perfectly with these agendas, and contributes to reaching the goals, not only responding to environmental challenges and climate change, but also to other aspects, as stated above, such as health and well-being, socio-economic development, and governance principles.

What makes your nature-based solutions' strategy legally binding, e.g. by connecting it to existing policy plans?

The compromise of the city towards the environment and to fight climate change has been growing since the start of the century, with several plans and policies approved in this direction. Signatory of the Aalborg Charter in 2001, A Coruña developed its first Local Strategy Against Climate Change in 2011, and in 2012 the city signed the Covenant of Mayors for Climate & Energy. In 2021 the city renewed its commitment to sustainability, endorsing the Basque Declaration and the Mannheim Message, and joining the Green City Accord.

The city is also developing an updated Plan for Climate Transition, aligned with the Urban Agenda and expected to be approved in 2022.

A Coruña also is pursuing to become a more walkable city, with a new, ambitious mobility model (Coruña Camiña) which includes a 30 km/h urban speed limit in effect since September 2020, and several projects to create pedestrian routes connecting the different neighborhoods.

Additionally, since 2021, the city leads the Spanish UrbanByNature Hub, committed to the mainstreaming of nature-based solutions in the Spanish cities and regions.

In 2022, A Coruña has applied for funding granted by Fundación Biodiversidad (Ministry for the Ecological Transition) to develop an Urban Greening Plan, which would include the urban gardens strategy, and which will follow the diagnosis drawn on the Green Infrastructure Plan developed in 2018. The idea for this new plan is to build on the lessons learned with the CN exemplar and the tools from the process, upscaling them to a wider level.

STEP 3 Target audience and actors

The Connecting Framework Report has been developed by the CN team (Antonio Prieto and María González), also including valuable inputs from colleagues responsible for the management of green spaces, environmental quality or biodiversity.

The Connecting Nature Framework is a useful tool for internal use, to make sure that other colleagues are familiar with the concept of nature-based solutions, which is quite a new word in our context, and to advance towards the interdepartmental and integrated approach that the multifunctional aspect of NBS demands. But it can also be extremely helpful as a means for public dissemination and increasing citizen awareness and engagement.

For example, we recently used the narrative supported by the Framework to explain our project in an event organized by A Coruña City Council in collaboration with the National Point of the URBACT Program, in which decision makers, professionals from other municipal departments and stakeholders from various cities participated. With our narrative we felt that we could convey our information in a more accessible way. It was useful as a starting point to make new contacts and networking with different stakeholders.

The Framework allows us to have all the information about our exemplar registered and organized, which is very handy when applying for financing or to enter competitions/awards. For instance, a few months ago we used the Connecting Nature Framework to apply for an award at national level. Having all the information written and organized in the framework document made it easy to write the application for the award, and thanks to this we managed to prepare quite a strong entry that won the prize. This was the award for Best Local Practices on Climate from the Spanish Federation of Municipalities and Provinces (FEMP) and the Spanish Network of Cities for Climate. This year was the VIII edition of the Prizes, and the first edition to have a category for Nature-based Solutions, in which we won. We also built on the framework to submit our project to a European award, the Transformative Actions Award, granted by the Sustainable Cities Platform, organized by ICLEI, the Basque Government, and the city of Aalborg, with the support of the European Committee of the Regions and the European Investment Bank. A Coruña's CN exemplar, our Urban Gardens Network, was selected among the three finalists.

In summary, this report can be a very helpful instrument both for internal use and to present our exemplar to a wider audience. However, language can definitely be a barrier, as all of the mini guidebooks and the framework itself is written in English. This means that many of our colleagues aren't able to access these documents or use them in a comfortable manner. If all the information could be translated into the local languages, then the multiplier effect would be for sure greatly amplified.

During the first visit of Osmos team in 2018, the following canvas was drawn from interviews with relevant stakeholders:

- **Project-Environment Canvas for the City of A Coruña (OSMOS Report)**

INVOLVED PARTNERS	VALUES	ACTIONS	OUTPUTS
Other municipal departments	Overcome existing weaknesses	Creation of green spaces on public land	Revised planning instruments
Experts	Reinforce culture of proximity in neighbourhoods	Connect isolated green spaces	Temporal green spaces on underused land
Neighbouring municipalities	Promotion of physical and mental health	Support transition of green spaces	Modify General Municipal Development Plan
Port authority	Social justice	Change protocols for maintenance of parks and gardens	Identification and activation of urban development opportunities
Provincial and federal authorities	Feeling of belonging	Adopt inclusive terminology	Tools for environmental education
Employer associations (e.g. A Grela)	Social/collective memory about space and environment	Explore models of public-private cooperation	
Refinery (REPSOL)	Green functions	Overcome obstacles of private ownership and inadequate infrastructure	
INTEREST GROUPS	NEEDS	RESOURCES	OUTCOME
Residential population	More attractive city	Original/historical place names	Creation of new ecosystems
Workers in industrial zoning	Spaces for social encounter	Proximity	Modernize city in a natural, healthy way
	Reinforce identity	High density	

Knowledge organisations and experts		<p>Critical mass</p> <p>Spatial opportunities</p> <p>Strong local identity</p> <p>Social memory</p> <p>Knowledge strategy</p> <p>Municipal budget for green space maintenance</p> <p>Private capital for real estate investment (e.g. Dolce Vita complex)</p>	<p>Adaptation to climate change</p> <p>Coherence between local, metropolitan and regional scales</p> <p>Recognisable identity for the forest of A Coruña</p> <p>Environmental awareness among citizens</p>
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Many of the topics and actors identified in this first exploratory visit proved very relevant to the later selected exemplar of an Urban Gardens Network, for example, the feeling of belonging, collective memory about space and environment, or the local identity. All of these topics, which are central to our exemplar and included in our Framework figure, have been also addressed through the Sarajevo process, a co-creative, arts-based engagement process, which is explained in more detail in the Coproduction section – Step 4.

STEP 4 Nature-based solution exemplar: an urban gardening network in A Coruña



A Coruña has three municipal ecoHortas Urban Gardens running since 2018 (Eiris, Agra do

Orzán and Novo Mesoiro), with a total of 218 plots available to citizens. In addition to these three gardens, two smaller Urban Gardens and a greenhouse, located respectively inside of Carlos Casares, Oza and San Diego city parks, are available for NGOs to develop educational projects.

The implementation of the first gardens started as an open participatory process, involving citizens and associations in a co-production process which selected the most suitable spaces, framed how these spaces should be designed and identified the services to be provided.

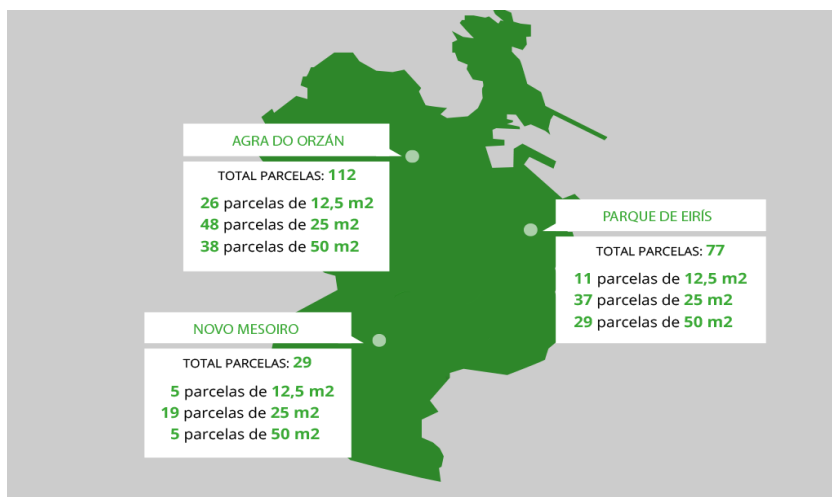
With these new spaces, the City of A Coruña aimed to satisfy the neighborhood demand of spaces for urban agriculture in the city, promoting and integrating urban garden projects as an essential part of a process of urban and territorial regeneration, from an ecological perspective, as a tool to increase urban resilience, social cohesion and citizen engagement.

Thus, ecoHortas are understood as spaces which can not only help improve the environmental quality, but can also become excellent meeting places; spaces of social participation and environmental education, increasing the well-being of citizens and their life quality.

The first three ecoHortas spaces were to be located on municipal land in the areas of Los Rosales-San Pedro de Visma-Agra del Orzán, Mesoiro-Novos Mesoiro, and Oza-Castrillón-Os Castros, and their uses and concrete and definitive locations were defined through citizen participation, in which the different social entities of these neighbourhoods, as well as individual citizens interested, were invited to the process to help discover and define the actual demands at each of the three areas.

In these areas, some abandoned plots with suitable characteristics for their use as UG were detected, alongside several underused spaces in some parks with high water requirements for maintenance (lawn areas). Both types of spaces were used to develop urban gardens (abandoned plots of municipal property in the case of Agra gardens, and an underused area of an existing park in Eirís and Novos Mesoiro)

The urban gardens were divided into individual plots that were initially assigned to citizens and associations for a period of two years, extendable to three. Water supply and common tools shared between all users are offered by the municipality. One of the conditions to be granted a plot is the adoption of organic agriculture. ecoHortas have a clear educational and inclusive vocation, that's why a certain number of plots were reserved for collective management by educational centers, non-profit associations and other groups. Also, a percentage of the plots were reserved for groups such as retired people, low-income households or people with special needs, as a way to promote intergenerational and intercultural relations and increase social cohesion. In co-operation with NGOs, various educational projects are being organized at the ecoHortas, aiming to increase social integration and develop the social skills of people in situations of vulnerability and social and/or labor exclusion.



By 2018 a total of 218 new plots had been created in the three areas (Agra do Orzán, Eirís Public Park and Novo Mesoiro).

Actions took place in order to facilitate self-management of the ecoHortas by its users, with a process developed between the months of July and November of 2018 in which an expert trainer and facilitator of collaborative processes and team work organized workshops and advised users with the objective of facilitating the provision of operation norms and the election of a Management Committee for each of the urban gardens. At the same time, the municipality offered training in the field of organic agriculture to users of ecoHortas, starting in May 2018, with theoretical classes, practical workshops at the ecoHortas and an online platform in which users can ask their questions.

The gardens that started the network were all built in 2018, just after the CN project had begun. The design process started in parallel to the city's participation in the CN project. Thus, the gardens were understood from the beginning as a NBS providing multi-level benefits. However, the first gardens of the network weren't initially designed following the CN framework and using its tools because the CN framework itself didn't exist yet. As a fast-follower city, during the first two years of CN our involvement was limited, and we weren't part of the process of co-creating the framework until a later stage. Probably because of this, the gardens have some flaws like the governance model (individual administrative concession, top-down), the maintenance model (same as green areas in the city), or the lack of common areas for socializing and promoting the creation of communities. These are the aspects that we have been trying to enhance, both for the existing gardens and for the new ones, building on the CN framework.

The city's Environment department has managed the Urban Gardens program, but other municipal departments, like Employment or Education, have been also involved. The Employment department created in 2018 a training program on urban gardening. In this course, trainees learn how to create and grow urban gardens, keeping them healthy and productive, in accordance with the principles of organic agriculture, and they learn to organize and develop didactic activities taking advantage of the potential of urban gardens. This course, thanks to co-operation with some schools, included a practical internship during which urban gardens were created or improved in the following primary schools:

- CEIP San Pedro de Visma
- CEIP Wenceslao Fernández Flórez
- CEIP Emilia Pardo Bazán
- CEIP Juan Fernández Latorre

The goal of this program is to boost the employability of the trainees and to create a new productive sector in connection to the fields of urban gardening and ecology. As a promising result of this program, some of the trainees are already starting new SMEs/social enterprise projects related to these topics.

Additionally, a new pilot project for school gardens has been recently approved by the City Council. It will be carried out by a private company after a tender. This pilot project will work on two levels: on the one hand new school gardens will be implemented on some of the schools that don't have them yet, expanding the network. On the other hand, activities and educational actions will be organized for integrating the gardens into the school curricula on those schools that already have a garden.

Thanks to the participation in the URBACT Ru:rbán project (2018-2021), there is already an active local group (ULG) of stakeholders who meet regularly and share their experiences and views on the field of Urban Agriculture, with presence, among others, of the municipality's Environment and Employment departments, the municipal Urban Gardens community, school community and NGOs.

The City Council is committed to expanding the Urban Gardens network, both by creating additional ones and by improving and expanding the existing ones.

In 2020, a project was approved for the creation of a new Urban Garden in the Adolfo Suarez Park, with 87 new plots. More details on this project can be found in the technical solutions chapter. The project was one of the approved proposals promoted and selected by citizens through the Participatory Budgets. The new urban garden was co-designed by a team of architects, with the support and inputs from neighbors and gardeners from the existing urban gardens. Due to different barriers such as the COVID crisis and the raising building material prices, the construction of the garden did not begin until the first semester of 2022.

In February 2022, a project was approved for the improvement of the three urban gardens of Agra do Orzán, Novo Mesoiro and Eirís. The goals of this project are to increase the number of available plots, and to create common areas that enhance the sense of a community and promote collective activities.

The project was co-designed with the gardeners, and include the creation of a shaded common area with a pergola and a table in Eiris and Agra gardens. The creation of a shaded area for meetings and celebrating has been a recurring demand of the gardeners, and specifically in Eírs, a group of gardeners submitted a proposal to the Council for a pergola to grow a grapevine. This was taken as the basis for the design of the pergola, which will give the gardeners the possibility to populate it with a grapevine or other climbing plants that will allow light to pass during the winter while providing shadow in the summer months.

The three gardens will now also have a common plot for its use as community garden/ children's garden (another suggestion by the gardeners), and the Mesoiro garden, the smaller

of the three, will be expanded to and adjacent area with eight new plots. Additionally, following the suggestion of the gardeners, some of the larger plots, which were too big for a family, will be also divided into two.

The final number of available plots will be as follow:

Agra: 112 plots → 117 individual plots + 1 common plot

Eirís: 77 plots → 88 individual plots + 1 common plot

Novo Mesoiro: 29 plots → 36 individual plots + 1 common plot

All of the works will be undertaken during March 2022, so the gardens are ready for the summer crops.

For the future expansion of the network, there is also a will to explore the possibility of expanding Urban Gardens not only to abandoned land areas (including temporary gardens on privately owned plots), but also to the roof of buildings, which offer options for the more dense city centre, starting with municipally-owned buildings, weaving a network of Urban Gardens that can help connect green areas, boost biodiversity and provide ecological services.

STEP 5 Position this report

The Connecting Nature Framework allows us to keep a register of all the steps of the process of implementing our exemplar in the city, and will serve as a model for future implementations of nature-based solutions at a wider scale.

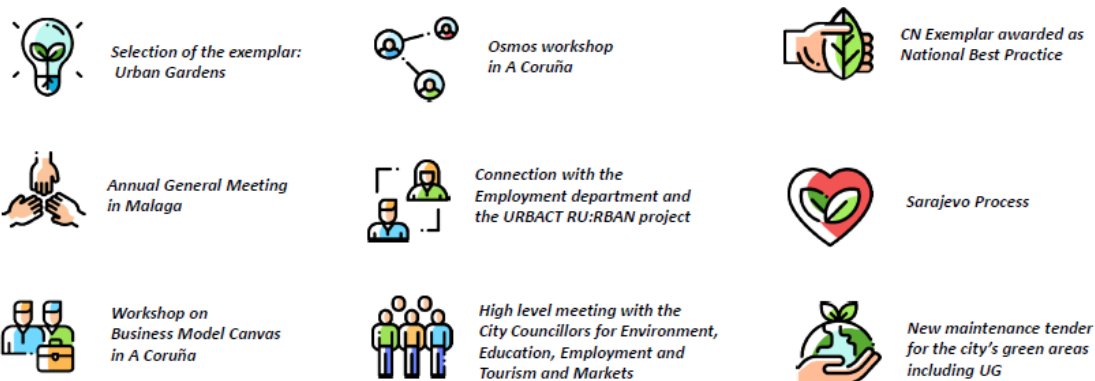
The narrative allows us to tell, in a short and simple way, how the exemplar is being built in our city as a model for the implementation of nature-based solutions and how the process of adapting the Connecting Nature Framework is taking place. Telling our story in an impactful way helps us further secure political support and increase citizen awareness.

The Connecting Nature Framework, with its seven elements, helped us design our NBS in the three phases (planning, delivery and stewardship). The following table outlines some specific activities linked to each phase; specific support related to building blocks is also noted where relevant.

Phase	Activities	Building Blocks
Planning	<ul style="list-style-type: none"> - The selection of the exemplar and the first meetings with the CN Partners. - The workshops on the Business Model Canvas to explore funding opportunities, and with Osmos, which helped us engage key stakeholders, helped us define the exemplar goals and provided the team with the basis for the development of the exemplar. - The support of the Technical solutions team was important for developing a biodiversity plan, making sure that the new urban garden in the Adolfo Suarez park is also part of a more ambitious project to change the way the park is managed, enhancing biodiversity, which will in turn be beneficial for the urban garden. 	Financing Governance (External) Technical Solutions Co-production

Delivery	<p>This included the exchange sessions with peer cities like Glasgow or Poznan, which were very useful to detect shared challenges and possible solutions.</p> <ul style="list-style-type: none"> - We also had some key high-level meetings with the political responsible persons from the different areas (Environment, Education, Tourism and Markets, Employment), and managed to secure their support for the exemplar. - Together with the UDC team, we also developed the Impact Assessment Plan for our exemplar, defining and measuring key indicators for the exemplar as a tool for quantifying the environmental, social and economic benefits 	Reflexive Monitoring Governance (Internal) Impact Assessment
Stewardship	<p>- This involves the maintenance of the exemplar, but also the upscaling of the network, multiplying the number of urban gardens in the city. We have been working on improving the governance model of the gardens, and the new maintenance tender for the city's green areas will have a separated lot for the maintenance of urban gardens, aimed at social integration enterprises. The previous approach was that all gardens were maintained just like the rest of green areas of the city, tendered by big enterprises, divided in three geographical areas. Now the gardens will all be together in a separated lot and this tender is only open to enterprises whose main aim is promoting social integration. A social integration enterprise is a legal figure, and enterprises have to comply with several requisites to be recognised as such.</p> <p>We are also exploring possibilities to engage some corporates to sponsor some of the school gardens and their maintenance.</p>	Governance Entrepreneurship Financing

Some of the main transformation points during the implementation of the CN exemplar using the Framework are shown below:



Some of the main elements of this process, selected as trademarks and considered as highly innovative in relation to our city context and compared to conventional urban planning, are as follow:

- Co-production
 - o Mapping the relevant stakeholders and involving them into the design of the exemplar
 - o Engaging stakeholders and users also for the delivery of the exemplar
 - o Using the Sarajevo process as a tool to engage gardeners and connect the exemplar with memories and heritage on the emotional level through the use of arts and poetry, potentially increasing feeling of attachment towards public space and creating bonds between the participants.
 - o Defining the stewardship phase involving users and potential sponsors
- Impact assessment
 - o Selecting the relevant indicators and designing an assessment plan. Setting up baselines for the indicators
 - o Implementing the relevant technologies to measure the data and/or carry out the questionnaires
 - o Comparing the collected data with the baseline

TECHNICAL SOLUTIONS

STEP 1 Definition of the nature-based solution

The different urban gardens that integrate the network present different technical solutions depending on the location, the size of the plot and the type of garden (municipal urban garden, school garden, community garden, etc.). The municipal urban gardens, open to citizens, are the largest in size out of all the different urban gardens in the network. The space is divided into individual plots that are allocated to citizens and families. Community gardens are smaller in size and the plots are not divided, all of the space is managed by an association/NGO. School gardens vary depending primarily on the availability of open spaces that the different schools have, but they're also relatively small, although some of the schools have a greenhouse and even one (CEIP San Pedro de Visma) has a chicken coop.

As a case study, we will now focus on the technical solutions for the new municipal Urban Garden which will be built in the Adolfo Suárez Park. This garden will be divided in plots available to citizens

The idea to install a new urban garden as part of this park comes from one of the proposals selected in the participatory budgets of 2018. The Adolfo Suarez Park is one of the newest city parks, being opened in 2016. However, it has some unused areas and extensive lawn surfaces with high watering demands that aren't exactly the most effective way to provide ecosystem services or co-benefits to neighbours. There's an ongoing project to progressively modify for the long-term the way that this park is managed. The goal is for the park to be managed in a more natural, ecological way, so that the soil of the park resembles that of a forest.

As the park was built with dead soil fillings, it now needs to be taken care of, avoiding chemicals, fertilizers, controlling humidity levels and reducing mowing frequency so that the roots can go deep into the soil. Leaving grassy areas without mowing that turn into spontaneous vegetation favours biodiversity and also help improve the soil. Planting legumes like clover improves soil structure and supply nitrogen. The plans are therefore for a progressive replacement of lawn by different types of vegetation cover that does not need irrigation and is capable of adapting to local climatic conditions, with the goal of reducing or eventually even eliminating the need for irrigation in these areas. The new management model also includes more sustainable tree pruning practices, which influences roots and their relationship with soil fungi and bacteria, which eventually have an effect on soil quality.

There is also a project for a collaboration with UNESCO's biosphere reserve Terra das Mariñas for the implementation of fruit trees / edible forests (permaculture) in the park.

This new, ecological management model of the green areas has already been implemented in another park in the city, the one next to the Tower of Hercules Roman Lighthouse, a UNESCO Heritage Site whose coastal surroundings are now a Protected Natural Area of Local Interest. Following the changes in the management model, native species have been able to take over invasive plants and more animals are nesting in the area (especially birds).

The garden will be located next to one of the main entrances of the park, close to one of the most densely populated neighbourhoods in the city (Agra do Orzán). On the opposite side of this neighbourhood there is an existing urban garden (Agra garden) which is the biggest urban garden in the city, but also the one with the highest number of people in the waiting list for a plot.

The area of the park where the new garden will be built is currently underused, the plot has a relatively steep surface and there is a small water course that can be a source of biodiversity.



As a consequence of the steep terrain, the urban garden will adopt the form of agricultural terraces, following the slope contour lines, and inspired by the traditional solution with stone walls very common in the hillslopes of the region. This traditional solution with walls also helps control the water flow, so it doesn't run to the lower part of the slope leaving the top plots drier and the bottom ones wetter.

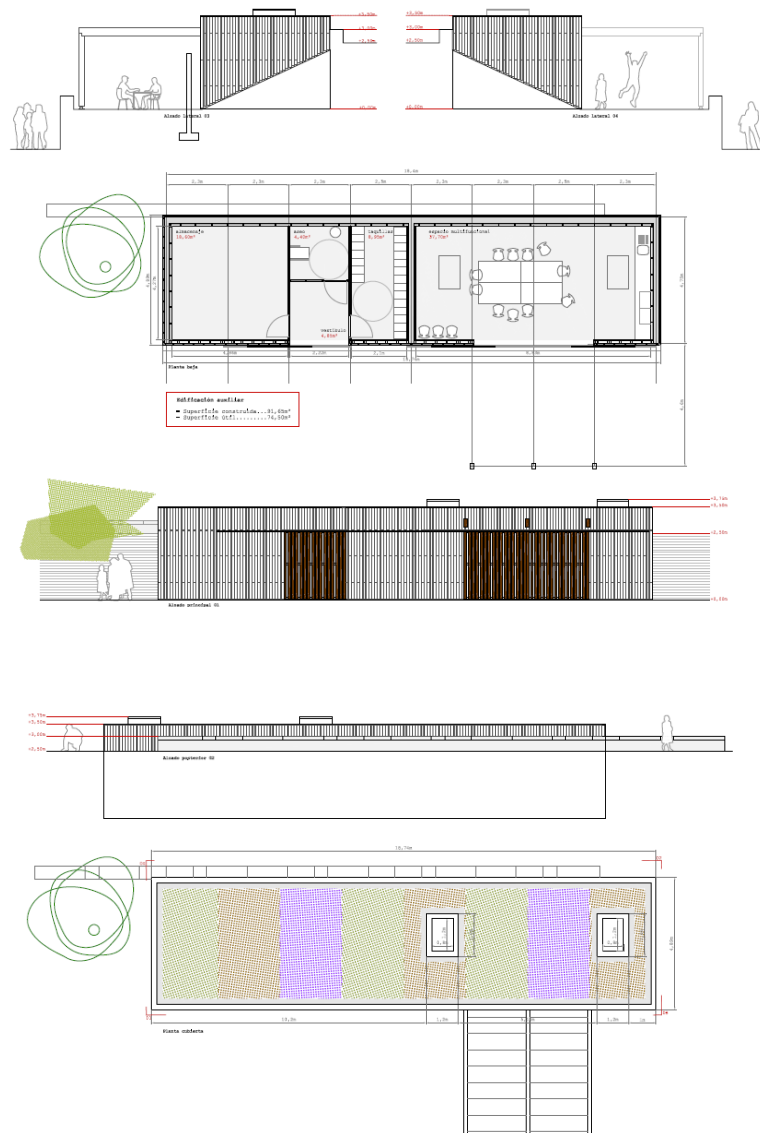
A total of 87 new plots will be created, each of which will have a surface of 28m². The total area of the intervention, including the pathways and the common areas, is roughly around 1000 sqm.





During the coproduction process which helped define the final design in which both neighbourhood associations and gardeners from the existing gardens participated, the gardeners of the existing urban gardens made a special emphasis on the fact that they don't have a dedicated area for gathering or even a shadowed area where to sit for a rest. This is why the new project includes a small building with a multifunctional common room and an outside area with a pergola to facilitate social interactions.

The construction will be partially buried, taking advantage of the slope, and with a green roof with floral species that will help the building merge with the landscape whilst providing thermal insulation and contributing to the biodiversity of the area. The species will be selected imitating as much as possible the vegetation that spontaneously colonizes the roofs of abandoned buildings, like sedum, aeonium, crassulas and echeverias. Elements for insects like logs will be introduced, and also climbing plants (*Parthenocissus tricuspidata* veitchi) for the walls of the building will provide a valuable habitat for insects. The pergola will be covered with a wine vine.



The feeling of community and the shared activities are encouraged with a common composting area and a dedicated space where gardeners will be able to build a small greenhouse and a seedbed.

The project also includes a pile compost area, as well as compost boxes

STEP 2 Develop an understanding of the landscape context and ecosystem services needs

1. Landscape scale:

- *What is the broad landscape context (e.g. watershed, ecosystems, geology of the peri-urban and rural areas surrounding the city)?*

The peri-urban area used to have extensive surfaces of agricultural use, which in time gave

space to new constructions as the city expanded, increasing soil sealing and producing a loss of green surfaces. The city is surrounded by an UNESCO's biosphere reserve "Mariñas Coruñas e Terras do Mandeo", comprising both coastal and mountain landscapes, with 39 protected areas and over 300 protected species.

- **What challenges does the broad landscape face (environmental, social, economic)?**

Environmental: Climate change effects, rise of sea level, decrease of precipitations (more water consumption needed for maintenance of green), increase of temperature (urban heat island effects).

Social: the main concern is the demographic crisis and ageing population. Galicia is one of the regions in Spain where the demographic crisis is more severe. Another concern is the unemployment rate, which is especially high among the younger population.

Economic: Pressing real estate interests to build more and fill-in vacant spaces. Consequences of COVID crisis on the economy (tourism, services).

1. City scale:

- • **What is the city landscape context (e.g. watershed, ecosystems, geology)?**

The city has a scarcity of green areas and open spaces, and the existing ones are not uniformly distributed. Accessibility to green is not universal. Connectivity between green areas need to be improved (green corridors planned). The urban parks are predominately populated with lawn, which entails high water and mowing requirements (high maintenance costs).

The coastal area is one of the main elements of the green-blue infrastructure, with a 13km long sea promenade and two protected areas (ENIL: protected space of local interest), one of them comprising the area around the Hercules Tower and another one including the San Pedro Islands. There are ongoing plans to improve the environmental quality of the most urbanised sections of the sea promenade.

- **What challenges does the city face as a whole (environmental, social, economic)?**

Same as the landscape scale

2. Local scale:

- **What is the local landscape context of the site of the nature-based solution exemplar (e.g. watershed, ecosystems, geology)?**

The plot in the Adolfo Suárez Park has a steep surface with various granite rock formations and a small stream which could potentially be a source of biodiversity to be integrated into the park and whole ecosystem. Currently the surface is mostly populated with lawn. Some of the native vegetation would be bellis perennis, wild geranium or agrostis.

- **What are the needs of the locality of the nature-based solution exemplar (e.g. what are the environmental, social, economic needs)?**

The Adolfo Suárez Urban Garden is located at the very edge of one of the most densely

populated neighbourhoods in the city (Agra do Orzán), which is also the most diverse neighbourhood with different ethnic groups living together. It is also a neighbourhood where residents have comparatively low incomes and high unemployment rates. This neighbourhood was built in the 70s without proper urban planning, which resulted in high rise buildings and narrow streets, lacking green areas and open spaces.

3. Exemplars that cover multiple local scales:

- • **If your exemplar is being delivered across multiple local scales, how does your technical design balance variation across local scales (in terms of variation in social, economic, and environmental needs of place)?**

The different urban gardens that integrate the network present different technical solutions depending on the location, the size of the plot and the type of garden (municipal urban garden, school garden, community garden, etc.). Each type of garden has different size requirements and different conditions for the planning, delivery and stewardship. Some of the schools have wide open spaces but other have mostly concrete surfaces and the only possibility to introduce urban gardens would be to rely on raised beds or green walls/roofs. Some of the municipal gardens are on flat terrains while other are in sloped areas. Some of the gardens are in more protected, shaded areas, while others are more exposed to the wind and sun. All of this variations determine the kind of technical solutions applied in each case.

In terms of stewardship, while the municipal urban gardens located inside parks are maintained by the company in charge of the maintenance of green areas, the situation with the schools garden is different, and specific maintenance tenders must be foreseen. This offers an opportunity to engage local SMEs and businesses.

- **How does the technical design improve biodiversity and ecological connectivity in relation to local habitats/city-wide connectivity strategies/the broader landscape across the multiple local scales?**

Replacing lawn areas with organic agriculture gardens increases biodiversity. Apart from the cultivated species, the gardens are equipped with fruit trees, flowers and aromatic plants, species which increase the urban biodiversity and protect organic production fields. Animal biodiversity is also encouraged, as pollinators are fundamental for a better agriculture production, and the gardens are provided with insect hotels and could eventually host beehives.

A global study of the park will be undertaken in order to determine which areas to mow and which areas not, the inclusion of an edible forest, etc. Also taking into account animal biodiversity (bats / insects), although in principle the creation of naturalized ecosystems is prioritized over bird/ bat boxes – (possible knowledge gap about this type of solutions).

Around the urban gardens there will be an unmanaged strip with wild flowers, spontaneous vegetation, fruit trees (oriented to avoid shading crops). Bee hives, insect hotels are useful mainly for educational purposes, but it is also important to promote pollination by wild insects.

Surrounding the park there are some privately owned cultivation and pasture areas, and we will try to take profit of those to generate seeds that can fly and colonize the park, promoting

that owners leave strips without mowing to serve as a supplier of seeds.

Urban gardens are also a part of a wider network of green areas and corridors that aim to connect the city, improving wildlife behaviour movement. (Green Infrastructure Strategy Plan)

It is also very important to design a communication plan for citizens: crucial to explain what we are doing, when are results expected, etc. Information panels.

STEP 3 Embedding multiple functions into the planning, delivery and stewardship of the nature-based solution

The technical design of the Adolfo Suárez urban garden took into account the landscape characteristics, looking to improve biodiversity, reduce lawn mowing and watering costs, and provide a more usable space for citizens. Feedback from gardeners and neighbors was useful to help detect and mitigate potential trade-offs.

After the final project was completed by the architects team, a public tender for the delivery of the exemplar was launched.

STEP 4 Monitoring and evaluation

The Urban Gardens will be managed by the city's environment department, through the contract for the maintenance of green areas of the city. While in the current tender the gardens were generically included as part of the green areas, the new tender for the maintenance of green areas (which is currently being drafted and should be tendered during 2022), includes an specific work package for the maintenance of urban gardens, with dedicated human resources who will support the gardeners and give them assistance.

Additionally, some changes were introduced in the new call for the authorization of use of the urban gardens (February 2022) to gradually shift the responsibilities towards the gardeners. The gardeners will be responsible for the maintenance of their plots, but now they will also be collectively responsible for the daily maintenance of the common areas, tool sheds and tools, benches, tables, and the irrigation installations. In the past, the City Council was responsible for all of these, although some of this maintenance was spontaneously undertaken by the gardeners association "De Leira na Leria". There is also a new procedure to ask the council for improvements twice yearly. Each proposal will need to be supported by signatures of the 10% of the gardeners and be approved in a gardeners' assembly. After that, if the City Council then approves the proposal, it will be granted financial support, but the signatories who backed the proposal must contribute to the implementation and stewardship of the approved action.

In the case of the School gardens, the stewardship is mainly supported by the schools' own funds. Some of the schools contracted a private company, "Horta eCoruna", which was founded by one of the trainees of the course organised by the city's Employment department, for the stewardship of their gardens. The schools have access to public funding by the city's Education department, regional government levels, and also private funding through grants by companies and foundations like VozNatura and Fundación Repsol.

STEP 5 Build an evidence base to promote nature-based solutions to a wider catchment

In terms of stewardship, the main barrier is the resistance to change and the reluctance to implement novel models. In the particular case of the urban gardens, there is also a lack of trust in the gardeners association, as its creation is very recent and there is a risk that they might not be able to completely self-manage the gardens in a proper way. This is why the new call for the authorization of use of the urban gardens introduces some changes to promote self-organizing of the gardeners, but the plots are still granted to individual citizens. For the same reason, the stewardship responsibilities are shared, and not fully assigned to gardeners or a gardeners association.

In a more general sense, the new tender for the maintenance of green areas will introduce many changes in the way green areas are managed, promoting a more natural approach, progressively reducing the lawn surfaces with high water requirements and substituting them with meadows. The main barrier for this is the citizen perception, which still values freshly mown lawns over naturalized meadows, still considered by many citizens dirty and not taken care of.

GOVERNANCE

STEP 1 Alignment of nature-based solutions with the wider goals of the city:

- 1. Home of the exemplar within the city departmental structure and other departments needed for successful implementation**

The exemplar, being part of the green areas of the city, will be primarily managed by the Environment Department. With regards to the school gardens, it is crucial to secure the involvement of the Education department, as they're responsible of schools and kindergartens. The Employment department is relevant for the training courses on urban gardening and the support for the setting up of SMEs. Involvement of Tourism and Markets department can be interesting too, for example, for the promotion and eventual sale of products from the urban gardens in the local markets. Urbanism & Infrastructures department is important, as they have information on land property and uses of land. Additionally, it could be useful to count on the support from the Social Services department, which manages the social centers network and organize leisure activities.

- 2. Legal framework within which the exemplar will be implemented, for example by being formally integrated into the city spatial plan, climate resilience plan**

The exemplar city network for Urban Gardening will be part of the city's Green Infrastructure Plan

- 3. City strategic goals at various scales (local/city/national/larger) that the exemplar helps to achieve**

- **From the global context to the local implementation of policies**

On September 2015, the UN approved the 2030 Agenda on sustainable development. 193 countries committed to the 17 Sustainable Development Goals and their compliance by 2030.

On October 2016, the New Urban Agenda (NAU-Habitat III) was approved. The NAU is a guide to guide city development efforts for a wide range of actors (states, urban and regional leaders, programs of the United Nations, academia, civil society, etc.) for the next 20 years. It seeks to promote more inclusive, compact and connected cities through urban planning and design, the articulation of a new governance and a profound revision of urban regulations, and the promotion of a new model of urban economy.

Following the path initiated with the Declaration of Toledo in 2010 and consolidated in the Declaration of Riga of 2015, on May 2016, the Ministers with powers in urban policy of the European Union signed the Amsterdam Pact where they agreed to elaborate an Urban Agenda for the EU that gives cities and urban authorities a central role in the development of a smart, sustainable and inclusive Europe.

On June 2018, the Council of Ministers of Spain approved the "Action Plan for the Implementation of the 2030 Agenda: Towards a Spanish Strategy for Sustainable Development", in which all Ministerial Departments have participated, as well as the Autonomous Communities, Local Entities and representative organizations of civil society. In our country, therefore, the 2030 Agenda is already at the center of the vision of the State and the action of the Government.

As one of the "lever policies" for the implementation in Spain of the 2030 Agenda, the Spanish Urban Agenda was presented to the Council of Ministers in February 2019. It is a strategic document of voluntary adherence, which, in accordance with the criteria established in the international agendas, seeks to achieve sustainability in urban development policies. It also constitutes a working method and a process for all actors, public and private, that intervene in cities and that seek equitable, fair and sustainable development from their different fields of action.

"The role of local and regional governments and their associations in achieving the SDGs is crucial, as it is at the local level that the equality approach to the implementation of the SDGs at the national level can be preserved. Achievement of the SDGs depends to a large extent on the active participation of the local governments, since all the SDGs include goals related to competences and responsibilities of the local and municipal sphere, mainly in the provision of basic services and in the promotion of endogenous, inclusive and sustainable territorial development. Hence the importance of city and local government networks as catalysts and support systems for strengthening their role at three levels: institutional framework, political advocacy and alliances." (Plan of Action for the Implementation of the 2030 Agenda: Towards a Spanish Strategy for Sustainable Development).

- UN Sustainable Development Goals



As seen in this graphic, urban gardens help address at least 11 out of the 17 UN Sustainable development goals:

Goal 1 – No poverty: urban gardens can be a help for low-income families.

Goal 2 - Zero Hunger: urban gardens help increase food security and facilitate access to a healthier nutrition.

Goal 3 - Good Health and Wellbeing: research shows that urban gardening can improve both physical and mental health. Being in contact with nature increases mental wellbeing, and gardening constitutes a moderate, healthy physical activity.

Goal 4 – Quality education: School gardens can contribute to improving the quality of our education system. Research supports that garden-based education can increase academic achievement and result in higher test scores.

Goal 8 – Decent work and economic growth: the setup of new SMEs and NBEs connected to urban gardening can definitely be a contribution to this goal.

Goal 10 - Reduced inequalities: urban gardens can be used as an inclusion tool to help increase social cohesion

Goal 11 - Sustainable Cities and communities: urban gardening encourages a more sustainable lifestyle, creating green public spaces and improving urban planning and management in participatory and inclusive ways.

Goal 12 - Responsible consumption and production: urban gardening enables self-production and encourages proximity consumption.

Goal 13 - Climate Action: urban gardens help prevent soil sealing, contributing to storm water retention. Additionally, the replacement of purchased vegetables by those grown in the garden helps avoid food chain emissions.

Goal 15 - Life on Land: the replacement of lawn area by a garden with organic agriculture can help increase biodiversity, with the possibility of including insect hotels or bee hives to maximize the effects.

Goal 17 – Partnerships for the goals: working with a more integrated approach, within different departments, engaging stakeholders and also involved in European networks are definitely ways to advance towards this goal.

- Spanish Urban Agenda & Local Urban Agenda



The Spanish Urban Agenda (AUE) is a strategic document, approved in 2019, which seeks to achieve sustainability in urban development policies, in alignment with the criteria set out in the 2030 Agenda, the new United Nations Urban Agenda and the Urban Agenda for the European Union. It is also a work method and a process for all stakeholders, public and

private, who are involved in cities and who, from their different areas of activity, pursue equitable, fair and sustainable development.

After intensive work and a broad participatory process starting June 2017 that lasted almost a year, this integrated urban development strategy offers a Decalogue of Strategic Goals, which, in turn, feature a total of 30 specific goals and 291 lines of action. The end result is a menu that can be used by the relevant actors to draw up their own Action Plans. The strategy is based on a broad vision that includes every town and city, regardless of size and population, and relies on a triple focus of economic, social and environmental sustainability.



A Coruña is one of the first cities in Spain to develop a pilot action plan for the local implementation of the Spanish Urban Agenda. This is an ongoing process which was initiated in 2019. The city is amid the process of collecting indicators, diagnosing the current state of the city and defining the city goals.

- **EidusCoruña (Urban sustainable development integrated strategy)**

This strategy was approved in 2016 and its implementation is co-financed with ERDF funds.

It has 4 main axes:

1. Information and communications technology (ICT)
2. Environment
3. Mobility and energy
4. Social integration

The axis 2 (Environment) is the one that's particularly relevant for the exemplar:

***AXIS 2 ENVIRONMENT:** Make the most of public spaces in the city so that they function as meeting areas, with high social and environmental value.*

The limited existence of free spaces to act implies the need to make the most of the opportunities that the compact city offers. All free space in the city has the potential to be valued and used for citizens to enjoy.

This challenge links with the EidusCoruña OT6 (Thematic Objective) - Conserve and protect the environment and promote resource efficiency. Interventions of landscape restoration,

urban gardens and humanization of public spaces will be performed within the OT6. The implementation plan for the EidusCoruña strategy includes a line of action for this Thematic Objective specifically dedicated to the creation of new Urban Gardens in the city.

- **Alignment of City Strategic Goals, NBS Objectives, Actions and Indicators**

City Key Strategic Objective	NBS Objectives	Actions	Indicators
<p>Landscaping and environmental and heritage restoration of places of touristic, cultural and environmental interest in the neighbourhoods of the city</p> <p>Preserve, improve, increase and connect the natural heritage of the city. Preserve and recover natural and cultural heritage of the city, as well as its fluvial and water memory.</p> <p>Disseminate knowledge of the values of green infrastructure and biodiversity and promote citizen participation and involvement.</p> <p>Improve the air quality and the environmental comfort of the city and reduce its carbon footprint.</p>	<p>Increase biodiversity and boost ecology.</p> <p>Provide a sustainable public space offering healthy recreational opportunities for people.</p> <p>Boost resilience against perturbations. Mitigate climate change effects.</p> <p>Protect and reinforce ethnographic and cultural values of the environment.</p> <p>Increase social cohesion and community engagement.</p>	<p>Implementation of the project for the ecoHortas urban garden network.</p> <p>Regreening buildings, creating roof gardens and green walls.</p> <p>Organize co-creation activities, community building and educational actions.</p> <p>Improve landscape -heritage connections and collective memory.</p>	<p>Environmental Indicators:</p> <p>Green Space Accessibility</p> <ul style="list-style-type: none"> - <i>Perceived access</i> - <i>Geographical access</i> <p>Temperature reduction</p> <ul style="list-style-type: none"> - <i>Green coverage for local heat reduction</i> - <i>Green roofs contribution to thermal isolation of buildings</i> <p>Biodiversity measure</p> <ul style="list-style-type: none"> - <i>Implantation of ecological agriculture, insect hotels, pollinator services.</i> <p>Water management</p> <ul style="list-style-type: none"> - <i>Improvement on soil permeability and water retention</i> <p>Social Cohesion Indicators:</p> <p>People-Place Relations</p> <ul style="list-style-type: none"> - <i>Levels of place attachment and place identity</i>

			<p>People-People Relations</p> <ul style="list-style-type: none"> - <i>Level of intergenerational relations</i> - <i>Improvement on social integration of collectives at risk of exclusion</i> <p>Health and Well-being Indicators:</p> <p>Education</p> <ul style="list-style-type: none"> - <i>Opportunities for environmental education</i> <p>Physical activities</p> <ul style="list-style-type: none"> - <i>Moderate physical activity promoted by Urban Gardens</i> <p>Mental health</p> <ul style="list-style-type: none"> - <i>Meaningful leisure opportunities promoted by Urban Gardens.</i>
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STEP 2 Current status of the location

The municipal urban gardens are located in public lands. The new urban garden will be built in an underused area of the Adolfo Suárez Park, a public park managed by the Environment Department. The school gardens are located in municipal lands managed by the Education department.

STEP 3 Who are the required partners

- Municipal departments:
 - o Environment Department - PLANNING, DELIVERY & STEWARDSHIP
 - o Urbanism & Infrastructures department (information on land property and availability) - PLANNING
 - o Social services (they manage the social centres network and organize leisure activities) - STEWARDSHIP

- Education (schools and kindergartens) - *PLANNING, DELIVERY & STEWARDSHIP*
- Employment (Urban gardening courses and support to SMEs) - *STEWARDSHIP*
- Tourism and Markets (promotion and eventual sale of the product from the urban gardens in the local markets) - *DELIVERY & STEWARDSHIP*
- University: Office for Environment (OMA), Architecture & Engineering Departments, People Environment Research group, Sustainability Campus - *PLANNING, DELIVERY & STEWARDSHIP*
- CEIDA: centre for environmental education - *STEWARDSHIP*
- Association for Urban Gardening "De leira na leira": newly created association by members of the three municipal urban gardens - *PLANNING, DELIVERY & STEWARDSHIP*
- NGOs like Ecodesarrollo Gaia, Ecos do Sur, Amigos da Terra... - *PLANNING, DELIVERY & STEWARDSHIP*
- ANPAS (parents associations) and Schools - *PLANNING, DELIVERY & STEWARDSHIP*
- Neighbourhood Associations - *PLANNING, DELIVERY & STEWARDSHIP*
- Other administrative levels: Deputación da Coruña (province administration), Xunta de Galicia (regional government with competences in Health & Education), national government, etc. - *DELIVERY & STEWARDSHIP*
- Private foundations like Afundación, Fundación La Caixa, VozNatura, Fundación Tríodos, etc - *DELIVERY & STEWARDSHIP*
- Local companies like Inditex, Gadis, Vegalsa, Estrella Galicia, etc. - *DELIVERY & STEWARDSHIP*

The existing Ru:rbán Urbact Local Group could be useful to sit all the stakeholders at the same table and start the coproduction processes, as a lot of the key stakeholders related to urban gardening are present in this group and in contact with each other. As the Ru:rbán project is about to finish, it would be key to transform this group into a stable Local Group on Urban Agriculture that continues to be influential and helps coproduce future actions. However, due to the Ru:rbán project not having such a broad approach, it would be necessary to further expand this group including some of the identified key stakeholders that are missing.

STEP 4 How will we work together. Developing a collaborative governance framework

The urban gardens have been traditionally managed by the City Council. However, the city council has organized capacity-building workshops on group facilitation with the intention of forming self-managed groups among the plot holders and gardeners. These workshops, together with the involvement of some of the gardeners in the OSMOS workshop for the open innovation team and the local group on Urban Agriculture, have resulted in the formation of a new association "De Leira na Leira", which is willing to take some responsibilities on the management and running of the urban gardens, and which is able to raise funds independently from both private and public sectors. There is a will for a gradual

transition of responsibilities from the city council to the gardeners. This is being phased in with the support of a staff resource in the city council.

This is, however, a medium term change, as there are reluctances in the city council to drastically change the model for the bigger gardens. At the same time, everyone agrees that the current system has flaws: it creates lots of bureaucratic procedures and administrative workload, and it's very difficult to keep track of the daily issues of the gardens from the office. Therefore, they are open to explore alternatives. As a first step, the new association has been granted (June 2021) one of the smaller urban gardens aimed at NGOs and associations (Parque de Oza garden). Additionally, the call for the new allotment of plots for Eiris, Agra, Novo Mesoiro and Adolfo Suárez gardens (February 2022) introduces a collaborative governance model, which promotes self-organization of gardeners and leaves a door open for the governance model to shift towards an association-led system.

FINANCING AND BUSINESS MODELS

STEP 1 Lessons learned from how NBS has been financed in each city to date

Both the capital expenditure costs and the ongoing operational costs of NBS in the city have been mostly financed with municipal funds, and in the case of capital expenditure often with support from European, national or regional-level funds.

EU funds:

- The city has depended on European funds for public infrastructure and urban regeneration projects, but access to these funds is not always guaranteed and can be problematic for political reasons (different political parties at local and provincial level).
- The city has access to European funds like ERDF programmes for developing new urban projects, with a focus on social inclusion.

National funds:

- Funds from the national level have been used to renovate different public spaces.

Own funds:

- Municipal budgets for parks and gardens, including for investment and maintenance.
- Participatory budgets: 2 million euros per year.
- Green public procurement including street cleaning, waste collection etc. represents more than 30 million euros annually.

Private funds:

- The presence of large economic actors in the metropolitan area like the Port Authority of Galicia, Inditex or Estrella Galicia could be a potential source for the funding of NBS, although this possibility has not been much explored until now. Inditex, through

Amancio Ortega Foundation, has sponsored some projects in the past like nursing homes, kindergartens or medical equipment for hospitals.

For maintenance, the city is divided in four zones that are maintained by private companies under contract with the municipality (three geographical zones and one including all historical gardens in the entire city). Currently there is one company (Althenia) which won the tender for the three geographical areas, and another one (Imesapi) which won the tender for the historical gardens.

These companies also have a budget for “improvements” which has been used to create or improve green areas in the city.

STEP 2 Explore opportunities for innovation in financing, governance and business models

In this second step, we ask cities to explore potential opportunities for innovation in the financing, governance and business models of NBS.

Sources of financing the NBS exemplar (These funds are secured):

- European funds: A Coruña EIDUS program (ERDF funds) has a financing line for establishing and improving urban gardens in the city. The project of a new urban garden in Adolfo Suarez Park is being implemented co-financed by these funds €293.727,56 (taxes included). The contract was formalised on January 4, 2022.
- Participatory budgets: NBS-related projects are usually among the most voted initiatives every year. A specific idea for a new urban garden in Adolfo Suarez Park was among the approved proposals (€50K) approved in 2019.
- “Improvements” budget from maintenance companies: this has been used in the past to finance the existing urban gardens capital expenditure costs and might be used again to create new gardens as a part of existing green areas in the city (for example community gardens in underused areas of public parks). In february 2022, a project for the improvement and expansion of the gardens of Agra, Eirís and Novo Mesoiro was approved, also funded by this improvements budget (28.000€). The garden maintenance contract is still in force although its renewal is being prepared. In the new tender, it is planned to also include a “budget for improvements”.
- Gardeniser program: a training course on design, creation and management of urban gardens has been organised with own funds from the municipal Employment dept., with support from the EU URBACT Ru:rbán project. There were two editions in the years 2018/2019 and 2019/2020.

Potential new sources of financing for a combination of the up-front NBS capital investment costs and the operational costs:

- Plot fee for the users of municipal urban gardens: currently urban gardens are completely free of charge for citizens. The possibility to include a fee, even if symbolic, might also help reduce plot abandonment. With the current system some

- citizens are assigned a plot but never start cultivating it, which leads to abandoned plots even if the waiting list is long (revoking the plots implies a slow administrative process). However, some improvements have been included in the new regulation (February 2022) recently approved to speed up the administrative processing in cases of abandoned plots, so that they can be quickly awarded to people on the waiting list.
- Association fee: alternatively, for the urban gardens where the model of management shifts towards an associations-led system, there could be a fee to join the associations, which in turn should be in charge of maintenance of the urban gardens.
→ The new association has a membership fee (€12 annually). They have already used part of this money to update the common tools in the three urban gardens and maintenance works (929,91 €).
 - Pilot project for school gardens: €60K (municipal funds) for the stewardship of the 5 existing gardens for the remainder of the year 2021. This includes maintenance and organization of educational activities for the school gardens. Estimated final cost of this service is around €250K annually if the project is expanded to all the 25 primary schools in the city + €40k additional expenditure cost for the new 20 school gardens. Currently looking for financing sources, education dept. very interested in supporting the programme but also looking at private sponsorships. Budget and political issues - no budget for 2021. Still working with the extended budget from 2020. This means it is much harder for new projects to get financed. It is expected that a new budget will be approved for 2022 which would unlock this project (budget still not approved as of February 2022 – expected approval March 2022)
 - Stewardship of existing gardens: in the garden maintenance contract still in force the UG are included in the general maintenance contract for the green areas of the city. The new maintenance tender for the green areas of the city, which is already underway, has a separated lot for the maintenance of urban gardens, planters and municipal buildings gardens, which will be aimed at social integration enterprises. The cost of maintenance of the municipal urban gardens is estimated at around €40k annually (municipal funds). In the new regulation, approved Feb 2022, the gardeners are collectively responsible for the daily maintenance of the common areas, tool sheds and tools, benches, tables, and the irrigation installations. In the past, the City Council was responsible for all of these.
 - The community gardens of Oza and Carlos Casares will be managed by associations following the new regulation recently approved. These associations could obtain new public or private sources of funding in the future. These contracts were awarded in 2021: the UG in Oza to the newly created gardeners association “De leira na leira” founded by some of the gardeners in Eirís, Agra and Mesoiro gardens and the UG in Carlos Casares to the Monte Alto neighbourhood association.
 - Commercializing the products of the urban gardens: now the products are for self - consumption and it is forbidden to sell them, however we could explore the possibility to allow commercializing them, be it in regular fairs held in the urban gardens, or else collaborating with the municipal markets. The money from this should be then re-

invested in maintenance, improvement or expansion of the urban gardens network. This still has to be addressed.

- Agreements with other institutions: schools, hospitals, nursing homes, kindergartens. Encouraging and offering assistance to them to install their own urban gardens, which might even be open to the wider public (learn from Poznan open gardens model). If approved, €7,000 from the environmental education budget could be allocated to offer this support to schools and kindergartens in 2022.
- Agreements with private institutions and large local companies like Inditex (clothing), Gadis (supermarket), Vegalsa (supermarket), Abanca (bank) or Estrella Galicia (beer) for the sponsorship of urban gardens. Estrella Galicia unveiled in 2021 the plans for their new corporate offices, which include urban gardens for their employees. Inditex (ZARA) is also concerned with sustainability, for example all the food served in their canteen is made with organic products sourced from local producers. Some enterprises like Repsol (energy company) and La Voz de Galicia (main newspaper in the region) have funded in the past capital expenditure costs for school gardens in the city and the metropolitan area.

Esther Fontan - councillor of environment - had a meeting with some of these companies during the Environment Week. We (CN Team) were in the public and after the event she presented us to the CSR person of these entities, so we had a first contact. After the call with Poznan we are defining the CSR strategy to organize a meeting with them. In the past companies mostly funded initial costs - easier to get them on board with that – but it would be great if they could support maintenance. It would be easier to get them on board to fund school gardens. Community gardens are more difficult – hard to find space - not much available public land.

- Improvement of existing urban gardens with workshops with employment department. (Proposal submitted for a regional grant). → NOT SUCCESSFUL. Looking for alternative sources (collaboration with university?)

New governance models:

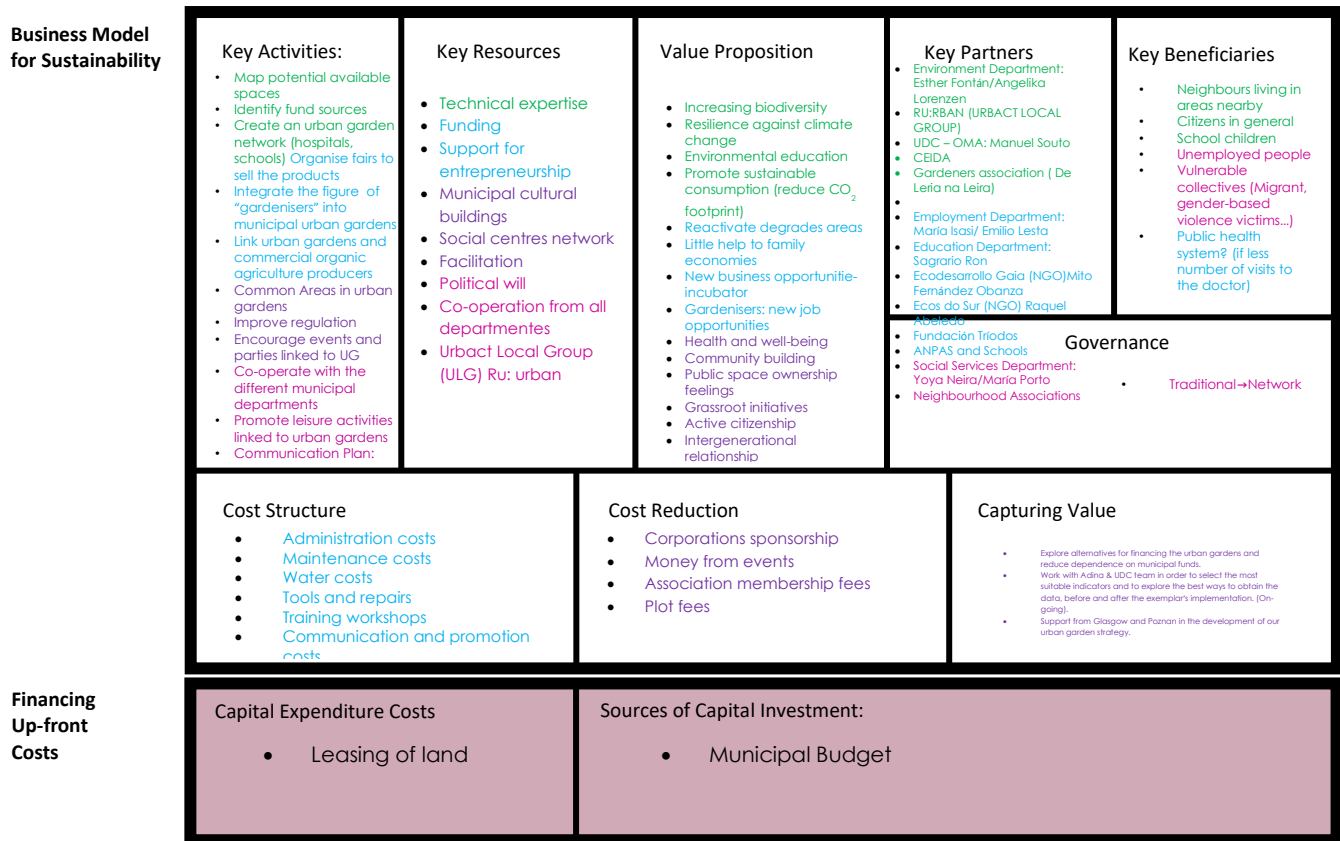
- The existing urban gardens are managed by the city council and plots are assigned to individual citizens. However, the city council has organized capacity-building workshops on group facilitation with the intention of forming self-managed groups. (New resource identified). In the urban garden of Nuevo Mesoiro there is a group of 15 people interested in proposing a new management model for the garden and they are currently working on it.
- A new association has been created by gardeners of the three municipal urban gardens ("De Leria na Leira"). It has been structured as a legal association according to the Organic Law 1/2002, of March 22, regulating the Right of Association, and has around 150 members.

- The intention is to gradually transfer some of the responsibilities held by the city council to the associations that represent the gardeners. The new association has already taken the initiative to update the common tools in the three urban gardens using money from membership fees. Additionally, the community garden in Oza Park will be directly managed by this new association. There is a new regulation for the urban gardens of Agra, Eirís, Nuevo Mesoiro and Adolfo Suárez for the next 4 years, which foresee a more active role for the gardeners, who can agree in an assembly to propose improvements in all areas, including the management model.

STEP 3 Planning the financing and business model of Connecting Nature NBS exemplars

In this step cities follow a business model approach to planning for the financing and sustainability of the NBS exemplars to be implemented in the Connecting Nature project. The financing plan identifies the upfront capital costs required and potential sources of financing. The business model planning approach asks cities to work out the costs required to sustain ongoing NBS activities, to consider how those costs can be reduced and to consider how to capture the value of NBS – both in terms of direct revenue generation and in terms of translating the wider value delivered by NBS (environmentally, socially and economically) into sources of ongoing operational revenue

Figure 1 Business Model Canvas and Financing Plan for NBS exemplar(s)



Brief Description of exemplar:

Urban gardens are a cost-efficient way of addressing many of the city strategic goals. They can help improve biodiversity and resilience against climate change while providing outdoor recreational spaces and promoting sustainable, active lifestyles. They have positive effects on mental and physical health, and they can improve social cohesion and social integration, increasing the well-being of citizens and their life quality.



A Coruña has three municipal urban gardens running since 2018, with a total of 218 plots available to citizens. The implantation of the municipal Urban Gardens started as an open participatory process to define the location of the plots. Their uses and concrete and definitive locations were defined through citizen participation. Actions took place in order to facilitate self-management of the urban gardens by their users, with a capacity-building process developed between the months of July and November of 2018 and the election of a Management Committee for each of the urban gardens. At the same time, the municipality offered training in the field of organic agriculture to users, starting in May 2018. Now, there is a strong demand for more urban gardening spaces, with a waiting list of over 180 people for the plots. Thus, the city wishes to expand and improve the existing gardens as well as creating new ones.

In addition to these three municipal gardens, a smaller community garden and a greenhouse, located in two city parks, are managed by NGOs which are developing educational and social projects with vulnerable collectives like migrants or gender-based violence victims. Another community garden in the Oza Park will be managed by an association (NGO).

Additionally, a professional program training on urban gardening has been organised by the City's Employment department. In this course, trainees learn how to create and maintain urban gardens, keeping them healthy and productive, in accordance with the principles of organic agriculture, and they learn to organize and develop didactic activities taking advantage of the potential of urban gardens. This course included a practical internship during which urban gardens were created or improved in four different primary schools. This was the beginning of a network of school gardens that the city council would like to expand, including as well other institutions like hospitals, retirement homes and kindergartens.

The school gardens programme. The improvement of school gardens and the possible creation of new ones to carry out educational activities in them has a budget assigned by the City Council for the development of a pilot project, through a private subcontracted company.

Brief explanation of major elements/assumptions:

- 1. Value proposition: how will your exemplar create environmental, social, economic or any other type of value?**
 - Urban gardens help improve biodiversity and resilience against climate change. They can mitigate climate change effects maximizing CO₂ absorption, increasing vegetative coverage, preventing soil sealing and providing water retention.
 - They can also be a modest help for family economies, and they favour responsible and proximity consumption habits, reducing CO₂ footprint and improving food security.

- Urban gardens have positive effects on mental and physical health, and they help build intergenerational and intercultural relationships, improving social cohesion and social integration. They provide outdoor recreational spaces and promote active and sustainable lifestyles, increasing the well-being of citizens and their quality of life.
- Urban gardens also promote community building and the generation of an active citizenship with increased ownership feelings towards public spaces, ready to be involved in new governance formulas.
- They offer a space for environmental education, helping communicate to citizens the benefits of being in contact with nature.
- Last but not least, urban gardens can act as incubator for new business opportunities and increasing employability of unemployed people. They can also reactivate degraded areas and increase property values.

2. Value creation:

- **Key activities and resources: what are the most important services or activities which need to happen to deliver the environmental, social, economic value?**

2019:

- Map potential available spaces for urban gardening, both belonging to the municipality/other public authorities, but also abandoned lands belonging to private owners with whom an agreement might be reachable.
- Identify fund sources
- Create an expanded urban garden network, also including hospitals, schools, kindergartens etc.
- Improve municipal urban gardens providing space for organising meetings, fairs and parties, and encourage these kind of events as powerful community building tools

2020:

- Improve co-operation between the different municipal departments (urbanism, social services, education, economical promotion) Agreement between Environment, Education, Employment and Tourism & Markets department to promote the Urban gardens with support from the relevant councillors.

2021:

- New urban garden in Adolfo Suarez park (project approved and construction works about to start, second quarter 2021). (Contract formalised in January 2022).
- Community garden in Carlos Casares park awarded to the Monte Alto neighbourhoods association (April 2021)
- Community garden in Oza park awarded to "De Leira na Leira" gardeners association (April 2021)
- School garden programme (with parents associations)
- Pilot project for a service to organise and maintain the school gardens: first phase in the 5 existing school gardens during 2021. To be expanded to more primary schools in a second phase (probably spring 2022?)
- Elaborate a comprehensive communication plan, measuring impact indicators.
- Organise fairs to sell the products
- Integrate the figure of "gardenisers" into municipal urban gardens
- New information point (human resource) being created in the Municipality for Urban Gardens. All sorts of advice, support, information and workshops for citizens interested in urban gardens. Funded by the Municipality. Link urban gardens and commercial organic agriculture producers
- Improve regulation
- Participation in the congress "From the Garden to the City: Food policies for Sustainable Urban Development" 13-14 May 2021, co-hosted by the URBACT National Point and A Coruña City Council (national level event).
- A Coruña's urban gardens network recognised as national best practice for the climate in the category of Nature Based Solutions by the Spanish Federation of Municipalities and Provinces.
- New contract for the maintenance of Green Areas will include a specific lot for urban gardens, open to social integration enterprises. As part of this contract, there will be one dedicated person who will assist the gardeners.

2022:

- New call and regulation for the urban gardens of Agra, Eirís, Novo Mesoiro and Adolfo Suárez.

- Project for the improvement and expansion of Eirís, Novo Mesoiro, and Agra gardens
- **Key partners and beneficiaries. Who needs to be involved to deliver the different value propositions? What is your city's 'ideal' governance model for the long-term management of the NBS e.g. city-managed or citizen-managed?**

2019:

- We need to involve the different municipal departments. Of course Environment Department, but also Urbanism & Infrastructures department (crucial, as they have information on land property and availability), Social services (they manage the social centres network and organize leisure activities), and Education (schools and kindergartens).
- The existing Ru:rbán Urbact Local Group could be useful as a lot of the key stakeholders related to urban gardening are present and in contact with each other.

2020:

- Employment, education and Tourism and markets departments are currently on board.
- University: Office for Environment (OMA), Architecture & Engineering Departments, People Environment Research group, Sustainability Campus. We are considering a collaboration with the School of Architecture to explore the possibility for students to design and build common areas in the three original urban gardens, which are lacking these elements.
- CEIDA: centre for environmental education
- ANPAS (parents associations) and Schools
- Neighbourhood Associations
- NGOs like Ecodesarrollo Gaia, Ecos do Sur, Amigos da Terra...
- Fundación Tríodos (Tríodos is a bank which is working with some social projects, some of them on urban agriculture).
- "Hortas na Cidade", association managing urban gardens in Feáns neighbourhood (on private lands)

2021:

- Local enterprises like GADIS, Estrella Galicia, Inditex, ABANCA etc (explore sponsorship opportunities)

- Repsol and Voz Natura / La Voz de Galicia (these institutions have funded part of the school gardens expenditure costs in the past)
- Gardeners Association “ De Leria na Leira”
- “Leira da Rocha”, association managing an urban garden in the metropolitan area (Cambre)
- HortaECOruña: local SME founded by one of the students of the training course organised by the Employment Department. They have been working on building school gardens in kindergartens and primary schools.
- Other administrative levels: Deputación da Coruña (province administration), Xunta de Galicia (regional government with competences in Health & Education), national government, etc.

3. Value capture

- Explore alternatives for financing the urban gardens and reduce dependence on municipal funds. The new fee from the Association De leria na leira has been partially used to buy tools for the urban gardens.
- Work with Adina & UDC team in order to select the most suitable indicators and to explore the best ways to obtain the data, before and after the exemplar’s implementation. (On- going).
- Support from Glasgow and Poznan in the development of our urban garden strategy.

4. Consider trade offs

- Consider gentrification risks associated to areas next to urban gardens becoming more attractive and increasing property values.
- Difficulties and resistance to the changes in governance, both from urban garden users (some don’t want to create associations) and from municipal officers (sometimes it’s hard to change the rules)
- Difficulty to engage other administration levels/municipal departments
- Possible trade-offs from commercializing the products (health concerns, competing with professional producers).
- There is a trade-off between raising funds for maintenance through user fees and encouraging public use of green space such as outdoor physical activity.
- Consider potential negative impacts related to any invasive species.

STEP 4 Implementation of financing and business model plans for specific NBS exemplar

Implementation actions may involve follow up on:

- Preparation of applications/bids for funding/financing (where relevant).

- Engagement with investors and other stakeholders for alternative sources of financing.
- Continued engagement of all stakeholders in preparation for implementation of business model.

Financing & Business Model Implementation Plan:

<i>City</i>	A Coruña
<i>Capital Financing required for NBS Exemplar</i>	New Urban Garden (Adolfo Suárez park) €300k Pilot project for schools gardens €60k
<i>Capital financing applications submitted /secured</i>	Participatory Budgets €50k EIDUSCoruña €250k (ERDF 80%)
<i>Unsuccessful capital financing</i>	Regional funds call for an employment workshop to improve the existing gardens (2020)
<i>Sources of capital investment</i> (1) City budget (public) (2) Regional / national / EU other public sources (3) Private/third sector (4) Financial Institutions	1. €160k 2. €200k (ERDF) 3. / 4. / Total €360k
<i>New financing partnerships</i> <ul style="list-style-type: none"> • Capital • Stewardship 	Capital: Collaboration between Environment, Employment and Education departments Stewardship: education dept. to take responsibility for stewardship of school gardens.
<i>Key Innovations</i>	- New model of collaboration between different departments (breaking silos)

	<ul style="list-style-type: none"> - New gardeners association to take some responsibilities for stewardship phase - New nature-based enterprises, SMES and cooperatives created
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NATURE-BASED ENTERPRISES

STEP 1 Awareness and strategic alignment

Contribution of NBS to the city economic development priorities

As exposed in the previous sections, urban gardens are aligned with several of the city strategic plans like EidosCoruña (Sustainable development strategy), the local Urban Agenda, the Spanish Urban Agenda and the UN Sustainable Development Goals.

Therefore, it is clear that NBS in general, and urban gardens in particular, have a big potential for contributing to some of the key economic development priorities of the city (Coruña future and Urban Agenda plans), like sustainable consumption, circular economy, green development and green/responsible tourism.

Contribution of NBEs to the planning, delivery, maintenance and sustainability of the exemplar

We are currently exploring the possibility of involving local NBEs for the maintenance of urban gardens/school gardens (easier for the latter, as the municipal urban gardens are included in the green areas maintenance tender). There is a recent successful example of a NBE delivering the exemplar: the Education department signed a contract for the preparation of the school gardens for the new term with a new SME (hortaECOruña) founded by a trainee from the course on urban agriculture organised by the Employment department. Additionally, several schools hired this same SME with their own funds for the stewardship of their gardens.

Another possibility that is yet to be explored is the cooperation with private companies to support initiatives on urban agriculture. Possibility to support the information point, options being explored include corporate and private enterprise with interest in green initiatives (CSR programmes).

Challenges and enablers in involving NBEs in the implementation of NBS

An important challenge is how to involve local NBEs on the maintenance of exemplar and NBS in general instead of bigger companies. Bigger, multinational corporations have a wider scope of resources and are usually more successful in preparing winning bids for the tenders, with more advantageous financial conditions.

Regarding the enablers, smaller contracts tend to be more accessible to local SMEs. Also tenders requiring more specific knowledge and experience can be an enabler factor, e.g. in the contract for the preparation of the school gardens the local SME was favoured because of the relevant experience on urban gardening and specifically school gardening, as opposed to all-

purpose landscaping companies .

Another simple but important enabler is the awareness from decision makers that these kind of local SMEs exist: the previous meetings and activities and the participation of the Education department in the Connecting Nature workshops and in the ULG (URBACT Local group) from the Ru:rbán project were crucial for the contract with the local SME to take place.

STEP 2 Building alliances

Challenges and enablers to start-up and growth of NBEs:

There is an increasing interest on NBS and green economy. The European funds for the recovery plan after the COVID crisis and the European Green Deal place a big emphasis on the development of a greener economy, offering a new scope of funding possibilities to nature-based enterprises and contributing to a social atmosphere in which the importance of the green economy is highlighted.

During the Environment Week in June 2021, the City Council organized a conference with some local big enterprises for them to present their strategies for circular economy and social responsibility. The CN Nature team took this opportunity to establish a first contact with the responsible people from the participating enterprises, as a first step towards organising a meeting with them to explore the possibility for sponsorships for the urban gardens (and especially school gardens). After a one-to-one session with Poznań where we discussed corporate partnerships and could learn from their experience, we are exploring the best strategies and approaches to organise this meeting.

The city of A Coruña is also leading the recently launched Spanish UrbanByNature Hub. This hub aims at promoting the implementation of nature-based solution in Spain, sharing knowledge between the partners and displaying the work developed in the Connecting Nature Project and other projects in the different cities. The hub was launched in November 2021 in a face-to-face event in the city of A Coruña. Among the main local partners, the hub is supported by the University of A Coruña, the UNESCO Biosphere reserve that surrounds our city, the Galician Health Service, some neighbour cities like Lugo and Santiago de Compostela, and also several private companies like CETIM, 3eData or Instituto Tecnológico de Galicia, which work on delivering NBS. This hub will be important for raising awareness and promote networking and collaboration with companies.

The main actors in the innovation ecosystem of the city are, on a municipal level, the departments of Innovation, Employment and Entrepreneurship, the Chamber of Commerce, and technological research centers like CETIM and ITG. At a regional level, the IGAPE (Galician Institute for Economic Promotion), and the Galician Agency for Innovation are the main players.

Additionally, the University of A Coruña, with support of the City Council, the Galician regional government and the provincial government, is developing a very ambitious programme "ICT City", to transform a 128.000 sqm former weapons factory into a digital innovation pole, with a business park, a technological campus, an R&D centre and an AI incubator.

Specifically focusing on NBE, there is a network at a national level “Red Empreverde” funded by the Biodiversity Foundation (Ministry of Ecological Transition) which offers grants and programmes for green entrepreneurship and start-ups.

Both the Connecting Nature team and the Environment department team have connections with the Employment and Economic departments, with members of the staff who have previously worked in the Employment department, in programmes supporting new entrepreneurs and start-ups.

STEP 3 Planning, implementing and monitoring a customised support programme

To translate our strategy into an actionable implementation plan, the following actions will be carried out:

- NBE incubator (planning stage)

Objective: creating jobs, building the sector, creating more NBEs, awareness-raising

Challenge addressed: lack of NBEs, low awareness of the potential of nature-based sector for job creation

The programme will be developed by the Environment Department in cooperation with the municipal Department of Employment and Enterprise, using the “Red Empreverde” resources. It will include training, mentoring and specialized advice to create nature-based enterprises. There will be different training itineraries according to the degree of maturation of the idea. It will be aimed at new or potential entrepreneurs interested in creating nature-based enterprises.

- Pilot programme with contracts for urban gardens maintenance (implementation stage)

Objectives: creating sustainable jobs, building the sector, facilitating the access of local enterprises to the public tenders

Challenge addressed: lack of opportunities for NBE, lack of expertise and time/resources for maintenance of gardens for the schools.

This Programme will try to involve local NBEs for the maintenance of urban gardens/school gardens (easier for the latter, as the municipal urban gardens are included in the green areas maintenance tender). The organiser departments will be Environment and Education. The program will include training on NBS and public bidding requirements.

- Training programme on urban gardening (finalised)

Objective: train people on urban gardening, facilitate the access of unemployed people to the labour market.

Challenge addressed: lack of awareness of economic potential of NBS among professionals, lack of professional opportunities for unemployed people.

In this course, trainees learn how to create and grow urban gardens, keeping them healthy and productive, in accordance with the principles of organic agriculture, and they learn to organize and develop didactic activities taking advantage of the potential of urban gardens.

The goal of this program is to boost the employability of the trainees and to create a new productive sector in connection to the fields of urban gardening and ecology. As a promising result of this program, some of the trainees have already started new SMEs/social enterprise projects related to these topics.

Participants: Unemployed people

Organizer: Municipal Department of Employment

STEP 4 Planning a programme to support nature-based enterprises

NBE Strategy Summary Table

NBS Urban Gardens Network					
NBS Phase	Planning	Delivery	Stewardship		All phases
Type of NBE Involved	New and potential NBEs	Construction/gardening companies	Small local NBEs	Large private companies	NBE, start-ups, SMEs
Challenge	Lack of NBEs		Lack of opportunities for NBE, lack of expertise and time/resources for maintenance of gardens for the schools.	Lack of private sector/ community ownership of NBS (stewardship carried out and financed 100% by city council)	Lack of private sector engagement on NBS
Goal of NBE Programme	Creating jobs, building the sector, creating more NBEs		Build sustainable stewardship model including small local NBEs and large private companies		Increase awareness for the potential of NBE, stimulate private sector interest in NBS

<i>How will this be achieved?</i>	Pilot of NBE incubator Programme		Training programme for small NBEs	Explore possibilities of private financing/ sponsorship	
<i>Partner</i>	Collaboration between the Environment Department and the Employment and Enterprise Department		Small NBEs	Private sector CSR agreements	
<i>What does success look like and how will you measure it?</i>	No. of participants in the programme, No. of NBEs created/ percentage of NBEs in municipal incubators / coworking spaces		No. of participants in the training courses / Maintenance contracts awarded to small local NBEs	No. of sponsorships	

COPRODUCTION

STEP 1 Define the goals of the co-production process

1. Goals for co-production:

- General goals: improve proposals with different views, adapt general plans to local and specific needs, enrich projects with expert knowledge and increase the ownership of citizens towards the projects (make sure they feel part of the process).
- Develop a new governance model for urban gardens and the urban garden network in the city: empower the associations of urban gardeners and the communities to self-manage the urban gardens. Support set up of association to manage the plots better (more direct contact, on the ground, with less bureaucracy). At the beginning the governance model was quite top-down. The municipality launched calls for citizens to take care of a plot. Currently there is a long waiting list to get a plot, and the process is slow: if a tenant is not using the plot they were given, plots need to be unused for 3 months before given out again, which created "unused" and not maintained plots. This led to a negative association with bureaucracy and tension, as many citizens

wonder why plots are lying vacant while so many people are waiting. This aspect has been corrected in the new regulation approved on February 2022. The plots will be given to next gardener in the waiting list if abandoned for longer than one month (except during the winter months December-February).

- Connect green areas and urban gardens: create a green infrastructure network
- Build intergenerational and intercultural relationships for social cohesion through the urban garden network
- Foster long-term commitment for local groups to self-manage gardens
- Learn from the urban gardens network to use these processes for the whole green infrastructure of the city.

2. Key actors to be involved in the co-production activities:

- Citizens in general.
- Specific group of users relevant for the project: Neighbourhood associations, gardeners in the municipal UG, NGOs working with migrants, schools and children, urban gardening initiatives, elderly (many gardeners are retired).
- Already established group for urban gardens including many of these stakeholders (from URBACT local group)
- Other municipal departments: dep. of Employment, dep. of Education (responsible for school gardens), dep. Markets & Tourism (organic markets where gardeners can sell and showcase produce), etc.
- Science and academia (university).
- Expert knowledge (private companies, i.e. architecture/engineering firms).

3. Some engagement tools we have put in practice:

- Participatory processes (participatory budgets)
- Regular meetings with the group of stakeholders
- Participatory meetings with the architects, neighbourhood associations and gardeners to co-design the new urban garden in Adolfo Suarez park.
- Participatory meetings with the gardeners to develop the project for the improvement of the existing gardens.
- Sarajevo process - memory work exercise with the gardeners
- Public consultation (open to amendments and suggestions for improvement)
- Public exhibition of the projects, cooperation with the university (scientific knowledge), Project / ideas competitions to engage expert knowledge.

STEP 2 Use the design principles to flesh out the coproduction goals and structure

PRINCIPLES

WHAT FOR?

HOW?

CHALLENGES

INCLUSIVITY	<ul style="list-style-type: none"> • To enrich proposals with different views • Expert knowledge and universities are usually involved in beginning of the process for proposal (feasibilities) 	<ul style="list-style-type: none"> • Good contacts with universities and scientists. Easy to involve them. • Citizens via participation department – help to involve citizens. Participatory budgets. • Communication to enable people to participate in decision-making – e.g. participatory budgets and agricultural gardens: get to know interested citizens through proposals and could contact and engage them • Going into neighbourhoods (with communicators) to look for interested people – should work with citizens from the start • Sarajevo Process: opportunity to involve participants from different ethnic/cultural backgrounds. Example of how urban gardens can act as the first anchor point for migrants arriving in A Coruña. • NGOS working with diverse community 	<ul style="list-style-type: none"> • Not every level and group of citizens is involved. Still people feel not heard, or don't speak up.
OPENNESS	<ul style="list-style-type: none"> • Make sure that every project is open to citizens – participation, buy-in and legitimacy • Share projects with other municipalities – knowledge exchange 	<ul style="list-style-type: none"> • Ensuring that process is open for adjustments and new ideas: usually there is a starting idea, but it can be adjusted • Important to share knowledge from the start so everyone knows and gets involved 	<ul style="list-style-type: none"> • Problem when multiply government layers are involved, cannot guarantee openness/flexible procedures
LEGITIMACY	<ul style="list-style-type: none"> • Important to maintain democratic procedures and not to by-pass them (concern especially when decisions are binding) 	<ul style="list-style-type: none"> • Start openness with small projects • Award for the UG network (Best Local Practices For Climate, NBS Category) contribute for the project to be taken seriously by decision makers 	<ul style="list-style-type: none"> • How to deal with conflicting opinions of people and selected involvement? • How to deal with criticism rooted in/related to political opinions? • Concern of urban gardeners/citizens: what will become of the ideas? What will be implemented?
ACTIONABLE KNOWLEDGE	<ul style="list-style-type: none"> • Citizens see their ideas being implemented – motivation and buy-in, legitimacy 	<ul style="list-style-type: none"> • Good cooperation and communication with other departments/colleagues. 	<ul style="list-style-type: none"> • Problem when multiple government levels are involved: cannot guarantee implementation of decisions/agreements

	<ul style="list-style-type: none"> • Get the best possible output to implement an idea that is in mind 	<ul style="list-style-type: none"> • Should communicate more openly in large projects from the start. • Usually we have an idea in mind that is to be implemented - but it can be adjusted (openness) 	<ul style="list-style-type: none"> • Bureaucracy is a barrier: time before an idea gets implemented
USABLE KNOWLEDGE	<ul style="list-style-type: none"> • Important to see what the social effects/outputs of a project/idea is – e.g. agricultural gardens: that people relate better to nature and others in neighbourhood • Not much experience with generating/aiming for usable knowledge 	<ul style="list-style-type: none"> • Organisation of environmental educational activities • Involvement of new actors in process to enlarge the reach of the action • Explicitly identifying social outputs of project 	<ul style="list-style-type: none"> • Lack of co-creation with private sector. Experiences within other departments (i.e. employment, sports), but not in environmental department / for NBS delivery)
EXTENDING INSTITUTIONS	<ul style="list-style-type: none"> • Creating synergies from linking different goals and align action across municipalities and departments 	<ul style="list-style-type: none"> • Link between environment and employment department (URBACT Ru:rbn project) • Collaboration with education dept. (trainees from training course for unemployed people building school gardens). Easy to involve education dept. because of high demand of school gardens. • Info point on Urban Agriculture involving 4 different departments (Environment, Education, Employment, Tourism&Markets) with high level political support 	<ul style="list-style-type: none"> • Challenge is to involve different levels of government, and to know when to involve private sector.

STEP 3 Plan the co-production steps and activities

- Meetings of the Local Group on urban agriculture (URBACT Local Group), to meet regularly with all stakeholders, share knowledge, inspire each other, foster commitment, have a say on municipal policies on urban gardens. Participation of urban gardeners, teachers responsible of school gardens, trainers and attendees of the urban gardening courses and representatives of the municipal departments of environment and employment. The group is always expanding, incorporating urban gardeners from different neighbourhoods (ambassadors for their neighbourhood), people from NGOs, trainers, representatives of urban school gardens and people related to enterprises on urban agriculture, like for example an enterprise that arose from the training organised by the Employment Dept.

○ 13th Jun 2019

- 26th Aug 2019
 - 2nd Sept 2019
 - 29th Oct 2019
 - 6th Nov 2019
 - 18th Dec 2019
 - 9th Jan 2020
 - 8th April 2020
 - 22nd Jun 2020
 - 22th Oct 2020
 - 15th Feb 2021
 - 17th March 2021
- New urban garden in Adolfo Suárez Park:
 - *Proposal for the creation of a new urban garden in this park selected in the participatory budgets (2019)*
 - *Meeting of the Environment department team with the architects. (30th January 2020)*
 - *Participatory meeting with the architects, neighbourhood associations and gardeners from the three existing urban gardens (12th February 2020). The architects presented the first version of the project and the different stakeholder expressed their views and ideas to be incorporated into the final design.*
 - Meeting with urban gardeners to explore the new governance model to be potentially tested in the Adolfo Suárez UG and the different possibilities:
 - *Meeting with representatives of the three municipal urban gardens (9th June 2019)*
 - *Meeting with the newly created gardeners association "De Leria na Leira" (16th October 2020)*
 - Creation of an Info Point on Urban Agriculture:
 - *Meeting Environment Department – Employment Department on Urban Gardens Info Point (12th Feb 2020)*
 - *High level meeting on Urban Gardens Info Point with the relevant Councillors and Heads of Department (Environment, Employment, Education and Markets Departments) (4th March 2020)*
 - Sarajevo Process:
 - *Memory work exercise with urban gardeners, school teachers and artists (6th June 2021)*
 - *Body mapping exercise (22nd November 2021)*

- Improvement and expansion of Eirís, Agra and Novo Mesoiro gardens:
 - o *Participatory walks with the gardeners (13th and 14th December 2021)*
 - o *Meeting with the presidents of the three UG to present them the final plans (4th February 2022)*

STEP 4 Select the co-production tools

- Sarajevo Process

During the first week of June 2021 we organised the first part of the Sarajevo Process, the Memory Work exercise, as part of the activities organised by the City Council for the Environment week, to make use of the momentum and maximize its impact.

The goal of this process is to show the important role played by heritage, culture, people's memories and connection with nature, through a co-created, art-based, engagement approach developed by TCD and UEL. This was, from the beginning, one of the priorities of the city for the development of the exemplar, looking to enhance the sense of attachment towards public space and the creation of cohesive communities.

For this exercise we gathered a group of urban gardeners, coming from different ethnic and cultural backgrounds, different age groups and different gardens (urban gardens and school gardens)



Every participant brought a picture from their childhood and they reflected on the memories it brought back. Some of the participants knew each other, but not all of them, so we started with a short icebreaking exercise. The participants compared their pictures and their memories, and spontaneously started to cluster the pictures that were similar to each other.



After this we moved to the outside, to one of the UG. The gardeners showed us around and they talked about the benefits of having a garden and being in contact with nature. Then we ran a mindfulness exercise to help us reconnect with our memories and with nature and getting in the mood for the writing exercise.



Then, we went back inside, to the building, and we ran the writing exercise. We had the help of two artists on this. One of them is Yolanda Castaño who is a writer and a poet, she facilitated the writing exercise and she is now preparing a text translating these individual memories into a collective output. And we also had Iria Fafián, who is an illustrator and has been translating the texts and the experiences of the day into images.

This exercise resulted into 12 texts written by the participants, which were all really compelling and moving. It was interesting to find some common topics, like a sense of nostalgia for the old times, as most people remember their childhood days as a time of happiness and joy, even if for some there were hardships too. Another constant was the concept of change, most people expressed that when they were children they had more contact with nature, there was more nature, and nature was more present in their lives. But also, interestingly, many of them said that having an urban garden was a way for them

to reconnect with nature and with those happy memories. This proves to us that UG can provide benefits also on that emotional level, which is important for the exemplar's goals of increasing the feeling of attachment to public space and creating a sense of community, reconnecting with heritage and cultural legacy.

I was so happy living in the village. The spring, with its incipient warmth, the changing soil smells and the scent of the wild roses; the summer harvest; the corn husking in the autumn; or even the chilblains of the winter. All of it comes to my mind wrapped in love and tenderness.

(...)

The years passed, and I found myself alone in the village with my grandmother and her sister. My mum, my brothers and sisters moved to the city looking for a job. Eventually, they took us with them. Lots of changes and lots of homesickness we had to bear with. We had to accept what life brought to us, a different lifestyle far from the trees, the birds, the fields and the animals. But the urban gardens brought me back the joy of being surrounded by flowers, birds, people and free air.

Concha

For me there is no better place than nature, I was born in the countryside and that's why having an urban garden was like going back to my roots. I love everything, planting, watering, harvesting, it's a feeling that you can't explain. The grape harvest (oh, the grape harvest!) wasn't like today, all with machines. Back then, we stomped the grapes with our feet, and sometimes they reached up to my head, but everyone was singing and in some way dancing inside those wine presses - so much nostalgia! But now, having my plot in the urban gardens, it was like reliving those wonderful years. I am immensely grateful that they give us these little pieces of land, at least to remember what I did in my youth, which was farming.

Herondina

The outputs of the session were showcased in a public exhibition in the Agora building. The memory text written by the participants were hanged next to the artistic response by Iria Fafián and Yolanda Castaño. The exhibition was launched on November 25th with a reading of some of the texts by the participants, and the reading of the poetic text by Yolanda Castaño, and was open to the public up until 19th December.



Also in November 2022, the second phase of the Sarajevo process had place with a bodymapping exercise. For this, we gathered several of the gardeners who had participated in the memory work exercise back in June, but there were also some new faces. The exercise was facilitated by Iria Fafián. After an immersion in nature, visiting the

urban garden and the neighbouring fields, where the participants collected objects for their bodymaps.



Back in the building, all of the participants drawn an individual bodymap on the templates provided.



After this, next to the exhibition of their work from the previous exercise, all of the participants created together a collective body map with the materials they had brought from nature and some additional natural items collected by Iria. The piece aimed at depicting the way they felt about nature, capturing the different feelings that each participant expressed in their individual body maps. This collective activity helped create bonds between the participants, who reflected on how much easier it was for them to

create something as a group, compared to the individual drawings. This reinforces the potential of the urban gardens to build a community and empower citizens.



The outputs of the two sessions of the Sarajevo Process in A Coruña will be showcased during the final Connecting Nature Summit in Genk in April 2022.

- Participatory walks with the gardeners

In February 2022, three participatory walks took place in the three urban gardens to discuss the new project to introduce small improvements, like a common, shaded area or a common plot for children. These improvements were suggested by gardeners themselves. Participants: municipal technician responsible for the urban gardens, the CN city team (María and Antonio), and a group of gardeners (about 8-10 people in total)

- Activity to have children draw their ideal urban garden and organise an (online) gallery (planned)

The goal of this activity is to involve school children in urban gardening. At the moment, 5 primary schools in the city have urban gardens, but many more have expressed their interest to have one. There is a pilot project to increase the number from 5 to 11 schools, in a first phase. Additionally, a new SME (hortaECOruña) from the training course on UG organised by the employment department has been working on the delivery of gardens to several primary schools and kindergartens in the city which financed the gardens with their own funds.

STEP 5 Reflect on the co-production process and results

The award for Best Local Practices for the Climate in the category of NBS (first year there was this category) led to increased support for NBS and urban gardens.

There is a good opportunity for the stewardship phase, as a new tender is being written for maintenance of the gardens: collaboration with social enterprises, opportunity for social integration. One of the persons responsible for this new tender is our colleague from Environment Department (formerly from Employment Department), she's also in the RM meetings, and because of her former position she has good connections with Employment Department.

We developed a proposal with employment department to have unemployed people work at urban gardens (e.g. building shelters). This would be a great opportunity for urban gardens to

be improved and at the same times create jobs. The proposal was submitted for a regional grant, but unfortunately it was not successful. We are currently looking for alternative sources (collaboration with university?)

The new urban garden in Adolfo Suárez can be used to test new governance models (including local community in managing the plots)

We have urban gardeners from different neighbourhoods that are really engaged, they are community leaders and some of them recently created an association (De Leria na Leira). This is a valuable asset for the process.

Some of the barriers faced include how to engage different departments for the project of the urban agriculture info point. Although we have high level political support from the relevant departments, it isn't easy to secure the funding and to decide who's going to pay for what.

Another barrier is the lack of experience in engaging stakeholders from the private sector. One of the goals in this direction would be to engage enterprises to fund / sponsor urban garden projects in schools. We had a first contact with some enterprises that have environmental, circular economy projects, and we have learn from the experiences of Poznan, on this topic, aiming at creating a catalogue of possible collaborations for corporates.

Time is also one off the main barriers we face: the process goes slower than gardeners, stakeholders, and even ourselves would like it to go, mainly because of bureaucracy and procedures.

Finally, COVID had an impact on the co-production processes, as many of the activities have to take place in an online format. However, thanks to the fact that we had a group of engaged stakeholders (coming from the URBACT Local Group), it was relatively easy to organize online meetings with them and keep them on board. The online meetings with this group had a lot of participants, almost the same as in face-to-face meetings.

REFLEXIVE MONITORING

Throughout the process of NBS implementation, the existing monthly reflexive monitoring process in place with all FRCs will be used to identify critical turning points, key learning questions and follow up actions. Reflexive monitoring supports learning by doing, helps in the early identification of roadblocks and challenges and stimulates the development of adaptive solutions. The current reflexive monitoring process facilitates a 6 monthly reflection on key lessons learned.

STEP 1 Rethink what learning process you need to achieve the goals of the nature-based solution

The City Council wishes to expand the existing urban gardens, both by enlarging the existing ones and by creating additional ones, weaving a network of urban gardens that can help connect green areas, boost biodiversity and provide different environmental, economic and social benefits.

The main learning questions that need to be addressed to achieve these goals is to change the way of governance, try to get people involved in a different way, taking charge of the responsibilities, not waiting for the city council to solve every problems and also to get a new regulation with changes in the legal issues.

We need to activate different actors to contribute to answer our learning questions, not just limited to the environmental department but extending to education department and the employment department, which supports startups and new entrepreneurs. This is Important for new NBEs that could be created.

We include here our Dynamic Learning Agenda:

Learning question	Connecting Nature Framework element	Follow-up action
<i>What do you need to learn to address a barrier or opportunity in a way that the higher-level goals of the project are targeted?</i>	<i>Choose one or several of: Technical solutions, Governance, Finance & business models, Entrepreneurship, Co-production, Reflexive monitoring, Impact assessment</i>	<i>Describe the next steps in the process to answer the learning question. The follow-up action addresses the barriers or utilizes the opportunities captured in the learning question.</i>
How to explore the possibility of sponsorships for the urban gardens (and especially school gardens)?	Financing	Prepare a proposal and organize a meeting with some local big enterprises
How can we temporarily use privately owned green areas?	Governance	Explore whether the Glasgow experience with stalled spaces can be transferred to our city
How to shift the governance model, building on the joint work with the new gardeners association?	Governance	Meetings with the members of the association

Could the improvements contemplated in the new regulation of urban gardens for NGOs also be included in the regulation of those for individual citizens?	Governance	Talk to the responsables for the drafting of the new regulation of urban gardens for individual citizens
Will the new regulation of urban gardens for NGOs facilitate in practice a greater involvement of the community and a better response to the needs of users and neighbors?	Governance/Impact Assessment	Monitor the operation of urban gardens that will soon be awarded to NGOs, within the framework of the new regulation
How will the maintenance of municipal urban gardens be affected by the new call that is being prepared for the maintenance of city parks in the coming years?	Technical solutions/Governance/Financing	Talk to the people responsible for preparing the tender
How could collaborative processes be facilitated to improve the network of urban gardens?	Co-production	Invite new actors to the local group on urban agriculture in order to bring together different ideas and different types of knowledge
How to discover new business opportunities and boost entrepreneurship around urban gardens? Would it be possible to facilitate support to new NBEs in our city?	Entrepreneurship	Meeting with the municipal Department of Entrepreneurship
How to select the relevant indicators for the evaluation plan	Impact Assessment	Meetings with the UDC and with experts from the Environment Department

STEP 2 Define the roles within the project team

María González assumes the role of monitor and Antonio Prieto participates in the reflexive monitoring process as project manager. Both of us joined the Connecting Nature team in February 2019, so we were unable to participate in the Nicosia KTW or the first Reflexive Monitoring webinars. We began to learn about the RM process and tools through our participation in the KT Workshop in Málaga and the RM webinars hosted by CN experts and WP leaders. We also read the RM manual and guides.

At first we didn't have a clear view of Reflexive Monitoring. It was just something we needed to do and didn't make much sense. Identifying critical turning points and defining the learning questions was not so easy at first. We had to learn how to address a barrier or an opportunity in a way that the goals of the project are targeted. It was hard to know what questions really need to be asked to have the most transformative impact.

With time, we came to realize the Reflexive Monitoring process helped us to frame our goals and the changes required. Thanks to RM sessions and meetings we got a clearer view on main challenges. If we didn't have these meetings wouldn't have dealt with these challenges/ barriers. They were very eye opening in this respect, made us more aware of the points we needed to give more attention to. Also, involving people from outside of the CN team, and having them in these meeting, helped to engage them into the process. These meetings helped to raise awareness and get more people on board.

STEP 3 Recording important events and analysing critical turning points

Some learning questions to be addressed:

- a. How to identify new spaces for Urban Gardens in the city?
- b. How to keep in touch with stakeholders during the lockdown?
- c. How to shift the governance model, building on the joint work with the new gardeners association?
- d. How to discover new business opportunities and boost entrepreneurship around urban gardens?
- e. ¿How to improve urban gardens regulation?

We have regular meetings including the CN team and also another person from the department, who is part of the team in charge of the maintenance of green areas and also coordinates the URBACT Ru:rbán project (also focused in urban agriculture) in the city. In these meetings we try to identify the critical turning points with the meetings with the local groups and follow up meetings weekly, with people working on urban agriculture - then have monthly learning sessions and try to identify learning questions and follow up actions

We have been organizing weekly meetings on the development of the network of urban gardens in which the people who work on the URBACT Ru:rbán Project also participate, in addition to the CN Project Team. The purpose of this other project is to transfer to our city good practices in urban agriculture that were implemented in Rome. After these meetings, important events are recorded. We also identify critical turning points after the meetings of the local group on urban agriculture.

We have a monthly CN Team meeting in which we formulate the critical points. It is a dedicated reflexive monitoring meeting, not connected with the regular project meetings. In our monthly learning sessions we try to identify learning questions. In these meetings we update the dynamic learning agenda.

At the moment we have shared the DLA with the person in charge of the URBACT Ru:rbán project, who is part of the team in charge of the maintenance of green areas and is also working on the creation of the network of Urban Gardens.

It is difficult to directly include in the RM monitoring sessions the higher level, like the head of department, but also other people that work in the department in different areas – it is a complex department with lots of responsibilities and different priorities. Language can be a barrier too, as all the information and the guidebooks on the reflexive monitoring are only in English. To keep track on the follow-up actions, especially when they are executed by colleagues who are not closely involved in the reflexive monitoring process, we ask for information and we try to participate in all meetings related with urban agriculture in the city: meetings with professionals of the Environment Department and professional of other municipal departments and meetings with the stakeholders of the Local Group on Urban Agriculture.

Examples of follow-up actions:

- Presentation of a draft regulation for the new urban gardens of Oza Park, to be awarded to associations (done by CN Team). The new regulation and call for tenders for these gardens
- Creation of an association of users of municipal urban gardens.
- Meetings with different municipal departments for the creation of an Information Point on urban agriculture aimed at citizens.
- Improvement of school gardens and possible creation of new ones to carry out educational activities in them. The City Council has a budget for the provision of these services by subcontracting a private company.

STEP 4 Use learning sessions to identify learning outcomes

The first barrier we encountered was that we couldn't limit ourselves to the environment department for which we work. For the implementation of NBS Exemplar it was essential to secure the involvement of other municipal departments. We needed to learn how to organize cross-departmental collaborations.

The top-down governance model we have on urban agriculture was a barrier at the beginning as it was the City Council that dealt with all the issues related to urban gardens.

The creation of an association of garden users is helping the city to move towards a bottom-up governance model.

Another opportunity to highlight was the participation of the employment department in an Urbact project to transfer good practices on urban agriculture developed in Rome. This was a key enabler that made it easy to cooperate with them and engage their department on actions on urban gardening.

In order to include the reflexive monitoring process into our daily activities, we try to keep a record of all the important events and try to see how they could affect the achievement of our goals.

During the learning sessions, we realized that it is necessary to develop a suitable legal framework for allotment gardens. Adequate regulation will allow us to move more easily in the implementation of our NBS.

STEP 5 Share your findings with others:

Building on the elements of the CN Framework and learning from the pioneer cities that have already gone through this process helped us face the challenges that arise during the implementation of our exemplar. The one-on-one reflexive monitoring discussions with Glasgow are very productive, because we can see concrete examples of how they overcome the barriers and transform them into opportunities and actions to implement their NBS.

In our city, because of the high density and the limited space, we don't have many green areas

or open spaces. There are some abandoned plots across the city, but they are not owned by the municipality, so that is a barrier. It would be great to use them temporarily. Stalled spaces in Glasgow and the way to solve conflicts with the uses of the plots, as well as their work with the communities, were an inspiration for us. Looking at the shared innovations, Glasgow explained us about the barriers they had to develop an education project, as teachers didn't know how to start to teach children. So, they decided to partner with the royal horticultural organisation, in order to provide training for teachers. Their training sessions generated a lot of interest and got people excited about the project.

STEP 6 Reflecting on the method and peer-to-peer sharing

Reflexive Monitoring is a new process for us, but we have found it really useful. We can see at a glance all the advances we have been doing, looking for critical turning points and barriers, so we can now take actions first. It is a new strategy, a new method of work. In the city council people usually work in silos - sometimes there are meetings to see what other departments are doing, but not a global vision. Reflexive Monitoring provides the big picture we need to move forward with the implementation of our exemplar.

The reflexive monitoring process allows us to know how the Project is evolving in real time, identify barriers and make decisions that will overcome them by taking the necessary actions. It facilitates innovation and new opportunities to achieve goals and develop our nature-based approach. Breaking silos between different departments is easier using this process.

Traditionally, evaluation is performed only at the end of a project to measure whether the actions carried out have met the planned objectives. Real-time evaluation without waiting for project completion is a major change in the usual way of working, allowing problems to be solved as they arise.

Incorporating more actors into the process facilitates a broader vision with different perspectives that can facilitate teamwork and lead to more creative actions. As an example of how this process can be helpful, talking with colleagues we discovered that there would be a new amendment of the contract for maintenance, and there is going to be a new call for tenders for the maintenance of the city's green areas for the next 5 years. One of the people responsible for writing this call is the person who is coming to our reflexive monitoring sessions. Having her at the sessions made her aware of the challenges that we face, so these would be taken into account for the new tender. For example, in the previous call, the urban gardens were included in the general tender for the green area of the city, with no specific treatment for urban gardens, whereas in the new call, the new maintenance tender has a separated lot for the maintenance of urban gardens which will be aimed at social integration enterprises as a tool for increasing social inclusion.

IMPACT ASSESSMENT

STEP 1 Engage in structured reflection on NBS impacts, pathways and trade-offs

As a part of the EidusCoruña urban sustainable development strategy, a new Urban Observatory will be created, which will collect indicators on urban sustainability, allowing for a better integrated strategic planning of the city. Existing indicators will be ordered and put together, new indicators are being collected and a new webpage and a software application are under development.

On the other hand, the local implementation plan for the Spanish Urban Agenda considers the following indicators and data:

- Descriptive data that appears in the Spanish Urban Agenda for each of the strategic objectives.
- Monitoring and evaluation indicators that appear in the same document.
- REDS Indicators (Spanish Network for Sustainable Development).
- Indicators of the Urban Observatory of A Coruña.
- Other indicators that may be of interest, such as those that are part of the EDUSI (Productivity Indicators, Result Indicators and EidusCoruña Communication Indicators).

These indicators will be classified in 4 levels of information:

- Level I: Descriptive Data and Indicators that help describe our urban area and its main characteristic (demographic, social, economic, etc)
Sources: Spanish Urban Agenda and Urban Observatory of A Coruña
- Level II: Urban Sustainability Indicators: indicators that describe our urban area, but incorporate the reference to an objective sustainability indicator and therefore reflect the evolution and trend of the city in achieving urban sustainability.
Sources: Ecological urban planning and Urban Observatory of A Coruña
- Level III: Quantitative indicators which measure the Monitoring and Evaluation of plans and projects that are developed in the city.
Sources: Spanish Urban Agenda, plans and projects (EidusCoruña, etc)
- Level IV: Qualitative indicators that measure the Monitoring and Evaluation of the plans and projects that are developed in the city.
Source: Spanish Urban Agenda, plans and projects (EidusCoruña, etc)

Another interesting document is the report “ODS in 100 Spanish Cities” published by REDS (Spanish Network for the Sustainable Development) in Nov. 2020. According to this report, A Coruña’s profile regarding the UN Sustainable Development Goals is as follows:

A CORUÑA

Galicia

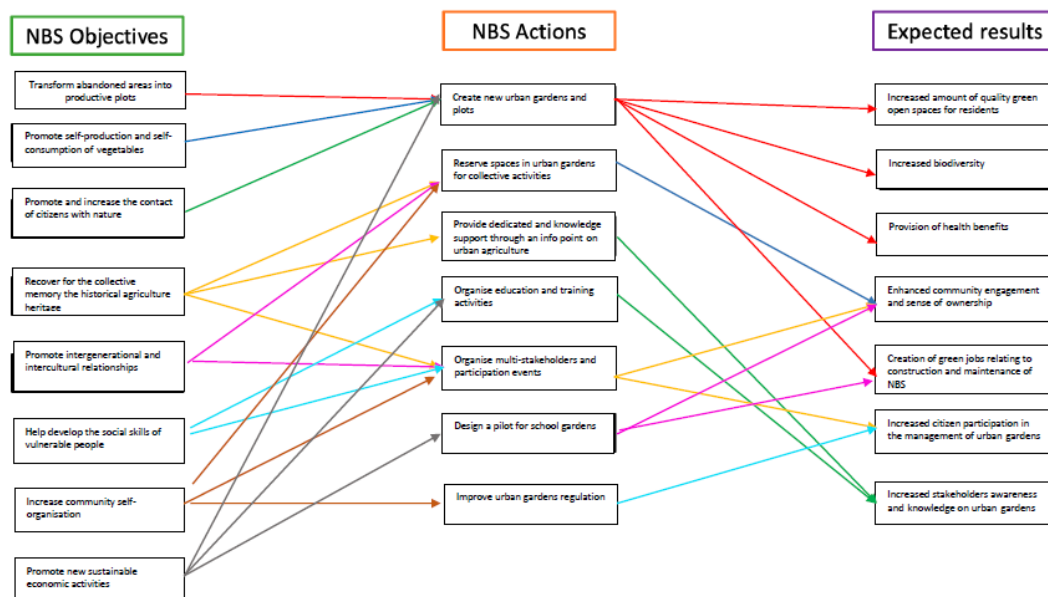


For the elaboration of this profile, a significant number of indicators were taken into account:

▼ INDICADORES			
ODS1 - Fin de la pobreza		Valor	Rango
2020 ratio		4.49	●
Gasto en servicios de promoción social		99.46	●
Tasa de población en pobreza alta		8.70	●
Tasa pobreza infantil		21.90	●
Tasa de población en riesgo pobreza		16.50	●
ODS2 - Hambre cero			
Agricultura ecológica		0.25	●
Precios de consumo de alimentos		105.26	●
Tasa de empleados en agricultura		0.58	●
Explotaciones agrarias y forestales		0.05	●
Superficie de cultivos por municipio		8.26	●
ODS3 - Salud y bienestar			
Fertilidad adolescente		2.35	●
Muertes por abuso de alcohol y drogas		1.63	●
Muertes por enfermedad infecciosa del sistema respiratorio		52.91	●
Muertes por hepatitis vírica		4.48	●
Mortalidad infantil		2.97	●
Muertes por enfermedades no transmisibles		1075.25	●
Muertes prematuras (<65 años)		290.77	●
Muertes por suicidios		7.73	●
Muertes por accidente de tráfico		2.03	●
Muertes por tuberculosis		0.00	●
Muertes por tumores del sistema respiratorio		111.51	●
Esperanza de vida		82.94	●
Muertes por SIDA y VIH		4.07	●
ODS4 - Educación de calidad			
Población matriculada en un título superior		96.00	●
Gasto en educación		28.99	●
Acceso a servicios en la educación preescolar		69.22	●
Población con nivel de educación máxima secundaria		26.51	●
Población con educación máxima de 2º ciclo de secundaria		23.14	●
Población con nivel de educación terciaria o superior		50.36	●
ODS5 - Igualdad de género			
Brecha salarial en pensiones		30.93	●
Brecha salarial en asalariados		22.23	●
Violencia y explotación sexual		31.34	●
Violencia de género		113.12	●
Paridad en cargos electos		51.85	●
ODS6 - Agua limpia y saneamiento			
Balance de ingresos y gastos en la gestión de agua		10.51	●
Precio de canon para abastecimiento y saneamiento de agua		4.47	●
Índice de esfuerzo para el pago de abastecimiento de agua		88.40	●
Litros de agua distribuidos por día por habitante		324.84	●
Precio de abastecimiento de agua		9.03	●
Precio de saneamiento de agua		6.98	●
ODS7 - Energía asequible y no contaminante			
Reducción del gasto en alumbrado público respecto a 2014		45.33	●
Impacto del gasto en electricidad sobre la renta media por hogar		2.16	●
Energía renovable		23.62	●
Índice de calidad de suministro		0.36	●
ODS8 - Trabajo decente y crecimiento económico			
Accidentes en el trabajo		3792.20	●
Tasa de desempleo		13.95	●
Impacto del covid19 en el desempleo		16.94	●
Tasa de jóvenes en paro		4.74	●
Parados de larga duración		4.30	●
Índice de dependencia por sector de empleo		2.47	●
Tasa de crecimiento anual del PIB real per cápita		1.83	●
Tasa de crecimiento anual de la productividad		0.41	●
ODS9 - Industria, innovación e infraestructura			
Índice de penetración 3G y 4G		28.23	●
Índice de penetración de banda ancha		10.30	●
Empleados en Industria		4.63	●
Gasto en I+D+i por habitante		4.43	●
Patentes solicitadas		7.76	●
Superficie de suelo prevista para actividades económicas		13.74	●
ODS10 - Reducción de las desigualdades			
Población por debajo de la línea de pobreza		12.20	●
Integración de personas con discapacidad en el trabajo		1.96	●
Extranjeros empleados		33.00	●
Índice Gini		0.48	●
Índice de dependencia		56.76	●
Riqueza en el 1% de la población		10.66	●
ODS11 - Ciudades y comunidades sostenibles			
NO2		24.00	●
O3		29.00	●
PM10		7.00	●
Días en los que la peor estación supera los límites de PM10		31.00	●
Media anual de PM10		22.00	●
Índice de acceso a la vivienda		4.76	●
Plazas en residencias		29.89	●
Resiliencia urbana		0.00	●
Infraestructura de transporte		7.70	●
Vivienda protegida		3.77	●
Vulnerabilidad urbana		6.10	●
ODS12 - Producción y consumo responsables			
Reciclaje de plástico y envases		29.79	●
Residuos impropios		—	●
Reciclaje de papel		19.21	●
Turismo sostenible		1.11	●
Reciclaje de vidrio		15.98	●
ODS13 - Acción por el clima			
Emisiones de CO2 per cápita de edificios e industria		6.19	●
Emisiones de CO2 per cápita		3.06	●
Emisiones de CO2 per cápita de transporte		3.77	●
Pacto de Alcaldes		66.67	●
ODS14 - Vida submarina			
Banderas azules		85.71	●
Calidad de las aguas de baño		100.00	●
Suelo construido en la franja costera de los primeros 500 m		53.35	●
Dominio público marítimo terrestre protegido		0.00	●
Costa y hábitats naturales marinos protegidos		0.00	●
ODS15 - Vida de ecosistemas terrestres			
Territorio y diversidad de hábitats. Cobertura artificial		51.44	●
Protección territorial de espacios naturales protegidos		0.00	●
Territorio y diversidad de hábitats. Zona forestal		28.20	●
Zonas verdes		1.01	●
ODS16 - Paz, justicia e instituciones sólidas			
Tráfico de drogas		10.99	●
Tasa de criminalidad		42.26	●
Tasa de homicidios y asesinatos		0.81	●
Participación electoral		65.83	●
Índice de participación y colaboración ciudadana		66.67	●
Solidez y autonomía de la institución municipal		66.74	●
Índice de transparencia		50.77	●
Índice de transparencia económico-financiera		70.37	●
Violencia a menores (0-13 años)		15.10	●
ODS17 - Alianzas para lograr los objetivos			
Proyectos de cooperación y desarrollo		1.53	●
Índice de Open data		100.00	●
Redes nacionales para lograr objetivos		29.87	●
Zonas blancas		0.14	●

The city of A Coruña has participated in the CN process of training sessions on impact assessment facilitated by WP₁ leaders. Additionally, A Coruña is committed to be one of the cities to take part in the optional second phase, cooperating with the UDC to actually assess the impacts of the NBS exemplar.

We have listed all the strategic goals of our city and selected their bindings to the SDGs. Then we made connections between NBS objectives and actions and finally we have related the NBS actions to the expected results. You can see below the diagram created:



STEP 2 Choosing appropriate indicators

In order to select the right indicators for our city and our exemplar, we have been working with Adina and David and the rest of our colleagues from the UDC, and we have been analysing the data that we already have and the data that we need to collect from scratch.

In terms of environmental indicators, for example the city council has a number of meteorological stations distributed around the city, and we managed to relocate one of them next to one of the urban gardens so this will give us very precise data like air temperature, humidity, wind.

Noise and air quality levels: city council has mathematical models, very accurate. Data available for all the city in real time, we are able to obtain the data for UG quite easily.

Biodiversity: we have a recent map of the city with quite a detailed level of granularity, also accessible in GIS format

The council has a lot of GIS data that is not necessarily organised in a user-friendly way, but we are in contact with the relevant department in order to access this data and include it in our assessment plan

CO₂ capture: estimations based on type of species planted and surfaces

Water absorption capacity – considering implementing low-cost sensors in some of the UG.

For the Health and Wellbeing and Social data, the UDC team has been in contact with schools and gardeners associations to collect data and conduct surveys. This will bring us a lot of valuable data on different indicators, just to name a few: Place attachment, trust in community, prevalence of diseases and levels of mental health and wellbeing.

In terms of economic indicators, we have some data on the number of jobs created by UG, and this is particularly relevant because the city council organised a training course for unemployed people on UG, and also data on new enterprise and SMEs related to the topic.

Finally, we have also a lot of relevant data of the participatory processes that led to the creation of the Urban Gardens.

STEP 3 Developing a data plan for impact evaluation

During the training process we have completed 5 templates that guided us through the steps we must take in order to develop an evaluation plan for our city:

- **Building Block template 1**

In this Building Block we had to design the theory of change in our city, relating the city goals to NBS actions and expected results.

- **Building Block template 2**

To learn how to measure the expected results we selected some of the CN indicators grouped into the 6 following categories: Use, Environmental, Health and Wellbeing, Social Cohesion, Economic, Participatory Planning and Governance.

- **Building Block template 3**

To complete this template we conducted a search to find out if there is a baseline available in the city that allow us to measure the different indicators and the method used to collect those previous data. For the available data we included the source and year of the baseline, the granularity (specifying the level the baseline data refers to: street, district, neighbourhood or the entire city) and periodicity. We also indicated whether new data will be collected for the indicators.

- **Building Block template 4**

Following the CN Indicator's Factsheets we had to select the measurement method to be used for each indicator, detailing the data collection planning.

- **Building Block template 5**

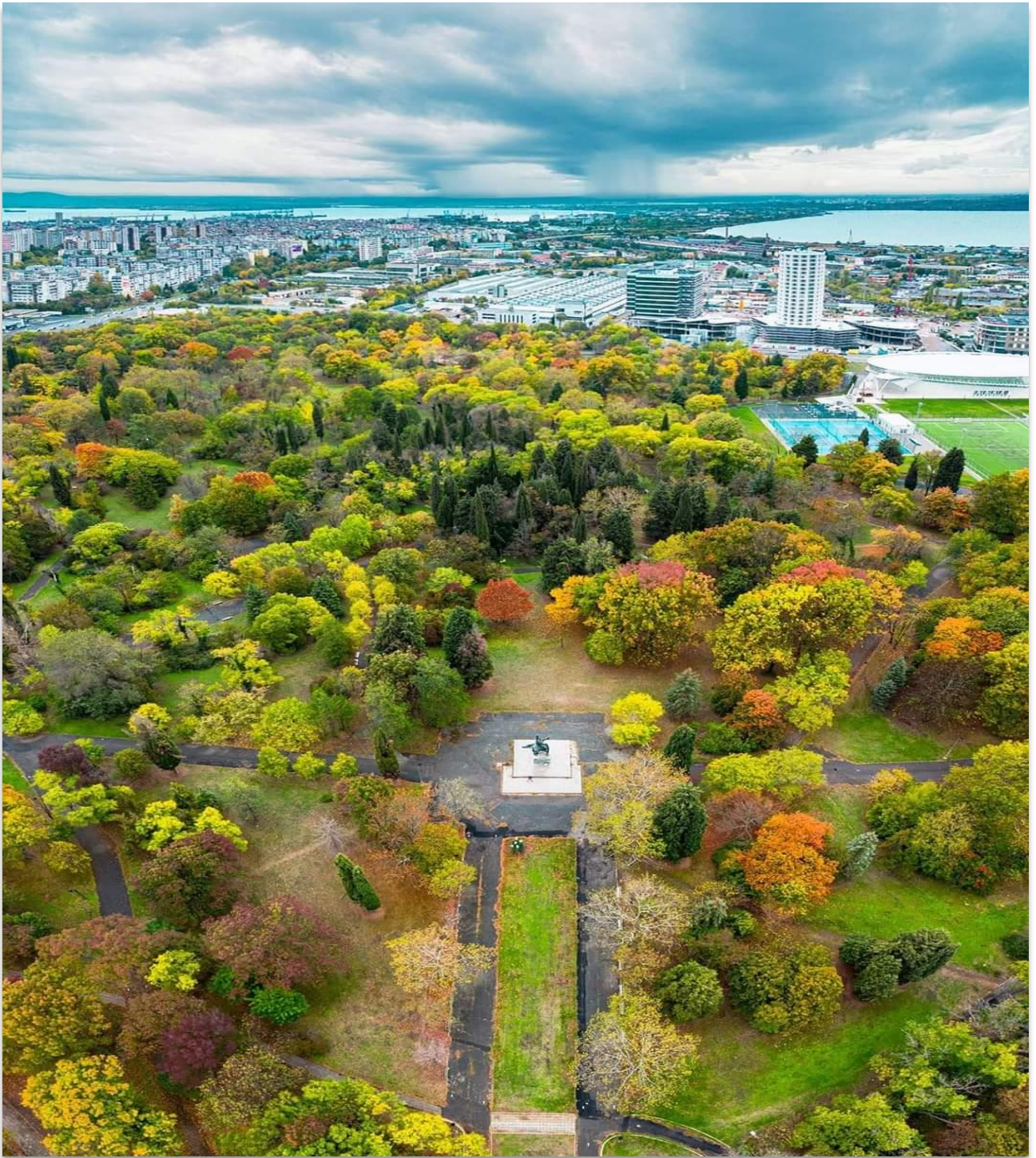
In this template we defined the ideal way to represent the evaluation data of our NBS and indicated to which stakeholders we would disseminate the results we obtained.

STEP 4 Implementing the data plan

Building on the information collected in the templates and the results obtained from the different selected sources, an Impact Assessment Plan tailored to our exemplar and our city context was developed by the UDC team. The detailed choice of indicators can be consulted in this Impact Assessment Plan.

STEP 5 Integrating evidence into the policy process

The indicators monitored and measured will provide very valuable information about the effects of the NBS exemplar, which will be crucial to prove if the expected benefits are actually being delivered. This evidence will be very important to grant the upscaling of NBS solutions in the city and the development of further projects to maximize the observed benefits.



SAINT TRINITY PARK

CITY OF BURGAS

Preface

The development and maintenance of the green system on the territory of the municipality of Burgas is a main task and priority of the local administration. Over the years, most of the main green areas in the city have been renovated, incl. the sea garden, parks in the residential complexes, under construction is a new recreation area connecting the sea garden with Sarafovo residential area.

Along with the reconstruction and improvement of the park spaces, Burgas Municipality is actively working on the maintenance of the urban green system. Periodic inventory of plant species is carried out, and if necessary, old trees, which were found to be unsuitable for the urban environment are replaced with new species.

At the moment, Saint Trinity Park is the only larger park area in the city that is neglected and unable to perform its functions.

With the support of the Connecting Nature project, Burgas Municipality wants to restore the "shine" of the park and during the process (from planning to implementation) the developed Connecting nature framework will be used.

0. CONNECTING NATURE FRAMEWORK

STEP 1. IDENTIFY THE CITY CONTEXT

- What is the status quo of your city with regards to implementation and scaling of nature-based solutions?
- What are challenges and opportunities for implementing and scaling nature-based solutions in your city?

Burgas Municipality is the largest municipality located in southeastern Bulgaria with a territory of 514,362 hectares, representing 0.43% of the country. The municipality is bordered to the east by the Black Sea, to the north - Pomorie Municipality, west - Kameno Municipality and south - Municipality of Sozopol. The Eastern boundary is a prerequisite for the development of port work, fishing, tourism, foreign trade, for concentration of productions and industries that rely on imported materials. Surrounded by three firth lakes - Burgas, Mandra and Atanasovsko and with a width of 10-12.5 km and a water depth of 10-12 m, Burgas bay forms the most extensive part of the Bulgarian Black Sea coastline. The availability of natural resources such as nature reserves, protected areas and natural attractions determine the wide biodiversity in the municipality, which is an important factor and condition for development of tourism and other economic and non-profit activities, stimulating small and medium business and development of the labor market. Due to favorable natural and economic conditions, a significant part of the population and economic potentials are concentrated in Burgas Municipality.

The geographical location of the city greatly influences its development. The Black Sea and the three large lakes on the territory of the city form the Burgas wetlands and logically place the protection of the environment and the development of the green system of the city and the implementation of the NBS among the development priorities. The city of Burgas has a large number and different in size parks and green spaces. Over the years, the administration managed to renovate all major parks in the city, providing safe conditions for recreation, play, entertainment, sports etc. for visitors. Under the pressure of the citizens of Burgas, the local administration pays more and more attention to the green spaces and the implementation of green solutions in the urban environment.

Current state of Nature-based Solutions projects

A number of projects have been implemented on the territory of the city, which can be qualified as nature-based solutions.

EXPO CENTER FLORA BURGAS



Expo Centre FLORA

<http://jessicafund.bg/en/2014/10/02/flora-expo-center/>

<https://www.facebook.com/floraburgas/>

Budget: 1 800 000 euro.

The project is supported by EU Structural Funds (JESSICA- Joint European Support for Sustainable Investment in City Areas, financial instrument) and co- financed by Burgas Municipality;

Beneficiary: The project is implemented and maintained by Burgas Municipality.

Flora Burgas, with its unique location, close to the beach and professional technical equipment is suitable for any kind of event. Exhibitions, congresses, cultural events, museum exhibitions, parties, weddings.

The uniqueness of the Exposition Center unfolds in the innovative "green" and functional design of the building, which achieves optimal area for exhibition and extremely convenient mobility by combining individual halls. Buildings is constructed with green roof and walls, as well as very good insulation materials, and is powered by solar energy.

BURGAS WET LANDS



Burgas Wet Lands

is a complex of closely related coastal lakes, lagoons, salinas, marshes, wet meadows and seashore surrounding the city of Burgas. The large variety of wetland habitats (and also rocky and steppe ones in the vicinity), the position in the middle of one of Europe's busiest migratory flyways, the Via Pontica, and the existence of a system of protected areas turns the area into a unique place. All the main wetlands of the complex are designated as Important Bird Areas (IBAs) of European and Global significance.

Two big projects have been implemented in recent years for protecting the biodiversity and promoting Burgas Lakes as a place for educational and leisure activities.

2.1. Life for the Burgas Lakes - <http://burgaslakes.org/en/>

Budget: 1 775 000, 00 euro.

The project is supported by the financial instrument of the EU LIFE+ Nature and Biodiversity and co-financed by project partners.

Project partners:

Coordinating beneficiary: Bulgarian Society for Protection of Birds;

Associated partners:

- Burgas Municipality;

- „Chernomorski solnitsi” JSC, Burgas;
- BBF (Bulgarian Biodiversity Foundation);
- Royal Society for the Protection of Birds.

Project objectives

- Ensure long term conservation of the protected areas from the ecological network Natura 2000 – “Mandra-Poda”, “Atanasovsko” and “Vaya” lakes which are important for the survival of priority bird species – Dalmatian Pelican, Pygmy Cormorant, Bittern, White-headed Duck and Ferruginous Duck.
- Maintain and enhance feeding, breeding and roosting habitats for priority bird species.
- Reduce the impact of direct and indirect threats on priority bird species.
- Enhance public understanding of and support for the conservation of priority bird species, their habitats and the wider Natura 2000 sites that are crucial for their long-term protection.

As a partner, Burgas Municipality was responsible for promoting the importance of the wetlands among local population and guests of the city, support project implementation with expert advices to what extent foreseen measures are applicable with Bulgarian environmental laws, update the strategic municipal documents with project results and identified measures for protecting and promoting the wetlands.

2.2. Urgent Measures to Restore and Secure Long-term Preservation of the Atanasovsko Lake Coastal Lagoon /Salt of LIFE/

<http://saltoflife.biodiversity.bg/en/>

Budget: 2 013 000, 00 euro.

The project is supported by the EU LIFE+ Programme and co-financed by project partners.

Project partners:

Coordinating beneficiary: Bulgarian Biodiversity Foundation

Associated partners:

- Bulgarian Society for the Protection of Birds;
- Chernomorski solnitsi JSC.

Project objectives:

1. To establish a functional, efficient and sustainable infrastructure for water management and control of the coastal lagoon in Atanasovsko lake. This will provide long-term improvements to habitat conditions and enable adaptation to the effects of climate change including changing rainfall patterns and rises in sea-level.
2. To reduce the impact of direct and indirect threats on Atanasovsko Lake lagoon and its priority bird species by securing sustainable habitat management including improvements to existing and creation of new breeding sites for priority bird species.
3. To monitor and evaluate the effects of the proposed habitat restoration measures on the lagoon, other significant habitats, and Annex 1 bird species during the project and to feed this information into future site management plans.
4. To improve the visitor experience at the site and to disseminate the project results to a wide European audience of site managers, ecologists and the general public.

5. To enhance public understanding of the ecological, economic and social values of the coastal lagoons and raise support for the conservation of priority coastal habitats and bird species.

Although Burgas Municipality was not officially a project partner, it supported its implementation by promoting the project through its various communication channels.

Burgas Municipality supports the implementation of many festivals and events dedicated to the lakes, e.g.:

- Salt Festival - http://saltoflife.biodiversity.bg/en/Salt_Festival-c150
- Conservation Camp - http://saltoflife.biodiversity.bg/en/Conservation_camp-c152
- Half marathon Atanasovsko lake:

<https://www.gotoburgas.com/en/news/view/3/2766>

<http://polumaraton.zelenastrandja.com/index.php>

Many other events are being organized to promote the importance of environmental protection and the great biodiversity surrounding the city of Burgas - http://saltoflife.biodiversity.bg/en/Inspired_by_the_Lake-c161.

SWIMMING POOLS WITH LYE AND HEALING MUD



Burgas Salinas

<https://www.gotoburgas.com/en/places-to-go/view/17>

<http://burgaslakes.org/tour/en/baseini-s-lechebna-kal.html>

The healing mud and lye pools are in the city of Burgas in the south part of the Atanasovsko Lake and are the largest free outdoor “SPA centre” in the country. The mud and lye are acquired sustainable and this does not hurt the lake inhabitants. It is a famous place to visit from May to September, because of the great health benefits.

There are various ways to reach the place- by bike, rollerblades, jogging, walking or use the electric shuttles provided by Burgas Municipality.

Burgas Municipality maintains the infrastructure at the place.

RENOVATION OF SEA PARK BURGAS AND PUBLIC SPACES



Sea Park of Burgas

<https://www.burgas.bg/bg/info/eventdetails/1122/29073>

<https://www.burgas.bg/bg/info/eventdetails/1122/29885>

<https://www.gotoburgas.com/en/places-to-go/view/35>

With the support of EU finds (Operational programme Regional Development) and co-financing by Burgas Municipality, large areas of the city were renovated. Renovated areas include green areas within the city, as well as renovation of the Sea Garden. Within the projects were removed old and dangerous trees and vegetation and replaced by new ones, new lightning and video surveillance were installed, park furniture was replaces, new playgrounds were created etc.

BUS STOPS GREEN ROOFS



Bus stop in Burgas



Bus stop in Burgas

10 bus stops in Burgas have green roofs.

Main urban challenges and opportunities

The main challenges related to the implementation of the NBS at local level are related to:

1. Adequate and qualified maintenance of implemented NBS - maintenance is among the main challenges for the local government. The reasons for this are complex and are related to the lack of a sufficient budget and lack of a sufficient number of specialists with the necessary qualifications and skills to be able to spend enough time on all territories and sites in the city.
2. Municipality is the main driver at local level for NBS implementation. The business, mainly construction companies and investors, are still reserved on investing resources in NBS solutions, because these are additional expenditures. They follow strictly the law, which at the moment permits only small part, based on the entire scope of the investment project, to be dedicated specifically for green areas and green infrastructure.
3. Enough budget for implementation of NBS at a larger scale. It is hard for municipal budget to cover all the demands of the city, This is why, NBS are not yet implemented at a larger scale.

The main advantages for the implementation of the NBS are:

1. Support the conservation and development of existing natural resources.
2. Increase the attractiveness of the urban area and make it unique.
3. Contribute to the adaptation of the urban environment to climate change and the conservation of biodiversity.

STEP 2: DEFINE THE GOALS OF YOUR NATURE-BASED SOLUTIONS

- What (city) goals do you intend to achieve with your exemplar?

Within Connecting Nature park after consultations with municipal departments, stakeholders and project partners, we decided our exemplar to be Park “Saint Trinity”.

Park “Saint Trinity” is one of the biggest parks in Burgas. It is located in the heart of the city in densely populated area. It is surrounded by three neighbourhoods, the biggest hospital in the region and an area, which is of great interest to investors for establishing another neighbourhood with living and office buildings.

Through the development of our exemplar we strive to achieve the following city goals:

1. Improve the process of interaction between local government and stakeholders in planning, implementation and management of high-impact projects.
2. Improve the condition of the green system and green spaces in the city.
3. Strengthen the connections between the separate green spaces on the territory of the city of Burgas.
4. Make NBS an integral part of the implementation of each project in the municipality.

- Describe the main aims, benefits and cobenefits of your exemplar.

Our aims are:

- bring back the popularity of abandoned green space;
- turn the park into a popular place for spending time outside with family and friends;
- keep the feeling of wild nature;
- keep and enrich the biodiversity.

The renovation of “Saint Trinity” park will have multiple benefits, including social, environmental and economic.

Environmental benefits:

The park plays an important role in the green system of the city. As there haven't been any serious infrastructure works on its territory, the vegetation was free to grow and develop. Trees there have a full capacity to purify the air, provide shade and tackle the “heat island” effect, because of the dense infrastructure around the park. The role of the vegetation in the park is also connected with limiting floods, caused by heavy rains. The park is a habitat of different birds and animal species. Through the replacement of ill vegetation, the area will preserve its important environmental role for the city.

Social benefits:

As already mentioned the park is situated in a heavy populated area. Roughly more than 20 000 people are living, working or visiting the institutions and facilities (hospital, offices, shops, sport facility centre) surrounding it.

The park has a great potential to become the favourite place for people. The social benefits from its reconstruction are:

- Place for walks and leisure activities;
- Place for physical activities (yoga, jogging, roller blades, skateboard, street fitness, etc.);

- Educational activities (open classrooms, seminars);
- Recreation and rehabilitation- as park is in close proximity to the largest hospital in the region, its area could turn to a preferred place for visit by patients;
- Religious meetings- within the area of the park, there is an operational church. After the reconstruction of the park, the church could use the territory for different religious and charity initiatives;
- Entertainment- parts of the park will be used for organisation of small festivals, concerts and performances.

Economic benefits:

The economic benefit from the implementation of the planned activities will result in several directions:

- Increase of the price of the property around the park;
- make the territory even more attractive for investors;
- turn the area into a preferred place to live and work;

The increase of private investments in the region will result in more taxes paid to the local authority.

- construct advertising areas around and within the park and rent them to companies;
- rent areas of the park for private events;
- construct small commercial area with small shops and coffees;

These places will be rented and the income will be used for maintaining the park.

- some of the territories of the park will be leased to nature based enterprises. They will have to present a concept for the development of the area they are responsible for and after the approval of the city, implement it. These areas will be demonstration areas of the private companies, where they will have the chance to show to the public, their expertise and innovations. The responsibilities of these companies will be to maintain their areas in perfect condition.

Thus, the local authority will save resources for investment and maintenance, as well as encourage the exposition of unique elements in urban area. Companies will not be allowed to construct heavy infrastructure in the park. They will have to use only natural materials and resources to implement their projects.

- How does the exemplar connect to and deliver on existing urban agendas?

Green areas are in the focus of local administration for years. Saint Trinity Park is the last big urban green area, which is not renovated and is logically considered as a priority project for implementation.

- What makes your nature-based solutions' strategy legally binding, e.g. by connecting it to existing policy plans?

Project is in full compliance with the strategic documents of the local authority:

- Burgas Municipality Development Plan 2014 - 2020 - Plan for integrated development of city of Burgas 2021-2027

The following priorities are immutable part of city's strategic documents:

- Protect the environment and biodiversity;

- Adapt to climate change;
- Establishment and maintenance of the city's green ecosystem.

The exemplar is in full compliance with the above mentioned priorities as it will enrich the green system and contribute to biodiversity and environmental protection, as well as support our efforts to adopt the territory and our lives to climate change.

STEP 3. IDENTIFY YOUR TARGET AUDIENCE AND OTHER RELEVANT ACTORS

- For whom is this document?
- Who has been involved in developing it?
- How did you engage/plan to engage with all quintuple helix actors (see figure to the right) across all of the different elements for your nature-based solutions exemplar? Please explain why you have chosen the actors and how you will engage with them.

In the process of identification and planning of activities to be implemented of our exemplar we identified the following general stakeholders:

1. Students in landscape architecture and urban development.
2. Architectural bureaus.
3. Nature- based enterprises.
4. NGOs.
5. Organisations of people with disabilities.
6. Population of city of Burgas.
7. The owners of a property in the area around the park.
8. The patients of the hospital next to the park.
9. The church.
10. Schools.

As the general concept for Saint Trinity Park was developed in June, we looked once again at our stakeholders and further clarified the exact entities we want to approach. Although we are still in the process of consultations we managed to reach and receive feedback from:

- NGO: Bulgarian Society for Protection of Birds and Biodiversity Foundation. These are two of the most organisations with most expertise in Bulgaria related to protected areas management, biodiversity and environmental protection. They expressed in general their positive statement for foreseen measures and added a few comments which will be taken into consideration during the detailed design of the concept for renovation of the park.



Discussion between experts of Burgas Municipality, Bulgarian Society for Protection of Birds and Biodiversity Foundation about expampler concept.



Discussion between experts of Burgas Municipality, Bulgarian Society for Protection of Birds and Biodiversity Foundation about expampler concept.

The concept is sent via e-mail to:

1. CLUSTER OF INFORMATION AND COMMUNICATION TECHNOLOGIES BURGAS- a cluster of IT companies, which will be of the main users of the open offices which will be placed in Burgas;
2. Union of architects in Burgas
3. Union of landscape architects in Burgas

, so that experts can get familiar with planned activities and measures and face-to-face meeting will be made after that.

On site consultation with citizens are planned as a temporary office will be situated in the park to ask for the opinion of people on planned activities. Info material for the concept are placed in territorial administrations in the neighbourhoods around the park, in order to inform people about the concept for renovation and receive feedback from them.

STEP 4. INTRODUCE YOUR NATURE-BASED SOLUTION EXEMPLAR

Burgas' Exemplar aims at restoring a city park in the centre of the city. Further details are presented below.

1. Technical Solutions

STEP 1: DEFINE THE NATURE-BASED SOLUTION.

Define the nature-based solution • What is the name of the nature-based solution exemplar? • What type(s) of nature-based solution does it include? • Where is the location that the project is being delivered? • What is the size of site? • Give a brief description of the technical design of the project and supplement with plans/images.

Park "St. Trinity" is located in the eastern part of the residential area "Slaveykov" on an area with a size of about 146 decares. From the beginning of the XX to around 1960 the city cemetery is located on this territory. Due to the rapid development of the city, the cemetery was relocated.

This happened in the period 1960 -1975 and after the relocation the park was created in its present form. The orthogonal alley network of the former cemeteries has been completely erased and a new alley network with rich landscaping has been built, in connection with the newly built residential complexes Slaveykov and Zornitsa.

Nowadays, the park "St. Trinity" occupies a central place in the urban territory. The park is surrounded on the north by Lazar Madjarov Street and "Slaveykov", from the east borders the main city arteries, Stefan Stambolov Blvd. and Struga Blvd., behind which are located respectively residential areas "Zornitsa" and "Bratya Miladinovi" and Regional University hospital Burgas. From the south, the BORDERS the railway line Burgas - Pomorie. To the southwest, the park borders Dame Gruev Blvd. and a former industrial zone, which since the late 1990s has developed as a mixed multifunctional zone with the construction of public service facilities, new residential, commercial and business buildings.

In the western part of the park in 2018 opened a swimming sports complex "Park Arena OZK", adapted for international water sports competitions. Despite its relatively central location between large residential complexes, the park is not well integrated into the urban landscape and does not serve as an area for daily recreation and entertainment. To some extent, this is due to the gloomy heritage of the park known by its nickname "Old Cemetery", but to a greater extent the problem is rooted in the outdated park development plan, poor maintenance and poor connections of the park with the residential areas around it. Restrictions for the development of the park in the urban sense are the busy city boulevards and railways- line that frames

the park and makes it difficult for citizens to access. The lack of suitable facilities in the park further aggravates its socialization with residents and guests of the city.

The concept is developed on the basis of an integrated territorial approach, which aims at lasting improvement of the physical and ecological environment of the territory.

The project solution preserves and incorporates the existing elements of the park (Holy Trinity Church, the Horseman Monument, the Old Russian Monument, the Playground and Outdoor Gym for Disadvantaged Children) in terms of composition and materials concept. Based on a comprehensive analysis of the nature and potential of the environment, modern views and new ideas for the development of the park are proposed.

At the same time, an integrated approach of urban regeneration and development is applied on the target area, as the objects of intervention, including additional sites, are united in a single architectural - spatial, thematic and landscape solution and thus emphasizes the identity of the park and its uniqueness, in full in unison with the historical structure and the surrounding sites.

Areas with the following various functions are envisaged in the scope of development:

- outdoor games and entertainment for children and adults;
- designated places for hobby activities, free play and walking of pets, etc .;
- daily sports, jogging, cycling;
- extreme games and rope park;
- areas or places for peaceful recreation and picnic areas;
- area for church and surrounding space / compositionally and volumetrically-spatially connected with the other areas /;
- shared workspace area;
- entrance area and pavilion area, water effect and administration;
- areas with movable objects for coffee and snacks and catering;
- amphitheater area, outdoor stage and cultural orientation;
- Restoration of the central composite axis with colored vegetation and water effect in the area of the Monument "Horseman".

Given the goals for the development of the territory, the design team has developed a concept for reconstruction and improvement of the park, which includes original planning and composition proposals. The application of modern architectural - spatial, compositional and design solutions is envisaged (eg innovative flooring, water effects, elements of urban furniture, landscape thematic groups and recreation areas, plant compositions with interesting plant species and high artistic and aesthetic appearance, etc.) .



Preliminary design for reconstruction of Saint Trinity Park.

Planned premises and areas:

1. Info centre, coffee shop, WC.
2. Work offices.
3. Existing playground for children with special needs and fitness.
4. Rope park
5. Picnic area
6. Education area for road safety
7. Art zone- exhibitions, biennale
8. Amphitheatre
9. Viewing site
10. memorial plaques
11. Holy Trinity Church.
12. Youth open zone
13. Zone for sports, yoga, pilates
14. Children playground /1-3 years , 3-12 years/
15. WC
16. Jogging alley
17. Monument „The Horseman”
18. Flowers installation
19. Water effect
20. Dog walking zone
- food shop

1. Construction and restoration of areas for public recreation, children's and sports grounds, water areas and water effects, toilets, installation of park equipment and other elements of park furniture.

1.1. It is planned to build a water effect in the area of the intersection of Lazar Madjarov Street and Stefan Stambolov Blvd. The situation of the water effect is in the main compositional axis to the "Horseman" monument and focuses on a main visual corridor that is revealed to the transit passengers on the boulevard.



Water effect

1.2. Around the alley network are developed various functional areas - art zone (outdoor exhibitions), bicycle range, playground, lawn for games and picnics, sports and meditation area (yoga, pilates), amphitheater, dog walking area, shared work space in a park environment, youth spaces, a separate jogging alley, a rope park. All areas and activities in the park are conceived and designed in close connection.

1.3. The amphitheater and the viewing platform are positioned in the northeastern part of the park in the area with pronounced displacement, which was used in the design of the facilities.

1.4. Dog walking area equipped with facilities for training pets in the discipline "Agility". Facilities are provided for both small and large breeds, which makes the training ground one of a kind in the city.

1.5. Construction of an area for shared work space with different size and function. With different square footage and orientation, in general they can function as a large office area outdoors, in nature. They can also be divided according to interests and rented and used for events separately. Offices will be for 1, 3 or 5 users and provide high speed internet and energy efficient power supply, as well as modern interior and unobstructed views of the richly landscaped surroundings.



Amphitheatre



Shared work offices



Dog walking area

2. Construction of children playgrounds

Playgrounds require a protective surface material under them to mitigate the risk of children falling. The material chosen for the flooring of the new playground is mulch of coniferous bark - Pine (*Pinus* sp.).

The material consists of well-smoothed pieces to avoid the presence of large and small particles, as well as long, sharp chips. Once laid, this flooring has the ability to self-level when played on. It is recommended to smooth the pavement of the most used places in the playground once a week with a rake.

In practice, the lower 200 mm of a 300 mm layer of granular crust adheres by itself and forms a hard but pliable layer with good drainage properties. The top layer of 50-100 mm remains loose and does not stick. This layer "yields" to pressure, while the lower layer softens the residual impact when falling. In places with increased use, where dents are formed, it is necessary to fill with a paddle about once a month additional material from other places where the wear is not so great. The application of wood mulch includes both a drainage layer and geotextile to prevent the mixing of the bark, which slows down the decomposition and prevents the growth of weeds in the playground. Ready-made wooden elements are used to limit the perimeter of the mulch. The material meets all modern standards of quality and safety for play.

The material from which the children's facilities will be made is natural material: Acacia. The modular design offers progressive levels of difficulty for children over 2 years, as each element of the facilities in the playground is in perfect harmony with the natural environment. The facilities provided include climbing and balancing trails that draw inspiration from nature. The elements are designed for children aged 2 to 10 years to develop their physical and motor skills. When combined together, they form pathways offering different levels of difficulty.

With the provided multiplayer structures, the playground becomes a land of adventure. Gaming houses and balancing paths combine to create structures that encompass all the basic functions of the game, while at the same time fitting perfectly into the environment.

In terms of quality, the white acacia wood is almost without a rival in our country. Significantly superior to oak wood in bending strength, crushing strength, elasticity and hardness. It is extremely durable and resistant to rot, thanks to the wide core, which is tylos, impregnated with antiseptic substances. Over time, it does not lose its mechanical properties, including its elasticity. It has a beautiful texture and it gives very good details

for children's play equipment. The wood can be used for up to 20 years without rot and meets the EN335 standard for durability in operation. The material is extracted from forests of controlled origin and have an FCS certificate.



Children playground



Children playground

3. Construction of new and reconstruction of existing park alleys and approaches, construction of bicycle paths and alleys, including installation of signposts.

Solutions are proposed for the approaches to the park (transport, pedestrian and bicycle connections), related to the nearby residential complexes and sites, including the planned large-scale expansion and overhaul of the Church "St. Trinity. The approaches selected in this way open the park to the residential complexes to the north and east.

The development clearly defines the park alleys by function (main and secondary pedestrian alleys, bicycle alleys, transport access to the park and the parking lot), by type of pavements and by width. The offered materials for the pavements take into account the type of alleys, the way of use and maintenance.

The development is in line with the existing natural footpaths, which have become established over time and have proven their functionality. The pedestrian and bicycle lanes are differentiated and a solution is offered limiting the passage of vehicles and bicycles on the pedestrian lanes. For alleys with mixed type of traffic, horizontal or vertical marking is provided. A scheme for traffic in the park is proposed - pedestrian, bicycle and alley for outdoor jogging. There are bicycle routes for training in road safety, with appropriate marking of the pavement so as not to impede fast connections and pedestrian traffic in the park.

Innovative technologies have been selected for the laying of the main floorings, providing anti-slip, weather-resistant materials, consisting of four components, which are mixed and applied on site. The flooring consists of colored stones and / or marble particles, chemical additives and improvers, pigments, special quartz aggregates, fibers, cement and others. The innovative paving system creates a porous structure that allows excess rainwater to pass through.

For decorative pavement around the main accents in the park (Monument "The Horseman", the Water Effect, Church "Saint Trinity") are selected slabs of natural stone with different texture of the pavement, observing the strict nature of the space.

For the third-level alley network, grass lane pavements are envisaged. The intervention in the area of the Monument "The Horseman" is reduced to the reconstruction of the alley network and repair of compromised sidewalks, without significant deviations from the existing design solution, replacement of power cable network and park lighting, artistic lighting of the monument, equipment with park furniture / benches, trash bins, etc./ and landscape reconstruction.

4. Video surveillance system will be installed on the territory of the park to prevent crime and assure safety to visitors.

5. Free high speed Wi-Fi network will be available in the park.

6. Park equipment and furniture (benches, lighting fixtures, bicycle stands, signposts, waste bins, etc.). The focus will be on "smart equipment" and "intelligent" infrastructure such as: smart bench, smart table, smart pole, information kiosks and other hardware. The park envisages the introduction of a system for separate waste collection.

7. Installation of energy-saving park lighting

It is planned to replace the lighting fixtures, the power supply network and implement energy efficiency measures.

Replacing old luminaires is a necessity for economy. The lighting fixtures will be energy saving LED. Software system managing the level of illumination according to the passengers in the park, intensity of daylight will contribute additionally for energy saving. Wherever possible street lights will be powered with solar energy. The park lighting will be energy saving and at the same time, will provide a variety of colors, RGB variability, easy dimmability and transition from one color temperature to another. This additional functionality of the outdoor lighting allows to decorate the park environment by adopting a unified design solution based on aesthetic and economic principles.

8. Construction of automated irrigation system

An automated irrigation system is envisaged, which will be supplied with water from a drilling well, after research and proposal of a possibility for construction. Irrigation with automated irrigation systems is the only applicable and possible approach that can be considered, planned and applied in the maintenance of

green and flower areas in a park environment. The overall benefits of applying this type of irrigation are indisputable - saving valuable human resources as a result of reducing the use of manual labor; reduced water consumption costs and higher irrigation efficiency, ie. improving the conditions for vegetation development, due to the possibility to regulate the duration and frequency of watering; better overall vision of the landscape, due to the possibilities for unobtrusive placement of irrigation systems; in the long run and more comprehensive perspective this type of irrigation is significantly more environmentally friendly, due to saving of natural and economic resources.

Irrigation system allows irrigation on a precise schedule and with a very precise duration, providing a number of advantages: 100% automation of watering, by connecting to a programmer with pre-set programs; Dividing the irrigation area into zones so as to ensure approximately the same amount of water in each of them; Lower water consumption and more control compared to manual watering; easy maintenance; Optimal watering of the plants - in the early and / or late hours and with a duration precisely determined up to a minute, which guarantees the maintenance of the optimal maximum field moisture capacity.

With the help of automated underground irrigation systems intelligent and economical watering of green areas is achieved. The automated watering system ensures: Optimal water regime for all plants in the park; Optimized water consumption; Time saving.

9. Vegetation

The new plant species, trees, shrubs and perennial flowers have a decorative effect in all seasons and are suitable for the region. New deciduous and coniferous trees, shrubs, flowers and ornamental grasses will be imported, in accordance with the climatic conditions of the region. Along with the enrichment of the park environment with new vegetation, the following activities are planned:

- Improving the condition of the existing tree and bush vegetation;
- Removal of dry and dangerous trees and coppice vegetation;
- Complementing the existing tree and shrub groups with interesting and diverse species;
- Stress on solitary woody plants that have a beautiful common habit and dominate the space. Highlight with park lighting.

9.1. Tree vegetation. Apart from being functional, the ecological role of woody vegetation is indispensable, as these plantations help to create and maintain conditions for a normal and healthy living environment, by providing shade, thermal insulation, protection from moisture and wind, improving air quality, reducing noise, increasing humidity and reducing surface runoff. The main principle of the concept is the preservation of the available tree vegetation to the maximum extent.

9.2. Overgrazing with grass mixture. The main planar vegetative element in the park spaces and the main background for all plant, sculptural or architectural volumes in the park environment are the lawns, which usually occupy large spaces. With the variety of shades of green, they create the feeling of space and tranquility of visitors in parks and gardens. Along with their aesthetic purpose and psychological impact, lawns have anti-erosion and strengthening effect on soil layers, reduce the spread of noise, affect the microclimate through their dust-retaining and moisture-retaining ability, support the creation of a healthy living environment through phytoncide radiation, sports, walks and rest. It is necessary to reconsider their current categorization, which will help optimize the technology for care (mowing, watering, fertilizing, weeding, treatment with fertilizers, aeration, verticutting, rolling, etc.), as well as their need for reconstruction. Restoration of lawns through partial or complete repairs should be carried out by appropriate methods (manual sowing, hydroseeding, mulching) and with appropriate grass mixtures at the appropriate sowing rate, which are consistent with the different purpose of the lawns - representative, ordinary, sports, industrial, peripheral, etc.

9.3. Implementation of flower areas. The use of flowers in green areas as an element of their overall composition increases the aesthetic impact they give to the urban environment and makes them an expected element of parks, gardens and other open urban spaces. The flowers are used to build various color figures and compositions, and their main distinguishing feature is the colorful accent, which is imported into the

park environment. Through the individual set of qualities and properties of each individual plant, connected in unity with the others in the flower composition, a complex impact is achieved in the open park spaces. Due to the strong effect of these compositions, it is extremely important that they be an integral element of the sustainable development of the modern urban environment, through proper scaling in space, achieving thematic unity with the environment and proper selection of decorative flowers sufficiently resistant to the city environment. Flowers are the most dynamic of all elements of the green system, which is due to the shorter lifespan, the rapid change of volume and color during the growing season, easy and fast change of plant species and types of flower arrangements, the rich variety of species and varietal composition.

Nature based approach –Biodiversity

In the design was paid special attention to the development and enrichment of the park fauna through various design solutions. The emotional impact of the fauna on humans is of great importance and therefore its preservation is of utmost importance.

Specifically in the park environment of park "St. Trinity ", the number of birds in the biotope is influenced by many factors. In general, it can be stated that it is directly proportional to the plant mass in it, as it primarily determines the nesting conditions and the amount of natural food. In the park the total plant mass is influenced primarily by the species composition, age and number of levels of the plantations. Factors that directly or indirectly affect the number of birds also intervene in the settlements. The most significant of these are the degree of air and vegetation leaf surface pollution, the noise of vehicles and the proximity of humans, which is associated with disturbance and in many cases the destruction of bird nests by domestic animals and children. It should be noted that the urbanization of the environment affects not only the quantity but also the species composition of birds. Some birds get used to the proximity of humans and their density in the "urban" environment is several times higher than in other habitats (dove, Common blackbird, great spotted woodpecker, Eurasian jay, goldfinch, starling, etc.).

Other species that until a few decades ago avoided the proximity of man are now his companions (European turtle dove, Common wood pigeon, Common swift, Alpine swift, European green woodpecker, Song thrush etc.).

There is the opposite phenomenon, many species of birds began to withdraw from the settlements (white and black storks, European nightjar, White-throated dipper, barn swallow etc.). The reasons for this are the changes in the biotopes and the presence of the basic natural food for the birds in them.

Due to the active economic activity of man in their natural biotopes, as well as the creation of artificial biotopes suitable for their life in the settlements (parks and gardens), it is necessary to strengthen the measures for the protection and attraction of useful birds in them.

The total plant mass in the biotope also determines the quantities of birds in it, therefore the task set by the designer to improve the nesting and feeding conditions for birds is to provide more plant mass. It should be noted that this is not just about increasing the density of a particular level (grass, shrub or tree), but about the overall volume solution of space in the park at a height of 10-15m. In determining this height, the height at which birds nest is taken into account. This requires special attention to be paid on the area of up to 2-3 meters in height, where many of songbirds prefer to nest (great tit, nightingales, Fringilla, bunting, thrush, wren, etc.). There is a very good opportunity, along with the improvement of the nesting conditions, to solve the issue of the food base. For this purpose, fruit-bearing ornamental shrub species, fruits and seeds, on which the birds willingly eat, should be used as a ground floor.

The main measures and considerations that are taken into account in landscaping and park management, according to the above general requirements, include improvement of the composition and structure of the green areas in the park.

The tree species and in general the composition of the green system in the settlement is essential for the presence in them of one or another species of birds. Many species inhabit deciduous and mixed forests, but there are species that are found in pure coniferous forests. Some birds are even attached to a particular tree or shrub species that serves as their main food at different times of the year.

The choice of ornamental tree and shrub species in landscaping is of a primary importance. Undoubtedly the main thing here are the aesthetic criteria in the overall solution of the park space. However, it is possible to enrich the species diversity of the vegetation in the park with some fruit-bearing ornamental tree and shrub species to attract more birds, which will increase its aesthetic value many times over. For this purpose, it is planned to plant new tree and shrub species of *Caragana arborescens*, *Prunus padus* and more specimens of the species *Prunus avium*, *Betula pendula*, *Fraxinus* sp., *Acer campestre*, *Ligustrum ovalifolium* and *Sorbus aucuparia*, which is planted in many places in the park "St. Trinity" and serves as food for its inhabitants.

Increase of plants age contributes to the development of rich grass and shrub vegetation, which increases the total plant mass in the park. Therefore, as the age of the plantation increases, the living conditions of the birds improve and their species composition increases. Many new species are also housed on the ground floor, whereas previously nesting was only possible in the crowns of the big trees. With increasing age, the living conditions of birds also improve. This is mainly due to the growth of crowns, which offer significantly greater nesting opportunities. If there is no terrestrial vegetation, the species composition here is limited only to birds nesting in the crowns of trees.

From what has been said so far, it is clear that in fact the greatest reserve for increasing the density of birds are multi-level plantations. This creates an opportunity for many species of birds to nest from the ground to the highest parts of the trees.

In the park an important condition for increasing the number of birds is the mosaic distribution of the individual levels of the vegetation, as well as its separation from alleys, playgrounds, meadows, etc. This significantly increases the park's ledge, where most birds prefer to nest and forage. In places where open spaces are significantly more, this problem does not exist. Here, however, the density of shrub vegetation that birds use for shelter and nesting is often insufficient. This issue will be successfully solved by building hedges, where aesthetic requirements allow. A well-maintained and often pruned hedge is an excellent refuge for small songbirds (sparrow, nightingale, blackbird, etc.). In these shelters, in suitable places, some of the branches are tied or pruned so as to form rosettes in which the nightingale, the red-backed shrike, the nutcracker, the songbird and other birds build their nests.

The improvement of the nesting conditions and the food base in the biotope attracts not only the open-nesting, but also the hollow-nesting birds, which stay for the good shelters and the rich food and build nests in the hollows of the trees.

In the summer in the park the birds do not always have access to drinking water. In many cases, despite the other good conditions that the park offers for living, this is the only reason why birds do not inhabit these areas. To avoid this, enough drinking spots are planned in suitable places in the park, in quieter areas and open places where the birds have a wide view.

At the moment there are no mammals in the park areas of the park "St. Trinity. The main species that can be attracted is the squirrel, and for this purpose it is necessary to provide suitable habitats for the species. Measures to ensure the successful breeding and protection of this species of mammal in park areas include determining the species composition and quantity in the park, improving artificial living conditions. The planting of tree species of the *Quercus* sp., *Pinus* sp., *Picea* sp., *Corylus* sp., *Juglans regia* will provide a favorable environment for the development and reproduction of this species of mammals. .

The introduction of new ornamental plant species with beautiful flowering and edible fruits will also contribute to attracting bees and other pollinating insects.

STEP 2: DEVELOP AN UNDERSTANDING OF THE LANDSCAPE CONTEXT AND THE ECOSYSTEM SERVICE NEEDS

Develop an understanding of the landscape context and ecosystem services needs Landscape scale: • What is the broad landscape context (e.g. watershed, ecosystems, geology of the peri-urban and rural areas surrounding the city)? • What challenges does the broad landscape face (environmental, social, economic)? City scale: • What is the city landscape context (e.g. watershed, ecosystems, geology)? • What challenges does the city face as a whole (environmental, social, economic)? Local scale: • What is the local landscape context of the site of the nature-based solution exemplar (e.g. watershed, ecosystems, geology)? • What are the needs of the locality of the nature-based solution exemplar (e.g. what are the environmental, social, economic needs)? Exemplars that cover multiple local scales: • If your exemplar is being delivered across multiple local scales, how does your technical design balance variation across local scales (in terms of variation in social, economic, and environmental needs of place)? • How does the technical design improve biodiversity and ecological connectivity in relation to local habitats/city-wide connectivity strategies/the broader landscape across the multiple local scales?

The analysis of the condition of the territory and the existing technical infrastructure determines the prerequisites for future upgrading and development of the area.

Field characteristics. The relief configuration of the park is flat, with a small displacement on the east side of the park, connection with Struga Blvd., which makes it suitable for the development of different function areas related to passive recreation, entertainment and social contacts. Most of the terrains are not leveled, which hinders their quality maintenance and are full of self-settled wood and shrub vegetation, household and organic waste, which requires gradual steps to make them look good and safe for residents, which at the same time will improve the conditions and facilitate their maintenance.

Alley network. The existing alley network is poorly developed and consists of:

- Main ground pedestrian approach to the Horseman monument from the intersection of Stefan Stambolov Blvd. and Lazar Madjarov Str.;
- Quick access to the public transport stop and University hospital Burgas, through an underpass on Stefan Stambolov Blvd.;
- Pedestrian access to Church "St. Trinity ";
- Natural pedestrian alleys, established over time and paved by people.

The existing alley network is currently depreciated, which hinders access and attendance. With the exception of the alleys in the northern part of the park, which are used for connection between the residential area Slaveykov and the bus stop on Stefan Stambolov Blvd., the alley network is chaotic, without clear connections and accents.

Existing vegetation. The existing large-sized tree vegetation is over 40 years old. The predominant existing vegetation is represented mainly by deciduous species: *Acer platanoides*, *Acer pseudoplatanus*, *Acer campestre*, *Fraxinus excelsior*, *Fraxinus ornus*, *Robinia pseudoacacia*, *Sophora japonica*, *Tilia* sp., *Platanus orientalis*, *Ulmus* sp., *Celtis australis*, *Quercus rubra*, *Sorbus torminalis*, *Sorbus aucuparia*, *Catalpa* sp., *Aesculus hippocastanum*, *Betula pendula*, *Cercis siliquastrum*, etc. Of the coniferous trees predominate *Cupressus sempervirens*, *Thuja orientalis*, *Cedrus* sp., *Taxus baccata*, *Picea abies*, *Picea pungens*, *Abies* sp., *Juniperus virginiana* and others.

The following negative trends have been observed in the last few decades:

- lack of systematic care, turning green areas into those with overgrown vegetation, unattractive to use and practically unusable;
- lack of measures regarding the overall development of the park, as well as planning and synchronization in the maintenance of green areas;
- Lack of variability and innovative solutions in the planning and implementation of specific measures for landscaping of the park, due to the outflow of specialists specialized in the development of green infrastructure in general;
- depreciated recreation infrastructure with a clear need for constant commitment to its maintenance and renovation;
- Lack of a comprehensive digital information base, including geo-based, for green areas, their elements and their characteristics, which would provide correct, complete and with the ability to filter, analyze and update information for professional and public use;
- reduction of the volume of the types of works necessary for the maintenance of the green areas, due to lack of financial resources;
- Insufficient resources and inconsistency of efforts, which leads to unsatisfactory general condition of green infrastructure, which reflects on the other elements of the development of the urban environment.

DIAGNOSIS. MAIN PROBLEMS

Despite its central location between large residential complexes, the park is not well integrated into the urban landscape and does not serve as an area for daily recreation and entertainment. To some extent, this is due to the gloomy heritage of the park known by its nickname "Old Cemetery", but to a greater extent the problem is rooted in the outdated park development plan, poor maintenance and poor connections of the park with the residential areas around it. Restricters for the development of the park in the urban sense are the busy city boulevards and railways, the line that frames the park and makes it difficult for citizens to access. The lack of suitable "anchors" in the park further aggravates its socialization with residents and guests of the city.

After the detailed research and analysis of the territory, the main problems of the park stand out, which should be addressed with the present development:

- Bad reputation in the territory
- Weak connection with the residential areas located north and east of the park (Zornitsa and Bratya Miladinovi)
- Deteriorated condition of the existing park infrastructure - depreciated and not well developed alley network, depreciated park furniture, poor condition of the landscaped terrains, grass, bush and tree vegetation.
- Lack of attractive architectural and landscape environment to attract and retain visitors to the park
- Poor provision with technical infrastructure - lack of irrigation system for maintenance of green areas and site sewerage for sewage, compromised park lighting and insufficient power of the existing electricity supply

At the same time, regardless of the current state of the park, it is visited daily by residents of surrounding residential neighborhoods of all ages, which is proof that the location of the park favors the creation and maintenance of high quality park environment and achieving sustainable functional connection of the natural and planned elements of the green system, so that the functioning of the green infrastructure provides multifaceted benefits for people and continuously improves the quality of life, while preserving and developing the benefits of the existing environment.

Along with the general zoning, the exemplar needs to offer a solution to the engineering infrastructure of the territory as a whole. It is important to solve and categorize the main approaches and alley routes that form the backbone of the park composition. Measures should be provided to attract visitors by providing

opportunities for recreation and entertainment of different social groups - children and young people, mothers with young children, the elderly and disadvantaged people. To effectively cover the entire range of functions, with even structuring and loading of the areas for passive and active recreation in the park.

FORECAST FOR DEVELOPMENT AND PURPOSE OF THE INTERVENTION

After analyzing the main problems of the developed area and making diagnosis, the improvement of the physical environment stands out as a main priority for future development of the park. The project intervention should justify measures that will increase the perception of the comfort of living in the park space, increase attendance and increase the importance of the park for local citizens and guests of the city, for social and cultural life, to improve the image of the park and its transformation into an attractive area for different age groups.

Specific objectives to be achieved:

- Creation of shared public spaces and implementation of innovative solutions to improve the physical environment of the park.
- Creating conditions for the integration of disadvantaged groups
- Preserve and enrich the biodiversity in the park;
- Increasing the safety and security of the park environment;
- Creating a renewed urban environment by introducing innovative "Smart City" solutions;
- Digitization of the information about the reconstructed territory and its publication in the existing integrated intelligent systems of the municipality of Burgas (GIS Burgas, Smart Burgas, VR Burgas and others) for use by experts and citizens, through provided public access. Digital marketing, as an innovative approach, would strengthen the public interest in the territory and the new social functions in the areas of intervention.

STEP 3: FEED UNDERSTANDING INTO DESIGN, DELIVERY, AND STEWARDSHIP.

Embedding multiple functions into the planning, delivery and stewardship of the nature-based solution • How are you targeting benefits, co-benefits and trade-offs related to the landscape/city/local scale through the nature-based solution exemplar technical design? • How are you managing the transition from technical planning to technical delivery of the nature-based solution?

The concept for renovation of Saint Trinity Park is developed by municipal specialists with the necessary qualifications and experience. This approach was chosen because the park is municipal property and the local administration has all the information about the site, incl. condition of the infrastructure, underground communications, assessment of the health of the vegetation, as well as deep knowledge of the problems of the area due to the maintenance it provides over the years, as well as the signals and complaints received from citizens about the unsatisfactory condition of the park.

The concept for development of the area is based not only on its social functions, but also environmental and economic requirements. Of vital importance is the requirement that the reconstruction and improvement of space must be performed in a way that not only to preserves but also enriches biodiversity. Another basic principle that is advocated is the economic viability of the site, providing an opportunity for the site to generate revenue to support subsequent maintenance.

The park is included in the Plan for integrated development of the city of Burgas for the period 2021-2027. This is the main strategic document for the development of Burgas Municipality in the next 7 years. The sites and project included in it will be financed under the European Regional Development Fund, through the Regional Development Program 2021-2027, financial instruments and own funds of Burgas Municipality.

STEP 4: ITERATIVE MONITORING AND EVALUATION

Monitoring and evaluation Stewardship management • How was a stewardship plan developed for managing and maintaining the nature-based solution? • What technical and operational tools are needed/being used for stewardship management? • Who is delivering the exemplar stewardship management? • Was there an appropriate skillset available for such management or was a training/apprenticeship scheme needed? If so, how was this established? • Were local residents involved in maintenance through employment/ enterprise opportunities or volunteer friends of/stewardship schemes? If so, how were these schemes established? Provision of benefits • How are benefits expected to change over time? • How is monitoring being used to inform management to ensure that technical performance is retained/enhanced? • How flexible is the nature-based solution management to future demands? How was flexibility built into the design of the naturebased solution? • Are any mechanisms in place to change the design if the expected benefits are not delivered?

During the physical implementation of all municipal projects constant construction, investment and author's supervision is applies, which ensures that the activities provided for in the technical design are performed correctly and qualitatively. In case it is determined that some of the envisaged design solutions are not suitable for implementation, there is a possibility for their change / replacement after consent of the interested parties, incl. investor, designer and construction supervision.

Burgas Municipality is responsible for the management and maintenance of the parks on the territory of the city. It will continue to be responsible for the management and administration of the Saint Trinity Park after the renovation.

On the other hand, the local administration actively partners with representatives of cultural, sports, educational and other institutions in organizing joint events. This approach of work will continue to be applied and upgraded in the organization and holding of various events and initiatives in the park.

2. Governance

Step 1: Aligning NBS with the wider goals of Burgas

Burgas Municipality has two strategic documents that define the priorities for the development of the city in the last 15 years:

1. Plan for Development of Burgas Municipality 2014-2021 (<https://www.burgas.bg/uploads/posts/2019/433c86a046c569491a6321fb8fa19714.pdf>)

2. Integrated Development Plan of Burgas Municipality 2021-2027

In both plans, the sustainable development and environmental protection are among the strategic aims for the development of the city.

1. Plan for Development of Burgas Municipality 2014-2021

Strategic goal 1. Achieving sustainable development on the territory of the municipality and preserving the environment focusing towards infrastructural connectivity, renovation and public works for improving the living environment.

The Municipal Development Plan of Burgas Municipality 2014-2020 has four priorities that address the challenges and needs of the citizens, business and administration of Burgas municipality and support the strategic goals:

ENVIRONMENT:

This priority comes from the understanding that growth and economic development in the long run can happen only if the sustainable development principles are observed.

2. Integrated Development Plan of Burgas Municipality 2021-2027

The strategic framework of the Plan for Integrated Regional Development of Burgas Municipality for the period 2021-2027 has been developed in order to provide the necessary conditions for balanced and integrated territorial development of the municipality. On the one hand, it is aimed at mobilizing the resources and potentials of the territory and effective use of available opportunities, and on the other - to adequately address the main problems of the municipality, which have a negative, restraining or limiting impact on development.

VISION for development of the municipality of Burgas - 2021-2027

Burgas - an attractive place to live and do business, effectively using its potential for balanced and sustainable development, with preserved local identity and access to a modern, resource efficient, climate adaptive and competitive economy, providing smart economic growth, spatial connectivity and access to services.

Strategic goal 4. Sustainable use of the natural resource potential of the municipality and adaptation of its territory to the challenges of climate change.

Priority 6. Burgas is adapting. Sustainable management of natural and urban ecosystems.

Measure 6.3. Preservation and increase of natural capital, including through quality ecosystem services for the local community

Activities related to the maintenance and restoration of natural habitats in the periphery of water bodies - rivers and lakes, to restore the regulatory role of aquatic ecosystems, protection and restoration of biological diversity in the municipality. Particular emphasis is placed on the protection and restoration of the marine environment and the complex of wetlands, which determine the specifics of the municipal territory and the need to apply an ecosystem approach.

Measure 6.4. Climate change adaptation, prevention and risk management.

The measure covers a set of investments related to aspects of the urban environment that have the potential to reduce vulnerability to climate change:

- Development and improvement of the quality of the components of the green system on the territory of the municipality, incl. public recreation areas and green areas

The plan identifies several functionally integrated investments related to the reconstruction and renovation of public spaces on the territory of large residential complexes "Slaveykov", residential complex Zornitsa, residential complex Izgrev: territories for trade and social activities, public spaces for wide public access in the city of Burgas and the settlements (**Saint Trinity Park**, Slaveykov Park, Veleka Park, Ezero Park, Mineralni bani park), renovation and landscaping of inner neighborhood spaces, renovation of green areas for wide public access in the neighborhoods of Burgas, Balgarovo and the villages of Burgas municipality, public spaces and multifunctional areas (markets). The investments are also aimed at introducing measures to increase security, build a unified system of green corridors and create a sustainable, aesthetically sustainable and accessible environment for all.

Both strategic documents during their development go through wide public discussions, as the consultations are open and anyone can participate in them and give their opinion and suggestions.

At the same time, everyone is given the opportunity to send their suggestions by e-mail or through a specially developed mobile application.

The discussions covered the widest possible range of representatives of all stakeholders at local level (citizens, NGOs, business, educational, cultural and social sector, healthcare, sports, state institutions, etc.).

The open planning process is a prerequisite that the goals, priorities and measures set in the strategic documents of Burgas Municipality reflect the views and opinions of stakeholders.

It is evident that all stakeholders at local level are well aware of the importance of the NBS as a useful tool for achieving the set goals for the development of the municipality related to:

- achieving sustainable and balanced development of the urban environment and peripheral territories;
- mitigation of the negative impact of the urban territory on human health due to deterioration of air quality, noise pollution, floods, formation of heat islands, etc.
- Preservation and development of biological diversity and natural resources on the territory of the municipality.

STEP 2: CURRENT STATUS OF THE LOCATION

Park Saint Trinity is owned, maintained and managed by Burgas Municipality. After its renovation the property of the space will remain municipal.

STEP 3: REQUIRED PARTNERS

1. Population living in close proximity to the park.
2. The owners of a property in the area around the park.
3. The patients of the hospital next to the park.
4. Existing church within the park.
5. Students in landscape architecture and urban development.
6. Associations of architects and landscape architects.
7. Nature- based enterprises.
8. NGOs (environmental, social, cultural).
9. Organisations of people with disabilities.
10. Schools.
11. Sports clubs.

Representative of the above stated partners were included in the process of development of Integrated Development Plan of Burgas Municipality 2021-2027.

At the moment Burgas Municipality is making individual consultations with each of the partners for discussing the concept for development of Park Saint Trinity. The feedback is analysed by the experts in the

administration who developed the concept and will be taken into consideration when developing the detailed concept for the park renovation.

STEP 4: COLLABORATIVE GOVERNANCE FRAMEWORK

Over the years, Burgas Municipality has been responsible for the maintenance and management of green spaces in the city. At the moment, no specific solution has been identified for changing this model.

On the other hand, the local administration has good relations with its partners in conducting joint initiatives. In the parks of Burgas almost throughout the whole year are held a huge number of events of various kinds, aimed at people of different ages and interests. Saint Trinity Park due to its extremely favorable location and relatively large size has the potential to become one of the most popular places within the city to visit. The employees of the Departments of Tourism, Culture and Sports, in close cooperation with representatives of the stakeholders, prepare a calendar of events at the beginning of the year, when the municipal budget is prepared and adopted, which allows better management and maintenance of the individual territories.

STEP 5: WHAT IS NEEDED FOR SUCCESS

Project management team applied a strategy to involve as much as possible colleagues from other departments in the municipality and especially the ones who are responsible for the physical implementation of the investment project of the municipality.

For this reason, it was decided that the concept for the development of Saint Trinity Park should be developed by a team of specialists working in Burgas Municipality. The reasons for this decision were several:

1. Taking into account the fact that the park owned by the municipality and local administration is responsible for its maintenance and management over the years, municipal experts know best the problems of the territory and having all the existing information to serve as a basis for preparing the concept. .
2. The Municipality of Burgas has the experience, contacts and communication channels and tools to attract the widest possible range of stakeholders. Taking into account the fact that the local administration will be the investor in the project, we thought that it would be most appropriate for us to be responsible for the development and discussion of the concept for renovation of the park.
3. The involvement of municipal experts into the design phase, who are directly responsible for the implementation of the investment projects after that is a good precondition, Saint Trinity Park to be included among the priority projects for the implementation of the local administration.

3. Finance – Business Models

STEP 1: LESSONS LEARNED FROM HOW NATURE-BASED SOLUTIONS HAVE BEEN FINANCED IN BURGAS TO DATE

The main lesson we have learned from the implementation of projects with NBS so far is that it is necessary to build additional capacity of the responsible experts, as well as to plan a larger amount of funds to effectively maintain the already completed projects.

Unfortunately, our experience so far shows that due to poor planning and implementation (selection of materials, plants, etc. of lower quality) or lack of sufficient number of experts, qualification of experts and financial resources for maintenance, part of the NBS projects implemented so far (green walls and roofs, as well as some green corridors) are in very poor condition.

Despite the undeniable benefits of the implementation of NBS, we are well aware of the fact that there is still a lack of sufficient capacity and expertise in the local administration for adequate planning and maintenance of these projects.

STEP 2: EXPLORE OPPORTUNITIES FOR INNOVATION IN FINANCING, GOVERNANCE AND BUSINESS MODELS.

Saint Trinity Park is included in the Plan for Development of Burgas Municipality 2014-2021, which ensures that it is among the priority sites of the city and will be funded in the coming years. The sites included in the plan will be financed by the European Regional Development Fund (ERDF) through the Regional Development Program 2021-2027, Priority 1 Integrated Urban Development, bank loans (mainly Flag Fund and Sustainable Development Fund) and own funds of the municipality.

This is the traditional approach that the local administration applies (use of a combination of financing resources- European funds, low interest loans and own financing) in the implementation of its investment program.

This way of financing puts under great and constant pressure the city budget.

It is necessary to attract private investment in the implementation of public projects, which would ease the local budget and contribute to increasing the number and reducing the time for their implementation.

Unfortunately, there are still very few examples in Bulgaria of successful public and private partnership in the implementation of large public projects.

The approach that we intend to apply in the reconstruction of Holy Trinity Park is that the city will implement the main part of the reconstruction itself, incl. replacement and reconstruction of underground infrastructure, renovation of alleys, replacement of lighting, construction of irrigation systems, etc. We will try to attract private investors in the implementation of landscaping activities in the park, where specialized companies have more expertise than the municipality, parts of the park will be given to landscaping companies to serve as their advertising space, and their responsibilities will be related to the implementation and maintenance of attractive green spaces, consistent with the concept of park development.

STEP 3: PLANNING THE FINANCING AND BUSINESS MODEL OF CONNECTING NATURE NBS EXEMPLARS

Saint Trinity Park is included in the Plan for Development of Burgas Municipality 2014-2021, which ensures that it is among the priority sites of the city and will be funded in the coming years. The sites included in the plan will be financed by the European Regional Development Fund (ERDF) through the Regional Development Program 2021-2027, Priority 1 Integrated Urban Development, bank loans (mainly Flag Fund and Sustainable Development Fund) and own funds of the Municipality Burgas.

STEP 4: IMPLEMENTATION OF FINANCING AND BUSINESS MODEL PLANS FOR NBS EXEMPLAR

The call for project proposals is expected to be opened in the second half of 2022 or early 2023, and the Burgas will prepare an integrated project to apply with, part of which will be the Holy Trinity Park.

4. Nature-based entrepreneurship

STEP 1: AWARENESS AND STRATEGIC ALIGNMENT

In the middle of the 20th century, the city of Burgas formed its economic profile as a highly industrialized city with leading enterprises in the oil refining industry and machine building. There is a good transport connection (sea, rail, air and land transport), which serves commercial enterprises.

After the changes in the 90s and the fall of the communist regime in Bulgaria, most of the enterprises were closed, but the main and most important ones for the region and the country remained functioning (- LUKOIL Neftohim Burgas Ltd., the largest oil refining enterprise on the Balkan peninsula. Major supplier of fuels for the domestic market of the Republic of Bulgaria; - Burgas Sea Port; - Burgas Railway Company; - Burgas Airport).

Despite the high added value of these enterprises for the country's economy, they have a significant impact on the environment and biodiversity in the region (mainly LUKOIL Neftohim Burgas Ltd.).

At the beginning of the 21st century, the city's economic priorities are changing as it attempts to attract companies involved in research and innovation and computer technology. The results of these efforts could be seen in the last 10 years, as Burgas has become a preferred place for many IT companies, and local universities are successfully developing research by attracting international companies such as Procter & Gamble. Head of the Laboratory of Mathematical Chemistry (LMH) at the University "Prof. Dr. Assen Zlatarov" has been awarded many times with the highest international awards and degrees for his global contribution to science (Lush Award for Science, QSAR 2021 Lifetime Achievement Award, etc.).

Currently, Burgas Municipality is actively working to attract companies that create products with high added value and at the same time do not have a negative impact on the environment (IT companies, computer modeling, production of renewable energy systems, production of electrical components and processors, etc.). These ambitions of the local administration are in line with the requirements of the present and with a view to the future.

The implementation of the NBS and the protection of the environment and biodiversity are directly related. In the digital era we are living, the need to provide a physical workplace for employees is greatly decreasing. The workplace is the laptop and the phone and is in no way limited by city, building and office. This trend for distant work has become normal in the current times of the Covid pandemic and has become a global trend for employers and employees. For this reason, as well as the strong competition among employers to attract and retain highly qualified staff, companies make greater efforts to provide their employees with not only good remuneration, but also additional benefits for the families. On the other hand, once the need for physical attachment to a workplace is eliminated, people have the freedom to move to live in settlements that provide the best living conditions.

Here comes the main role of the NBS. It has been proven that spending more time outside in an environment close to nature has irreplaceable benefits for people's physical and mental health. The role of well-developed green areas and infrastructure in cities has increased even more in today's global pandemic.

The understanding of promoting work, entertainment, sport, etc. outdoors is embedded in the concept for the renovation of Saint Trinity Park.

Landscape architects and specialists are / will be engaged in the planning and implementation of the renovation activities, who will plan and implement in detail the activities for complete landscaping of the park in a way that does not harm the existing healthy plant species, but also contributes to the enrichment of the local flora and fauna.

Currently, the only companies in Burgas that fall within the definition of NBS are specialists and companies engaged in the design and implementation of green spaces and green infrastructure and their representatives are involved in this project.

STEP 2: BUILDING ALLIANCES

At present, the business in Bulgaria is not familiar with the definition of nature-based enterprise. The companies that fall into this definition and withstand the economic challenges of the market are landscape architects and companies implementing projects for landscaping and implementation of green infrastructure.

In our opinion, the market logic in Bulgaria still does not allow local companies to specialize in the very specific segment of the NBS, as the demand for such products is limited and cannot cover the costs of companies.

STEP 3: PLANNING, IMPLEMENTING AND MONITORING

5. Coproduction

STEP 1: DEFINE THE GOALS OF THE CO-PRODUCTION PROCESS

The main goal of the co-production process is on the one hand to stimulate stakeholders at local level to be more active during the process of development and implementation of city policies and projects, and on the other to change the approach of local administration in preparing local policies and projects by encouraging the active discussion and seeking the opinion of various representatives.

STEP 2: USE THE DESIGN PRINCIPLES TO FLESH OUT THE CO-PRODUCTION GOALS AND STRUCTURE

STEP 3: PLAN DE CO-PRODUCTION STEP AND ACTIVITIES & STEP 4: SELECT THE CO-PRODUCTION TOOLS

Appropriate steps and tools related to the city exemplar are presented in the table below.

TRANSFORMATION POINTS	Reflect on the impact of this transformation point on your exemplar
1. Selection of the exemplar: Saint Trinity Park	<i>Add description: with the start of the project we had several suggestion for green areas in the city. However after internal discussions, as well as the support of the project partners and considering a survey carried out in 2017 we decided to choose Saint Trinity park as our exapmler.</i> <i>Linked to phase: Planning</i>

2. Nature-Based Entrepreneurship (NBE) Workshop and Development of Business Model Canvas November 2019	Add description: During the workshop, we managed to gather different stakeholders. As a really good benefit from the event was, that participants managed to start thinking a little bit different (not in traditional way) on the ways how we can finance and maintain our exemplar. Because of that, participants came up with different interesting NBS that could be implement on the territory of the park. Linked to phase: Planning
3. Organise internal meetings within the administration to discuss the approach and solutions for the implementation of the exemplar 2019 and 2020.	Add description: Several meetings with relevant directorates (Urban Planning, Environment, and Economics) were iorganised. We created an action plan for the implementation of the exemplar. The general scope and functions of the area wese specified, as well as relevant stakeholders for public discussion. Linked to phase:Planning
4. Present the idea for renovation of Saint trinity park in front of local NGOs. October 2020	Add description: As part of the public discussions regarding the development of Integrated Plan for Development of Burgas 2021 - 2027, the initial concept for renovation of the park was presented. We received a positive feedback on this idea. Linked to phase: Planning
5. Sociological survey on the attitudes and wishes of citizens of Burgas for development of the city in the period 2021 - 2027 October 2020	Add description: As part of the development of Integrated Plan for Development of Burgas 2021 - 2027, a sociological survey was carried out. People stated that they want more green areas to be created in the city, and the renovation of Saint Trinity park was pointed out. Linked to phase: Planning
6. Development of a concept for renovation of exemplar February – May, 2021	Add description: In the period February – May a concept for the renovation of Saint Trinity Park was developed. This was done in- house. We believe that this approach supported us to exercise a better control on the work of the experts and increased their experience and expertise on trying to incorporate more NBS in the urban environment. Linked to phase: Delivery
7. Reflective Monitoring Sessions 2021	Add description: We have organised several discussion with city of Genk, where they shared their experience on working on their exemplar and gave us guidelines on the way they used Reflexive monitoring. Linked to phase: Planning
8. Select appropriate indicators January – May, 2021	Add description: Selecting the appropriate indicators for the different aspects of the project (social, economic, environmental) will support us in the better assessment during and after its implementation Linked to phase: Planning
9. Public discussions on the concept for renovation of exemplar June - September, 2021	Add description: In June 2021, we plan to implement several public discussions with different local stakeholders and see their opinion in the general concept we have developed. Linked to phase: Planning/ Delivery
10. Design a detailed concept for renovation of Saint Trinity Park. September - November, 2021	Add description: Once we have a feedback for local stakeholders we will proceed with development of a detailed concept for renovation. The renovation will be separated to several phases and this way it will be easier for us to proceed with the actual implementation, depending on the available financial resources. Linked to phase: Planning/ Delivery

Step 5: Reflect on the co-production process and results

What are results of the co-production processes?

- Reminded to us one forgotten truth, that green areas are one of the most important things for the citizens of Burgas, and worthwhile to invest in.
- The process of consulting city projects with the public has been improved. We are organizing separate sessions with different type of stakeholders according to their expertise and knowledge. Still there is a lot of room to grow.

What were the main opportunities faced?

- Increased understanding among the administration that city's projects (whenever possible) should incorporate three elements: economically sustainable, sociable and protect and enrich biodiversity.
- Local stakeholders show a little more more interest in participating and express their opinion and ideas related to public projects in the city of Burgas.

What were the main barriers faced?

- One of our biggest learning objectives is how to motivate stakeholders to be active.
- Open more offices for collaboration with citizens?
- Things are happening slow, or at least not as fast as the people would like to.

What was the impact of Covid?

Not being able to organize face-face meetings had a good and bad side. Positive sides - pretty easy to join a consultation/ survey, no need to go anywhere. However, negatives - you cannot be sure how engaged the other side are - they look like they're in the meeting but could be somewhere else.

6. Reflexive Monitoring

Step 1: Rethink what learning process you need to achieve the goals of the Nature-based solution

- What are the main learning questions that need to be addressed to achieve to reach these goals ?

What local stakeholders want in order to turn the place in favourite spot for leisure, social activities, sport and at the same time combine economic activities and protection of the biodiversity?

- How did you create a learning environment, and how were you introduced with Reflexive monitoring?
-

Step 2: Define the roles within the project team

Ivaylo Trendafilov, who was a coordinator of the Connecting Nature project on behalf of Burgas Municipality was the person responsible for the reflexive monitoring of the exemplar. A larger team was

established and involved in the learning process including experts from the Urban planning department and Construction department in Burgas Municipality, as well as external architects and landscape architects were involved, as well as experts in biodiversity.

Step 3: recording important event and analysing critical turning points

We used the DLA to plan and monitor the steps related to the exemplar.

Step 4: Use the learning sessions to identify learning outcomes

- What came up during the learning sessions that influenced planning, co-production and/or implementation of your nature based solution?

We realized the importance of discussing our projects with experts related with biodiversity, something we have not done before.

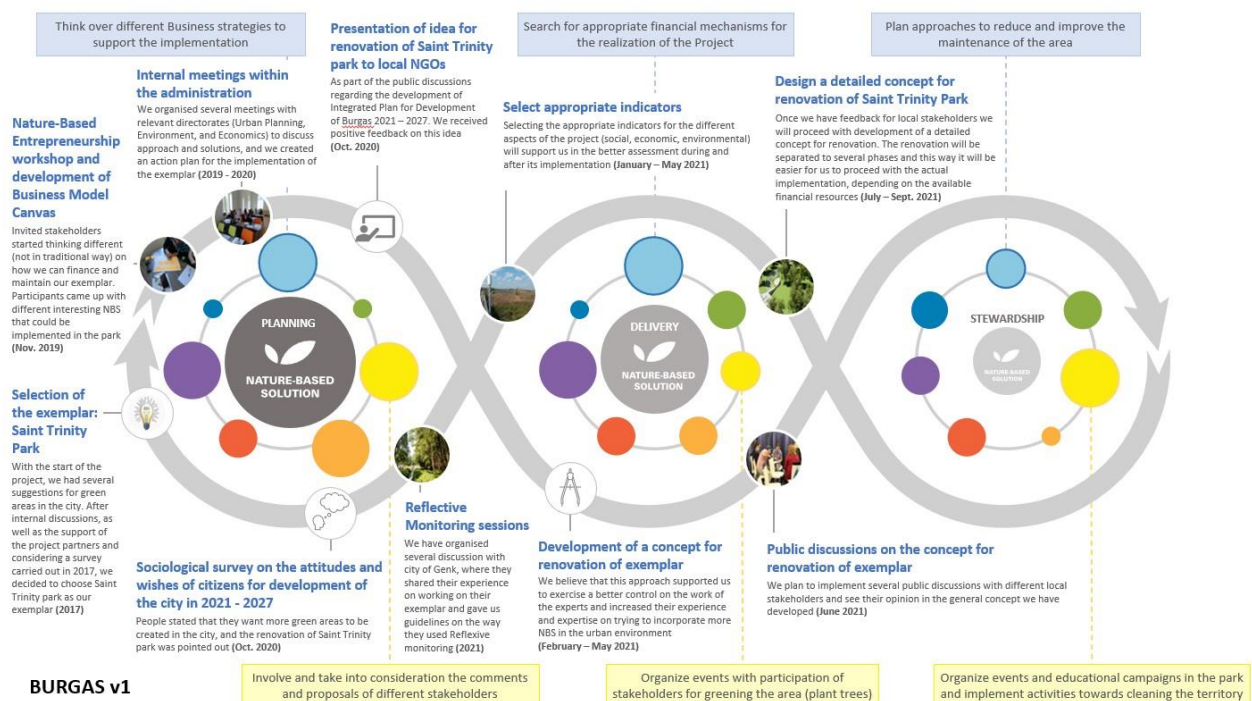
- What barriers did you face in applying Reflexive monitoring?

It takes some additional time and requires the participation of different people from different departments, which is not always possible.

Step 5: Share your findings with others

Step 6: reflecting on the method and peer-to-peer sharing

7. Impact assessment





CONNECTING NATURE CITY REPORT

MALAGA, JUNE 2021

Urban garden in Lagunillas

Draft version

Table of contents

Summary	4
CONNECTING NATURE FRAMEWORK	5
STEP 1 Identify the City context.	5
STEP 2 Define the goals of Project goals.....	17
STEP 3 Identify your target audience and other relevant actors.....	18
STEP 4 Introduce your nature-based solution exemplar	21
STEP 5 Position this report.....	22
TECHNICAL SOLUTIONS.....	26
STEP 1 Define the nature-based solution	26
STEP 2 Develop an understanding of the landscape context and ecosystem services needs Landscape scale:	28
STEP 3 Embedding multiple functions into the planning, delivery, and stewardship of the nature-based solution .	32
STEP 4 Monitoring and evaluation.....	33
STEP 5 Build an evidence base to promote nature-based solutions to a wider catchment.....	33
GOVERNANCE.....	33
STEP 2 Current status of the location: identify the current use, ownership, and management of where you want to implement your nature-based solution	36
STEP 3 Who are the required partners: identify all relevant partners and bring everyone together to co-create a vision and goals for the nature-based solution	36
STEP 4 How will you work together? Develop and agree a collaborative governance framework so that the different partners work together effectively, sharing roles and responsibilities	38
STEP 5 What will you need to succeed? Identify conditions, skills, and reflexive learning capacities to ensure ongoing success	38
FINANCE AND BUSINESS MODELS	39
Step 1: Lessons learned from how NBS has been financed in each city to date	39
Step 2: Explore opportunities for innovation in financing, governance, and business models.....	42
Step 3: Planning the financing and business model of Connecting Nature NBS exemplars.....	43
Step 4: Implementation of financing and business model plans for specific NBS exemplar	48
NATURE BASED ENTERPRISES	50
STEP 1 Awareness and strategic alignment	50
STEP 2 Building alliances	51
STEP 3 Planning, implementing, and monitoring a customised support programme.....	52
STEP 4 Planning a programme to support nature-based enterprises	55
CO-PRODUCTION	56
STEP 1 Define the goals of the co-production process	56
STEP 2 Use the design principles to flesh out the coproduction goals and structure	57
STEP 3 Plan the co-production steps and activities	58

STEP 4 Select the co-production tools	59
STEP 5 Reflect on the co-production process and results	59
REFLEXIVE MONITORING	60
STEP 1 Rethink what learning process you need to achieve the goals of the nature-based solution.....	60
STEP 2 Define the roles within the project team	60
STEP 3 Recording important events and analysing critical turning points	60
STEP 4 Use learning sessions to identify learning outcomes	61
STEP 5 Share your findings with others	61
STEP 6 Reflecting on the method and peer-to-peer sharing	61
IMPACT ASSESSMENT	64
STEP 1 Engage in structured reflection on NBS impacts, pathways and trade-offs	64
STEP 2 Choose appropriate indicators	69
STEP 3 Develop a data plan for impact evaluation	70
STEP 4 Implement the data plan	71
STEP 5 Integrate evidence into the policy process	72
ANNEX: CHAPTER 4 NATURE BASED ENTREPRISES.....	74

Summary

Malaga is a Mediterranean city located in the South of Spain, with a green and blue environment typical from the Mediterranean coastal cities. During many years Malaga was mainly known as a touristic destination due to the diversity of its environment offering beaches and mountains landscapes but also because the city has a mild climate throughout the year.

For more than three decades Malaga has been relying on tourism and construction as the main engine of the local economic activity, building hotel and residential developments with little regards to the environment. In the past two decades consciousness about the environment has hit many social actors who have seen the need to evolve the productive model towards one that is more respectful of the environment. Cities are today human ecosystems with the best opportunities for social, economic, and environmental opportunities but at the same time they face important inequalities and some of the biggest sustainability challenges.

The City of Malaga is implementing measures to improve the environment and thus also improve the quality of life of its citizens. The city is exploring ways to restore an ecosystem damaged by the impact of economic activity and through the Connecting Nature project, learn more about the benefits of this framework and its methodology. The city had already developed some nature-based solution but without applying the framework of the Connecting Nature project. This innovative framework involves a series of innovations in the way of facing and implementing nature-based solution projects, introducing new elements such as co-production, co-creation, governance, financial and business models, technical solutions, impact assessment, nature based enterprises and reflective monitoring when creating, planning, executing, and maintaining those projects. The connecting nature framework seeks to optimize environmental, economic, and social resources by applying its own work methodology.

CONNECTING NATURE: CITY REPORT

URBAN GARDEN IN MALAGA

CONNECTING NATURE FRAMEWORK

STEP 1 Identify the City context.

After a several years of relative stagnation during the 1980s and early 1990s, the city has experienced rapid development over the last two decades due to the entrance of Spain in the European Union and a certain local political stability. Today, the city has become much more attractive, prosperous, and dynamic but the city has been relaying on two main activities: construction and tourism and in a smaller scale textile. At that time Malaga was building infrastructures like the new airport terminal, the highspeed train station, a coastal walk, the reconversion of the city center into a pedestrian zone and a new dock for cruise ships. Many of those projects benefited from financial support of the European Union.

The focus of recent urban development on construction and tourism gives rise to the following challenges:

Need for balance between tourism and construction and other dimensions of developments. In the years 2000 Malaga had a great dependence on tourism (sea and Sun segment) and construction. At the end of the 2000s the city experienced a severe financial and real estate crises that left many construction project abandoned, real estate prices crashed, and many companies related to the sector went bankrupt leaving thousands of workers without work. At the time the tourism policy developed in the city was around short city trips and sea and sun segment for tourist arriving by plane or by cruise ship with strong negative environmental impacts.

Prioritization of quality of life as strategic asset for economic development. The city of Malaga developed a strategy to diversify from construction and tourism by focusing on the quality of life that Málaga offers to its residents but also to attract companies looking for cosy, less congested location to establish subsidiaries or back-office facilities to relocate some of their activities. The urban development challenge for Málaga is to support this development by making place for these activities (office space, attractive housing, convenient transport, and communication infrastructure), which to some extent boils down to compete with the current model of city tourism.

Getting a grasp on real estate speculation. This is an important point for the city since the real estate market has always been very speculative market over the years but after the crisis of 2008 there is a need to get a grater control on real estate speculation. Besides, in Málaga, the real estate market movements are an important source of wealth for a part of the population and a powerful influence on all aspects of city making. Real estate boom result in the construction of massive housing developments resulting very damaging for the environment. Other environmental challenges exacerbate the environmental impact of this tourism.

Mainstreaming of environmental ambitions as general policy goals. The city of Malaga is a classical Mediterranean city where citizens rely on cars to move within the city and to the residential areas mainly because there are a lot of stiff slopes in the city. Here an effort is to be made to try to reduce private transportation in favour of other less polluting means.

Coastal management. Malaga's coastline has been for many years Malaga's greatest asset, event though the city has been turning his back to the sea for many years. It is not until the development od the new port (Muelle 1) that the city faces the sea. But in environmental terms, the management of the Mediterranean coast as a strategic asset

requires more attention among other issues, like the sustainable management of aquatic and coastal ecosystems and the control over sewage treatment and water pollution caused by activities in the port and the city.

Finally, there is a third set of challenges that can be identify and need to be considered:

Management of socio-demographic change. Like in many other European cities Malaga, event though is a young city, experiences an ageing of its population and therefore also the repercussions of this phenomenon on public finances, the provision of public services, pension schemes and other core elements of the welfare state. In Spain, many cities the impact of local population's ageing has been somewhat curbed by the arrival of immigrants, especially from Central and South America. While many of these migrants speak Spanish, their integration remains a challenge for the city.

Labour market integration of young generation. The regeneration of several strategic neighbourhoods (e.g., industrial port, waterfront, historical centre) has benefitted the city, and there is still work to do to regenerate other neighborhood like Lagunillas and Cruz Verde, left aside for many years. All those changes have been of great importance for the development and image of the city but at the same time they have left some groups more vulnerable than others. This concerns not only the construction sector, whose workers were hit hardest by the last crisis, but younger people in general. Many of them have sought well-paid jobs on construction sites during boom period, but later experienced that they lacked the skills and qualifications to find jobs in alternative jobs. Many educated young people have left the city to look for opportunities in Barcelona, Madrid or abroad, leading to a certain brain drain. Youth unemployment remains high compared to the European average.

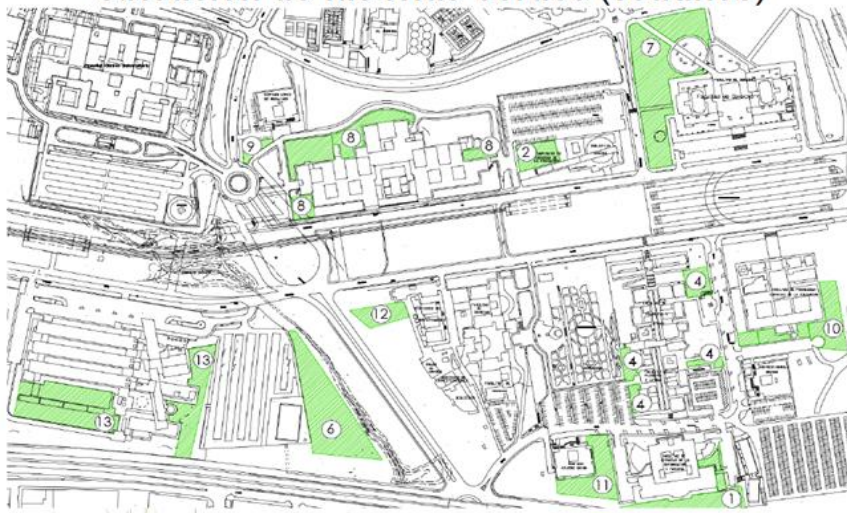
Regarding the Nature based projects the city of Málaga has been developing a few urban projects event though some of the are still in development:

Project Path and Green Islands (Sendas e Islas verdes)

This project has been developed by the University of Málaga in its Teatinos Campus to fight heat islands in hot summer days. The project is about creating high-quality green spaces for the students to use. The innovative character of the intervention lies in participatory process that underlies each of the green islands and the green paths that link them. The objectives of the project are therefore two: the design and physical construction of green islands and paths and

the stimulation of cooperative, multidisciplinary and educational processes on the campus.

Ubicación de las Islas Verdes (Teatinos)



Green island's location

Related to this green islands project, there is another one that is also interesting from a natured based solutions perspective: the central Green Boulevard on the campus. The green boulevard will feature seven outdoor aulas for teaching and other university activities, again taking advantage of Málaga's benign climate throughout much of the year. The boulevard will be developed between 2019 and 2025.

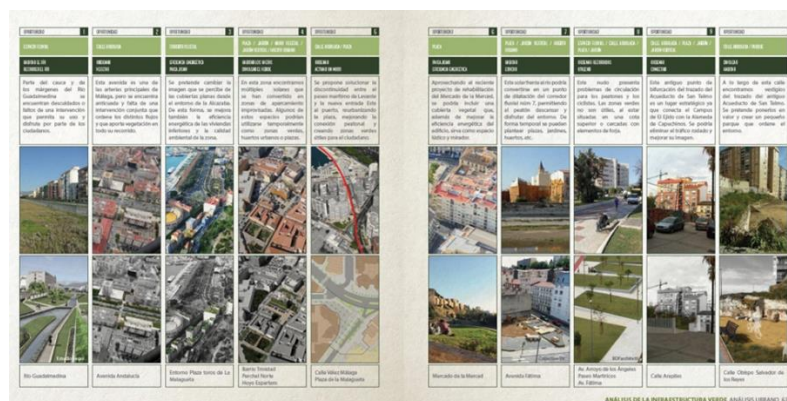
Urban Planning Green infrastructure planning

The Urban Planning department has developed a plan for green infrastructure in and around Málaga. These planning activities have been documented in the book “Green infrastructures of the City of Málaga” that provides a great amount of detailed diagnosis, analysis, propositions, and planning orientations for the development of different types of green interventions in Málaga, ranging from general principles (access and connectivity) to specific interventions on individual sites.

At the city-wide scale, three main green corridors have been identified and to some extent planned:

- The (mostly dry) river Guadalmedina
- The (mostly dry) river Guadalhorce
- The area of the historical San Telmo aqueduct

For the green corridor around the Guadalmedina, a general plan exists that includes, among many other features, the development of a bike path along the embankment. Its implementation depends on the cooperation of the Junta de Andalucía: the city alone cannot develop this corridor as the management of waterways falls under the competence of the regional authorities.



The San Telmo aqueduct is another nature-based solution in development: The city has been able to restore a part of it, but some important parts remain for restoration using Nature based solutions. This structure was built in the XIXth century to irrigate agricultural land situated around Málaga.



Waste water treatment and reuse systems

Bioazul is a small engineering company who specialises among other things in innovative water management solution. The designers and engineers from Bioazul provide technology consultancy, project management and product development. The company is based in Málaga and partner of Connecting Nature.

Over the last years, Bioazul has developed technology for small-scale water treatment and reuse that allows to remove pathogens from waste water while keeping nutrients. The system combines several treatment stages in one compact technological solutions: microbiology, ultraviolet, filters. This system could be used in different contexts, including urban and peri urban settings. It can work at different scales. Bioazul has worked on the development of the system with innovative companies from different parts of Europe, such as suppliers from Germany and Switzerland. The assembly of the system takes place on the site of its application.

Vertical garden in Pericón square

A vertical garden has been built during the remodelling of the square improving the beauty of the square



Community gardens

The city has developed Community gardens in some available sights for the benefit of the community. The improvements introduced in the urban environment have an impact on the three aspects of sustainability: economic, social, and environmental. The gardens are owned by the municipality and are managed by different associations.



The OMAU building

The building is constructed on a municipal plot of 2000 square meters. The building was built to optimise natural resources aiming to be self-sustainable and ecologically functional so it could be classified as Bioclimatic.



Park Promenade (Paseo del parque)

The Parque de Malaga is located right in the center of the city very close to the port. The parc was built in the XIX century by Joaquín de Ruccoba. It has an extension of 3.3 hectares in which a great diversity of vegetation meets, all adorning the numerous fountains and monuments.



Senda litoral

Is a pedestrian pathway that runs the entire coastline of the province of Malaga for a total of 178 km long. The path is still under construction, but several sections are already done



“Málaga cómo te quiero!?”

This is a joint program of the City of Malaga and Limasa, the city’s public-private waste operator, that aims to influence the neighborhood responsibility in cleaning and image of public spaces in the city. The program “Málaga how I love you !?” focuses on the role of the individual as an active agent and whose knowledge and behaviour determine, ultimately, the conditions of the urban environment. This program focuses on education to help social changes of behaviour regarding g the environment.



Other Nature based Publications

Last year the city of Málaga in collaboration with some of the Cluster companies and Institutions published a guide for the application of Nature based solutions in the province of Malaga (Guía para la aplicación de soluciones basadas en la naturaleza en la provincia de Málaga, Diputación de Málaga 2021, https://www.malaga.es/es/turismo/publicaciones/lis_cd-16413/guia-para-la-aplicacion-de-soluciones-basadas-en-la-naturaleza-en-la-provincia-de-malaga)

The city has also taken place in many events to disseminate Nature Bases solutions as seen in the cluster presentation used in the Urban nature seminars in Brazil and the Caucasus. In 2020, Gerardo from Bioazul and myself also presented in the International University of Andalusia, the Nature based solutions Cluster from Malaga, and the Nature based solutions concept to the students.



The strategic plans (see all the plans in annex)

In the last two decades with the implementation of the first strategic plan (1992-1996), the city has positioned itself as a European Mediterranean City lined up with Europe. This first strategic plan has been the beginning of the transformation of the city. In 2002 the second strategic plan (2002- 2008) is launched with the aim of providing the city with important infrastructures for the future like the high-speed train, a new terminal for the airport and a Congress and trade fair center. But the 2002 plan was different, excepting the infrastructures the plan was conceived for the first time around key elements like people, governance, globalisation, and sustainability.

In 2015 the city adopted a new plan called Urban Agenda, formerly called Agenda 21, (agenda Urbana, 2020-2050) and a more comprehensive plan from 2020 until 2050. This new plan englobes all the other plans that the city is currently working or carrying out like the plan Alicia, also called plan for climate 2050, which includes among other measures the green ring measures to be adopted in the city and its surroundings. The city is also aligned with the United Nations Sustainable development goals, the Urban Agenda for Cities, and the compromise to reach zero emissions in 2050.

In the past years the city Hall has been improving the city by planning in advance including new and important elements regarding sustainability and nature. This changes have improved the liveability of the city and since then the city has change from a range of 0.4 square meter of green space per inhabitant in 1980 to 7 square meters per inhabitant in 2015 and that figure is still on the rise.

Origin and historical development of the Lagunillas neighbourhood

The Lagunillas neighborhood is part of the Historic Center of Malaga, to the northeast of the old city, forming one of the old suburbs outside the old space inside the walls of Málaga Nazari (the current Calle Carreteras).

It is believed that the name of Lagunillas, which is a plural diminutive, comes from the lagoons that originated from the extraction of clay around the El Ejido hill, for the manufacture of bricks and tiles. The large cavities produced by the extraction, and due to the height of the phreatic level and the impervious nature of the clay soils, small lagoons were generated due to the rain.

When Lagunillas Street was finally built in the 19th century, it became the commercial and marketplace of the entire area with great activity.

In the twentieth century the neighbourhood had two high moments, and Lagunillas street registered its greatest commercial splendour before 1936 (Spanish Civil War) and another between 1955 and 1975. Lagunillas street had all the types of traditional commerce that was sold on the street: bangers, craftsmen, rags, water carriers, oil makers, etc. Special mention must be made of the market that preceded the Casa de Socorro located in what is currently the Federated Society of the Deaf of Malaga, which had up to 17 grocery stores. Later, in 1939, after the civil war, many businesses were dedicated to "black market", and coal mills abounded.

From the decade of the 1970s, the population in the neighbourhood began to decline, which was practically relegated to oblivion. Many of its inhabitants were relocated to other areas of the city due to the problems of deterioration of their homes, leaving these abandoned and in ruins and the plots began to appear.

The starting point of this process of massive abandonment and depopulation is related to the housing plan that is being developed in the Cruz Verde. In what are now Calle Altozano and Calle Cruz Verde there were settlements with a fully entrenched gypsy population, with an urban structure of low houses. But in the early 1990s an urban operation was developed, which would destroy these houses, to build large blocks in a development of 400 social housing units. Thus, came a new and numerous population from exclusion zones throughout Spain, the majority of which were gypsy ethnic groups, which became crowded into large blocks, but unlike the previous population without roots in the area. This formed a ghetto with an uprooted population, in a situation of social exclusion, and without planning or institutional resources for community building and social cohesion.

With this, the social context of Lagunillas changed, and in a neighbourhood that functioned as if it was a small town, with the arrival of the new population, problems of coexistence began to arise, which disrupted trust, freedom, and neighbourhood. Problems with the sale and consumption of drugs begin to arise, generating a lot of insecurity, and that is when the decline of the neighbourhood begins, with the closure of businesses and abandonment of the

population. The result of this process was a neighbourhood full of abandoned lots and houses that offer an image of increasing degradation and some health problems, even.

This context served for the administrations to become aware that the neighbourhood was in decline, and with the aim of revitalizing it, in 2002 the Junta de Andalucía and the Málaga City Council proposed the project of the “Tecnocasas”. It was a project of officially protected housing (VPO) that would be built on the abandoned lots or replace the buildings that were in ruins, expropriating them, and that would be aimed at young people on a rental basis, linking the

residential space with rooms for place of work (mainly for workers of the Andalusian Technology Park), so that the young population was introduced, and the neighbourhood was revitalized.

In parallel, there is an urban regeneration of the historic center, with the intention of promoting it for tourism, especially with the demand for the opening of several museums.

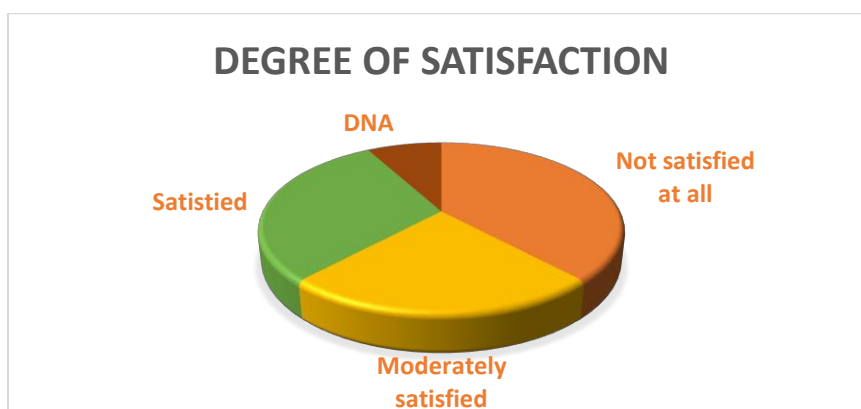
Likewise, from the year 2000, thanks to Miguel Chamorro (an artist from Madrid) the Fantasia Lagunillas Association was created to work with the boys and girls of the neighbourhood through art, giving workshops, and painting murals. The goal was to turn the neighbourhood into a place of teaching, learning and culture. This brings with it the help of other artists.

And so Lagunillas, a peripheral neighbourhoods, degraded, cheap, and with the walls that surround its lots painted with graffiti by the local artistic community, becomes a central neighbourhoods with places like the Plaza de la Merced and the Picasso Foundation just a short walk away. Less than 50 meters.

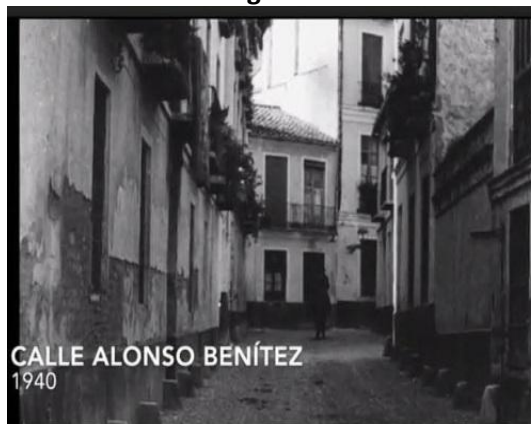
Currently Lagunillas is in a process of change, which has begun to attract many people motivated by its central position, the price of the houses and the tranquillity of its streets. As more life enters the neighbourhoods, it in turn causes problems such as the abandonment of homes, or drugs, to move and new residents to arrive with initiatives, installing small artisan workshops, cultural centers, local businesses, etc.

But after the tourist saturation of the so-called "historical almond", the neighbourhood with its privileged situation is situated in an ambivalent situation, between carrying out a necessary regeneration that continues to preserve its identity, with a quiet neighbourhood structure, permanent residents, and patterns of coexistence, or to become a leisure park for tourism, with the problems of gentrification and tourism associated with it.

Regarding the perception of residents about this change of identity suffered in the neighbourhood in recent years, it is found that in general they are not very satisfied since, after the 124 surveys carried out, 38% are not satisfied at all and 24% they are moderately satisfied compared to 30% who are satisfied.



Different times in Lagunillas







Lagunillas location and delimitation

It is in the Centro district of Malaga, bordering on the southwest with the La Merced neighborhood, on the north and west with the Cristo de La Epidemia and El Ejido neighborhood, on the northeast with Conde de Ureña and on the east and south with La Victoria.

At the orographic level, Lagunillas forms a valley between two elevated areas, Mount Gibralfaro to the east and the neighborhood of El Ejido to the west. This arrangement historically favoured the flow of groundwater and the formation of surface lagoons, which gave rise to the name of the neighborhood.

It can be considered as a small quiet neighborhood behind the Cervantes Theatre and a few meters from the Plaza de La Merced. In fact, in many informal conversations with residents, it is characterized as a town, especially the southern areas, close to Coto de Doñana, Vital Aza and Cobertizo del Conde streets, both for its urban morphology and for the lifestyle that it has been taking shape and is still being perceived today.



Situation of Lagunillas neighborhood in Malaga.

STEP 2 Define the goals of Project goals

City goals

Malaga's exemplar should achieve many goals, but it is important to say that the development of the exemplar should lead to open new ways of implementing and doing things.

So far, we can aim at the following objectives:

1. Promote Nature based solutions within the city. This is an important aspect since NbS is a brand-new concept here. To do so we should work on the gated and abandoned plots by transforming them into productive plots aimed towards social use, social cohesion, and activity promotion.
2. Promote NbS Cluster. The Malaga Nature Based Solutions cluster was created in 2018 to exchange knowledge, raise opportunities and disseminate Nature based solutions. It started with 8 companies and has grown up to 30 companies all related to gardening, laws, protection of nature, topography, solutions for cities, and environmental companies.
3. New development of Lagunillas. The Lagunillas neighborhood has little green, a lot of concrete and many empty plots walled so people do not get in them. It is important in the development of Lagunillas to create more green spaces and to connect them with the nearby hills of Gibralfaro.
4. Reintroduction of autochthonous plants. This aspect has been an issue for a long time. In Malaga there are a lot of invasive species (Pampa's duster, eucalyptus, reed beds, acacia, cat's claw), brought in the past by foreigners. These species have been in certain cases very invasive, and it is now time to replace them by the autochthonous ones.
5. Develop economic activities and initiatives in the area. To do so you need to plan solutions that will attract business to the area. This is a challenge since the economic development of an area usually also generates important problems like gentrification. Economic initiatives like the incubator project can help to provide the area with new businesses.
6. Provide a space for education. It is important to promote educational activities and it is important to do so with young people, to teach them the importance of nature as itself but also to promote the importance of nature in the health and wellbeing of the people, to ensure good practices in the future.
7. Promote neighborhood activities by creating spaces for the community. In this case urban gardening can be a moderate activity for the neighbours to ensure some social contact, gain in wellbeing and fight loneliness.
8. Increase social cohesion among the community and within the neighborhood by promoting relationships among neighbours and helping develop social skills of people in situations of vulnerability and loneliness.
9. Promote models of active citizenship, increasing engagement, community self-organization and involvement in social life. Engage citizens to play an active role in the maintenance and managing of the public space.



Connection to existing urban agendas (see chart about urban agendas in annex)

Nature-Based Solutions are a new concept that encompasses all actions that rely on ecosystems and the services they provide, to respond to various societal challenges such as climate change, floods, and other natural disasters. The term Nature based solutions goes beyond traditional principles of biodiversity conservation and management, reorienting

the debate on human beings and specifically integrating social factors such as human well-being and poverty reduction, socio-economic development, and governance principles.

NBS "are actions that are easily seen as positive for a wide range of stakeholders, as they generate benefits at the environmental, economic and social level. However, the occasions in which the implementation of NBS involves public participation are not common. Through the following actions it is intended to value the collaborative and educational urban garden "Huerto las Yucas" by displaying the Nature based solutions and promoting the values of a neighborhood project.

What makes your nature-based solutions' strategy legally binding, e.g., by connecting it to existing policy plans

Strategies are designed to implement improvements and Málaga has developed many strategic plans to try to take the city to the next level. As a matter of fact the compromise of the city with the environment is growing steadily. Malaga has been developing in the past decades plans to fight against climate change like the Plan Alicia established in the urban agenda strategy for the next 30 years and in which the city should strive to reach 0 emissions by 2050. The city is also aligned with The UN sustainable goals and is also part of the European Green Deal. All these policies made to improve citizen life and taking care of the environment are subscribed by local authorities. (See all the plans in annex)

STEP 3 Identify your target audience and other relevant actors

For whom is this report?

How will your target audience use your report? What is needed to make this happen (e.g., translation, graphic design, turning the report into a video etc.)?

Who has been involved in developing the report?

How did you engage/plan to engage with all quintuple helix actors (see figure to the right) across all the different elements for your nature-based solutions exemplar? Please explain why you have chosen the actors and how you will engage with them.

This report has been elaborated by the Project department of Promalaga and the Promalaga steering committee will be the first to read it. Usually, the report will be redirected to decision making bodies and related stakeholders like OMAU, Urban Planning, Environmental department, NbS Cluster, and the University of Málaga.

During the visit of OSMOS we were able to establish the following partners described in the project environment Canvas below chart below

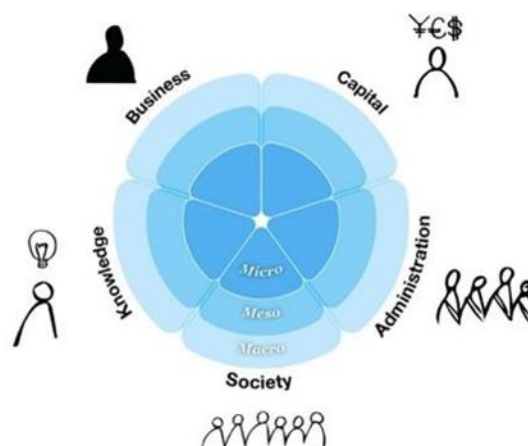
INVOLVED PARTNERS	VALUES	ACTIONS	OUTPUTS
CIEDES University of Malaga OMAU Rizoma Foundation Promalaga Gerencia urbanismo (ayuntamiento) Junta de Andalucia (Consejería medio ambiente y ordenación territorial)	Ecological integration and connectivity Quality of the urban landscape Health and well-being of inhabitants Historical value of heritage Urban sustainability	Facilitate consensus on an action plan among key stakeholders Support participation in green infrastructure projects Communication and dissemination activities around green infrastructures Capacitation on economic models (incl. sponsoring, philanthropy)	Moving from planification to implementation Boosting awareness and societal momentum around green infrastructures

		Execution and maintenance of physical projects	
INTEREST GROUPS Landscaping and gardening companies Land and real estate owners Horticultural producers Farmer's cooperatives Residential population in adjacent neighborhood	NEEDS Urban climate comfort Easier mobility Accessibility to a wider territory	RESOURCES Connecting Nature network experts and knowledge) Prototipes from UMA (Islas y Sendas Verdes, aulas abiertas, huertos urbanos, etc...) Local academic community (UMA) CIEDES Working group "Coastal line sustainability"	OUTCOME Quality of life Green jobs for young population A new urban model Reaching Sustainable Development Goals Productive green corridors

During the Osmos visit one of the objectives of the exploratory research was to identify the relevant stakeholders, both individuals and institutions. The methodology of the exploratory research involved three elements: Desk research based on planning documents, project reports and other material, Interviews with key stakeholders representing different profiles and a workshop. The interviews and workshop were carried out by OSMOS in Spanish on November 20-21, 2018.

The Connecting Nature team from Málaga organized the interviews in advance but the interviews were conducted by Osmos. The interviews were useful not only about gathering information, but also as an occasion for the project partners to meet potential local partners in person.

Since nature-based solutions reach into different areas of city-making, it is important that the group of interviewees reflects different types of stakeholders that have to cooperate to make NBS possible and successful. Schematically, the interviewees were selected to represent the five different types of stakeholders in a "quintuple helix" shown below. This schema distinguishes between five types of stakeholders that we want to bring on board: business, capital, knowledge, society, and administration.



Penta helix diagram

The stakeholder types defined by the penta-helix diagram were too abstract to identify interviewees (and potential partners). This is why the interviewee selection guidelines finally defined 12 typical “profiles” within each of the five categories mentioned above.

The first category would be the Administration (political and institutional capital) with the three following profiles:

The policy maker. This person has a senior role in a public organization and is tasked by an elected official to define concrete policy. This person may be responsible for setting key performance indicators, targets, and review progress. City-scale governance is also a general topic that this person is very familiar with.

The planner. This is the person that is connecting policy and place by acting within a certain governance regime. The planner may be an architect focused on spatial design or it could be an urbanist that is concerned with area plans. This person may work for the city or be a private consultant that is capable of building a project. Sometimes this role will be combined with the policy maker’s role and will draft policy and then develop concrete projects.

The maintainer. This person is responsible for the Operating Expenditure (OPEX), long-term maintenance of public works. This person manages a team that cuts grass, fixes pavements, unblocks sewers, paints seats and so forth and therefore has a very good sense of what the long-term maintenance costs will involve. Depending on the local context, this person could belong to the “business” category rather than to the “administration”.

The second category will be the Business itself (economic and human capital) with two profiles:

The entrepreneur. This person is involved in creating business and has a very clear understanding of the real-world realities that come with urban projects, including their business models and economic viability, either as public services or private undertakings. The entrepreneur is connected to the business milieu of the city and understands the strength and weaknesses in terms of future economic development.

The builder. This person is doing or responsible for Capital Expenditure (CAPEX) of public finances. This person understands the costs associated with construction and technical problems associated with materials or building. This person could work for a public authority or may work for a private organization that is contracted by the city. It could be the project manager of a large urban (preferably NBS) project.

The third category will be the Financial capital with three profiles

The financial officer. The person manages budgets for public works and has a clear overview of where money is being sourced and how it is being invested. This person generally works for the city or region. This could be the financial controller of the municipality.

The investor. This person has access to private or public capital that could be invested in NBS projects. The investor could work for a local (or regional) bank but also for an organization that manages public funds that are invested in urban projects (such as the unit in charge of European structural funds or urban renovation programs). The investor is aware of the criteria against which potential projects are evaluated and has an eye for selecting projects that “will work”.

The philanthropist. This person invests into urban improvements without requiring a financial return on the invested capital. This can take the form of foundations, non-profit companies, or individual donations.

The fourth category will be Knowledge with a single profile:

The involved expert. This person may be a philosopher, an academic, an independent urbanist, a sociologist or maybe a journalist. The observer has an overview of how the urban dynamics, the general quality of life, the main challenges facing the city and so forth. This person generally does not work for the city, however, is a respected voice irrespective of political views and often is involved in public talks and events. The observer is not necessarily passive: through action-research, she might acquire first-hand knowledge of how nature-based solutions work out in practice.

The fifth category will be society with three profiles

The community builder. This person helps to reach out to the community and better understand their needs. Sometimes the community builder is focused on a very specific topic, such as the environmental quality of a nature

reserve or in the development of cycling infrastructure. This person may work for the government or may work from an NGO or cultural organization.

The environmentalist. The environmentalist is concerned with the natural environment and/or the human impact on the environment. They may be concerned with ecosystems, water quality, waste management and so forth. Often this person will work for a city or region.

The social innovators. This person initiates new ideas or projects that enlarge the scope of what is possible. They influence the city directly through their activities or indirectly by inspiring others. Often municipal administrations take the ideas and projects of social innovators into consideration.

Based on these guidelines, the following interviewees were selected:

<u>Name</u>	<u>Organisation</u>	<u>Profiles</u>
Rocío Mora	University of Malaga	Involved expert
Patricia Mora	University of Malaga	Involved expert
Gerardo González	Bioazul	Entrepreneur/involved expert/social innovator
Fátima Salmón	Ciedes Foundation	Community builder/planner
Carlos Lanzat	Urban Planning	Planner
Francisco Salas	Promálaga	Policy maker/planner
Isabel Pascual	Promálaga	Policy maker/planner
Cristian García-Espina	Promálaga	Policy maker/planner
Ruben Mora	Rizoma Foundation	Social innovator/entrepreneur

STEP 4 Introduce your nature-based solution exemplar

The Connecting Nature project in Malaga is part of developing a new perspective for urban planning and in the Lagunillas neighborhood. The implementation of this new perspective can cover the three types of interventions:

The renovation of three public squares in Lagunillas

- The renovation of public squares.
- The development of a green corridor between Lagunillas and the mount Gibralfaro
- Incorporating nature-based solutions in small-scale interventions across the neighborhood (street crossing, publicly owned vacant lots, use of abandoned buildings, small public spaces into pocket parks).

Finally, the Connecting Nature project in Lagunillas aims for urban revitalization of this dense neighborhood located in the city center.

Our Nature based solution exemplar is to build a nature Based solution urban garden in a disused plot of land in the Lagunillas Neighborhood. Lagunillas has several plots of land abandoned and the idea is to do a pilot project in the area with the possibility in the future to replicate the idea in other plots or in other neighbourhoods.

The Lagunillas neighborhood has very little green spaces but has a lot of walled and abandoned plots. Most of those plots belong to private people and a few of them belong to the city. Private owners are attentive to the development movements of the city council, they are waiting for real estate opportunities that will end up creating gentrification in the area.

The urban garden La Yuca was designed in a participatory process with the partners involved (OMAU, Cluster NBS). It was then built by some private companies from the Cluster dividing the plot in three parts, one for schools to come and learn about the autochthonous plants in Málaga, the other as a space for the neighbors to gather and relax and the third for elderly neighbors to be able to cultivate some produce doing moderate activity buy also to get together with other people and therefore aimed to fight loneliness.

In this context we also have a population in the area that is also growing older, so the idea is to generate interest among residents and neighbours and to keep them active.

STEP 5 Position this report

Lagunillas is a degraded neighborhood that needs improvements in many aspects like a new urban design, an increase of green spaces and the rehabilitation of half demolish buildings. There are a lot of abandoned and ruined buildings that need to be rebuilt, there are also a lot of empty plots walled so people do not have access to them, and there is very little street business because the area does not have good access by car or by foot.

Like Einstein used to say if you want different outcomes try different things. Therefore, trying to implement the Connecting Framework was necessary to obtain a different outcome. The initial idea way to pilot a nature-based solution using the framework. There was already a few nature based solutions in Malaga five years ago, but they were isolated projects without a process tool like the Connecting Nature Framework, a structured tool allowing for efficiency and optimisation in a three phases process with seven elements to consider in each of the three phases. To use the tool, we selected a plot in the Lagunillas neighborhood using nature-based solutions.

If we consider, the framework, we can find three stages, planning, delivery, and stewardship. For each phase there are seven elements to consider (see framework image on page 16). What is innovative is the application of the framework itself, to create the exemplar, since usually this kind of operations are conducted in a different, traditional way: design, implementation, maintenance and then evaluation following the initial design from the first phase. The evaluation usually serves to reflect that the work has been done but does not reflect if the work has been well done and much less if there are some improvements that could have been made to improve the results. Elements like coproduction cocreation and reflexive monitoring for example are not considered in a traditional approach.

The framework is innovative in all its aspects. Using the framework has allowed to change the traditional way of working. With the Connecting Nature framework all the elements must be considered in each of the three phases of the project and at the end of each phase an evaluation process occurs to see if the phase has been fully optimised. Once the first phase is approved, the second phase can start following the same process and considering the same elements. The third phase of the framework follows the same guidelines than the previous ones to ensure that nothing is left aside. The third phase is more complex than the traditional phase where the evaluation is made to confirm that the work has been done reflecting the initial approved project. With the framework the evaluation is different since it considers indicators to measure in real time performance and then through a process of reflexive monitoring allows for changes and corrections with the aim at optimisation of all the resources.

Most all the elements of the framework are innovative in it selves and others are innovative in their approach. For example, one of the seven elements called reflexive monitoring is a new element that has never been used before in the development of an exemplar in Malaga. It contains a set of rules and follows a thinking process and methodology for evaluation. In the other hand Governance is also an innovative element in the way the Connecting Nature project focuses on this element since the term collaboration can have different approaches. For example, the connecting perspective to governance is to create a team to collaborate in the development of the exemplar. This differs from a more classical approach to governance, where the collaboration between departments exists, but without creating a team to develop the exemplar. Here the focus is different, but the collaboration exists in both ways of work.

This happens also with other elements of the framework like coproduction, technical solutions and Financing and Business models for example.

TRANSFORMATION POINTS	Reflect on the impact of this transformation point on your exemplar
1. AGM Iannonina	<p>June 2018</p> <p>First all partners AGM gave the opportunity to meet the Connecting Nature family hidden behind the cities and to see on what kind of projects cities are working.</p> <p>Linked to phase: planning</p>
2. NbS Cluster	<p>March 2018</p> <p>Málaga create the first NbS cluster in the city. Mission: The Cluster-NbS was created to promote NbS application and contribute to the development of more resilient, healthy, liveable, and lively cities. NbS is a brand-new concept that to promote and disseminate you need a backup with expertise to rely on.</p> <p>Linked to phase: planning, delivery & stewardship</p>
3. Malaga Workshop	<p>October 2018</p> <p>Workshop enabled to map the city areas/administrations/ Institutions working on NbS. It also helps to understand the importance of including NbS in developing a spot or a neighbourhood. Cities need to regreen to improve citizen lives.</p> <p>Linked to phase: planning</p>
4. Business Model Canvas	<p>June 2019</p> <p>BMC is useful tool to explain Connecting Nature methodology and a “vertebrate” path to follow. It shows how to engage NbS thorough entrepreneurship, partnerships, governance and how to look for financing NbS projects. Financing is key in developing any kind of project</p> <p>Linked to phase: Planning</p>
5. Selection of the exemplar	<p>August 2019:</p> <p>Urban garden in Lagunillas and other developments related to NbS in Lagunillas. The idea is to flourish the Lagunillas neighbourhood with NbS</p> <p>Linked to phase: Planning</p>
6. Malaga Public Event & AGM	<p>October 2019</p> <p>Opportunity to bring together de Connecting Nature Family to Malaga, and to showcase several NbS projects undergoing in Malaga and several other cities from Andalucia.</p> <p>Linked to phase: planning, delivery, and stewardship</p>
7. Delivering the exemplar	<p>December 2020</p> <p>Lagunillas Yuca Urban Garden. Real turning point. Difficulties to deliver something with no budget for it.</p> <p>Linked to phase: planning and delivery</p>
8. Looking for business	<p>March 2021</p> <p>La Bocanà de Lagunillas Project. Following Glasgow steps to try to develop a coworking and NbS program incubation. This is s stakeholders project with the collaboration of the NbS cluster</p>

Most relevant elements for you during the three phases of the Framework

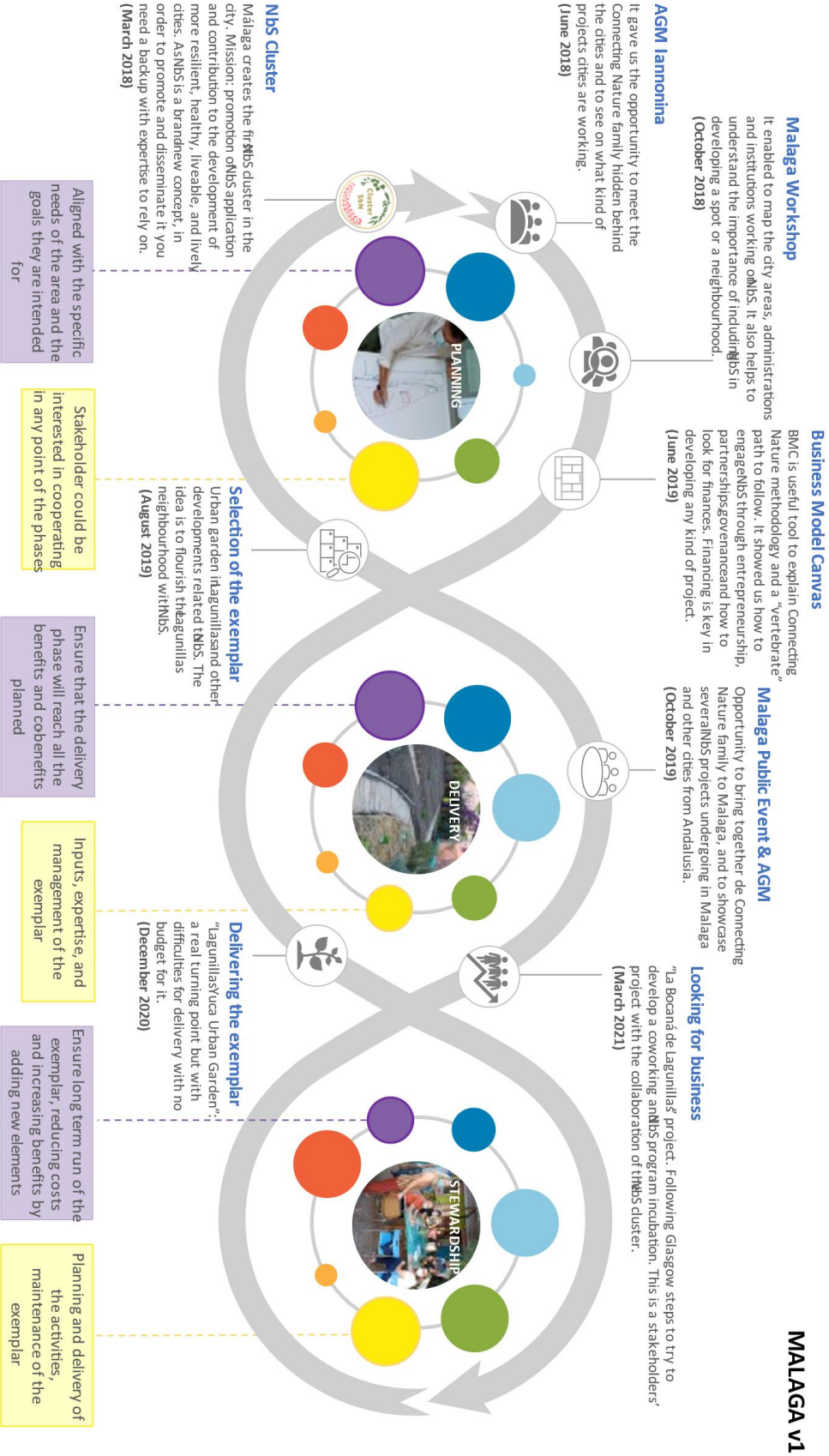
TRADEMARKS	Phase		
	Planning	Delivery	Stewardship
Co-production	<i>Stakeholder could be interested in cooperating in any point of the phases</i>	<i>Inputs, expertise, and management of the exemplar</i>	<i>Planning and delivery of the activities, maintenance of the exemplar.</i>
Technical solutions	<i>Aligned with the specific needs of the area and the goals they are intended for</i>	<i>Ensure that the delivery phase will reach all the benefits and co-benefits planned</i>	<i>Ensure long term run of the exemplar, reducing costs and increasing benefits by adding new elements</i>

Degree of importance for the seven **elements** of the CN Framework during the three phases (i.e., planning, delivery, stewardship).

ELEMENT	SCORE		
	Planning	Delivery	Stewardship
Technical solutions	<i>High</i>	<i>High</i>	<i>Medium</i>
Governance	<i>High</i>	<i>High</i>	<i>Medium</i>
Financing & business models	<i>Low</i>	<i>Medium</i>	<i>Medium</i>
Entrepreneurship	<i>Medium</i>	<i>Medium</i>	<i>High</i>
Co-production	<i>High</i>	<i>Medium</i>	<i>High</i>
Reflexive monitoring	<i>Low</i>	<i>Low</i>	<i>Low</i>
Impact assessment	<i>Medium</i>	<i>Medium</i>	<i>High</i>

degree of development of each **phase** of the CN Framework

PHASE	Score
Planning	<i>Medium</i>
Delivery	<i>Medium</i>
Stewardship	<i>Medium</i>



TECHNICAL SOLUTIONS

STEP 1 Define the nature-based solution

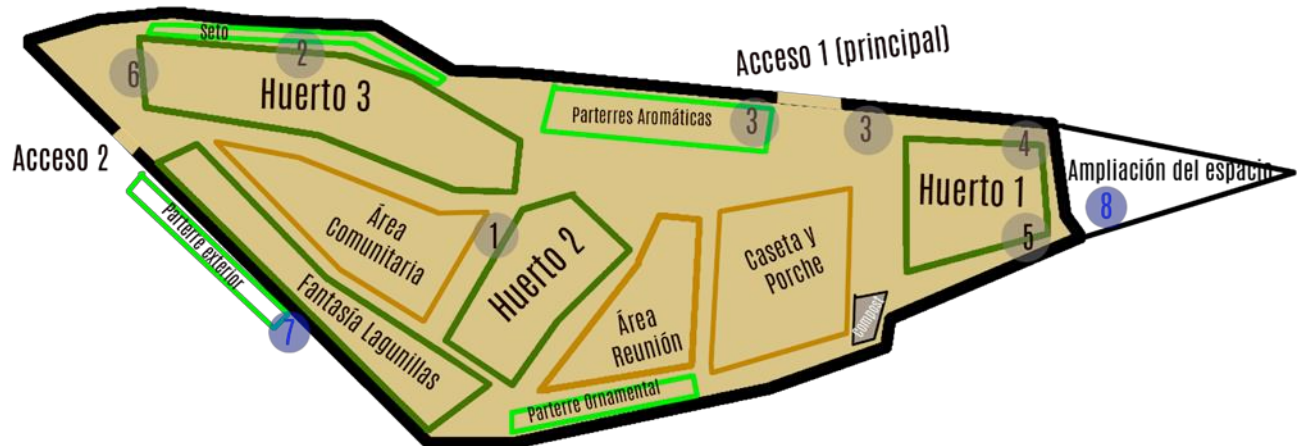
The name of the exemplar is Lagunillas **Las Yucas Urban Garden**. This is a plot of land located in the Lagunillas neighborhood in an urban landscape, right in the middle of the city surrounded by housing blocks and roads. Lagunillas is an urban degraded area of the city of Malaga, with the following characteristics:

- Old and dilapidated buildings. Often homes in poor condition.
- Numerous vacant plots. Most of them gated.
- Low average family income and high unemployment rate.
- Population multicultural, with great ethnic and cultural diversity.

Remarkable is the scarce awareness that exists among part of the neighborhood community of these neighbourhoods regarding the care of the environment, the value of recycling or cleaning public roads, which is evidenced in the large amount of garbage and waste that accumulates certain public spaces located in the neighborhood.



Plot size and distribution



The plot is around 400 square meters. The objective is to regenerate and restore a disused space for the neighbours and for the community through an ecological approach for the regeneration of public spaces through nature-based solutions and for the creation of a collaborative community management project that can be replicated in other spaces and serves as a management model for the use of future urban spaces.

To achieve those goals some actions are intended to value the collaborative space **Las Yucas Urban Garden** by displaying the NBS and promoting the values of a community project.

1. Value native plants Yucca. Emblem of the plot Algarrobo, Lemon trees, White Sapote, Acebuches, Cherimoyo and Moringa
2. Elimination of invasive species
3. Conditioning and supply of nutrients
4. Installation of an efficient drip irrigation system with a programmer
5. Construction of furniture with recycled materials
6. Adequacy of a compost bin
7. Promotion of renewable energies by installing a photovoltaic system.
8. Dissemination of NBS information.

The actions agreed during the participatory process, distribution of spaces and some milestones are indicated below:

Community Area:

- Provision of benches and tables with recycled materials for participation spaces and for use in workshops.
- Perimeter the area with planters that delimit the space.
- Aromatic plantation.

Outdoor fence area

- Conditioning of the existing parterre,
- Elimination of invasive species (Ailantos and Ricinos),
- Contribution of land and planting of climbing plants that cover the fence. Jasmine (2) and Winter Bignonia (Pyrostegia venusta)
- Keep existing bougainvillea at the ends.
- Installation of "Library furniture" to exchange books with the neighborhood.
- Hedge: Elimination of existing invasive species (Ailantos and Acacia) and maintenance of Raspberries, lavender, and Jasmine.
- Maintenance pruning of the Carob trees (elimination of basal suckers).

Aromatic Parterre:

- Improvement of the soil with the contribution of organic matter and the planting of aromatic herbs (lavenders, rosemary, mint, lemon balm...).
- In the area with paved soil, installation of a cultivation table for the use of culinary species and / or seedbeds.

Booth and Porch:

- Adequacy of the batteries of the photovoltaic panels for putting them into operation.

Orchard's area:

- Conditioning and supply of nutrients to garden areas; Topsoil and compost.
- Physical treatment of the soil with a walking tractor.
- Soil analysis
- Installation of drip irrigation system with programmer and solenoid valve for differentiated irrigation in 6 zones.

STEP 2 Develop an understanding of the landscape context and ecosystem services needs

Landscape scale:

Lagunillas is a central district right in the center of the city. Unfortunately, it's an ideal location for business and commerce led in the past the area to fast urbanization. The exemplar is located right in the city Center surrounded by buildings and concrete. The Lagunillas neighborhood has very little green but in the other hand, it has many walled plots that could be turned into pocket/urban gardens.

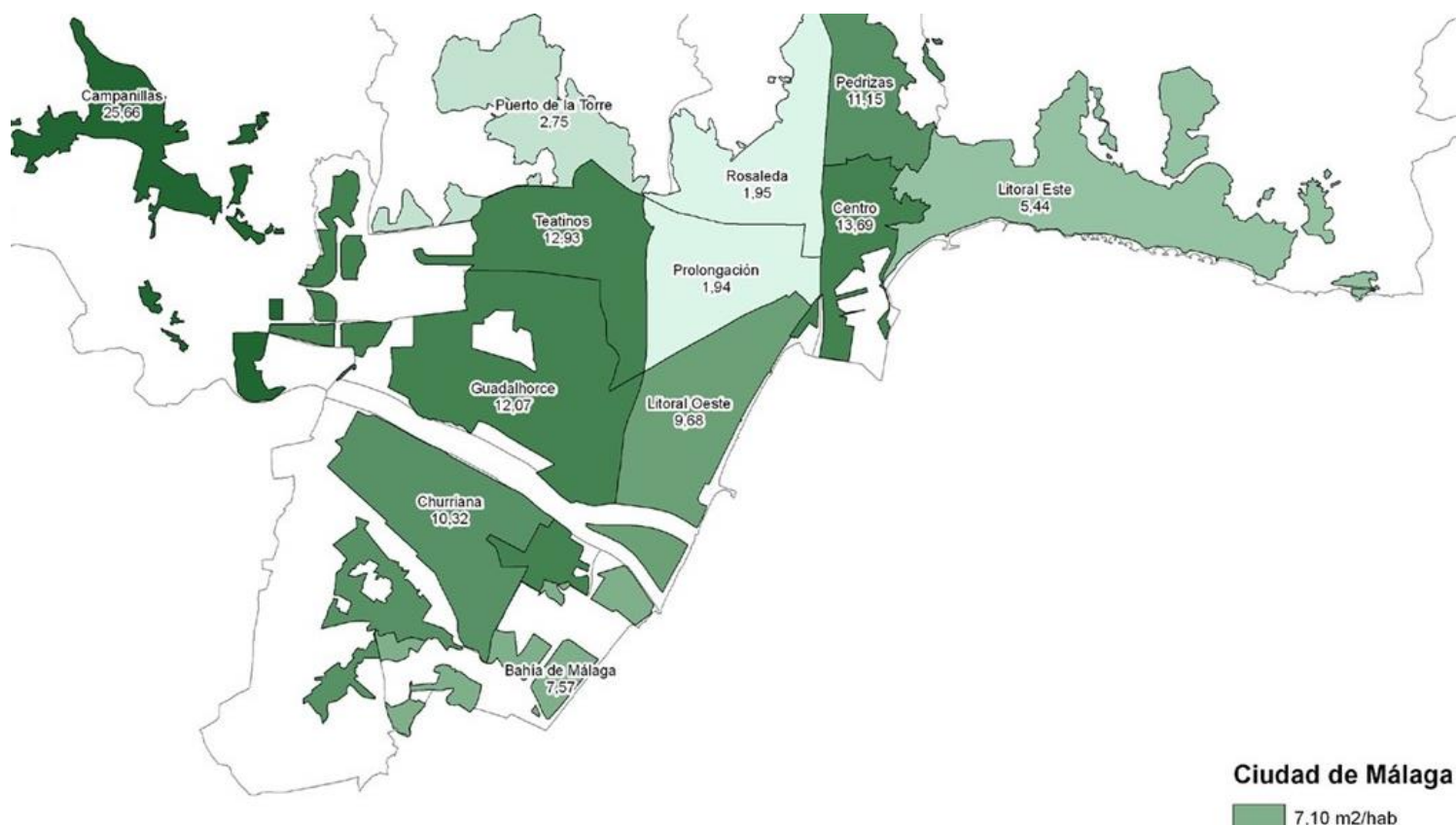
At the environmental level Málaga is suffering from frequent flood within the city center due to heavy storms, increase in the city temperatures becoming very hot in the summertime and producing heat island effect. The city is looking for solution for both problems. The first solution relies in **Green Ring Project** a project in development to reforest and plant autochthonous plants in the mountains surrounding the city to avoid storm waters to rush into the city. The second one through the University which is developing Nature based solutions to fight the heat in the summer time through the creation of green islands.

At the social level we have almost the same problems everywhere in Spain and I think in Europe also. Our population is aging even though there are a lot of younger professionals coming to our attractive city to work since we have an interesting IT ecosystem with the Málaga Tech Park among other things. The other problem is endemic, and its unemployment. Unemployment is higher than in Europe and young people unemployment is even higher. There are little opportunities for qualified jobs outside the tourism sector so many young professionals leave the country to find opportunities elsewhere.

Finally at the economical level, these years have been difficult for the local economy since Malaga relies on tourism and foreign residents. The pandemic has somehow frozen things for almost two years and destroyed a lot of

employment in the service sectors and in tourism since a lot of hotels and resorts have been shut down for most of the year triggering the closure of other entertainment venues.

At the city scale the city landscape context, the city can be divided in two parts. Green and blue context. The old town has very little green area, little shades and suffers heat islands effect in summertime. At the time of those constructions there was very little planning by the local authorities. To start to see some parks and green areas you need to go to the new developments of the city. Those new development have been made following new urban planning standards including green areas and other services. The city counts also with a high number of small and medium size parks with



a lot of trees that need maintenance and other green elements like roundabouts. The image below shows the green area density per area and per inhabitant. This figure has been increasing since 1980.

Green density per area and per person in the city of Malaga.

The blue context is the shore of the city where a path is being built, as mentioned above from the east part of the province all the way to the end of the west part. In total 178 Km of a pathway for pedestrians and bicycles.

Malaga has numerous beaches for the summer period. Climate change provokes heavy storm, and the beaches need to be fixed for the season. The cost of maintenance is becoming higher and higher to meet the EU standards of quality. The city faces many challenges as climate becomes more challenging every year. Under an environmental perspective the main challenges for the city are related to water management issues, which are central to keeping the city cool in the summer and urban parks and gardens attractive. More generally, the management of the coastal line brings a host of environmental challenges, the most important one being the protection of the coast as a resource for the future development of the city and its inhabitants. Other issues like the heavy rains and storms cause flooding in the city, making great damages in streets and parks.

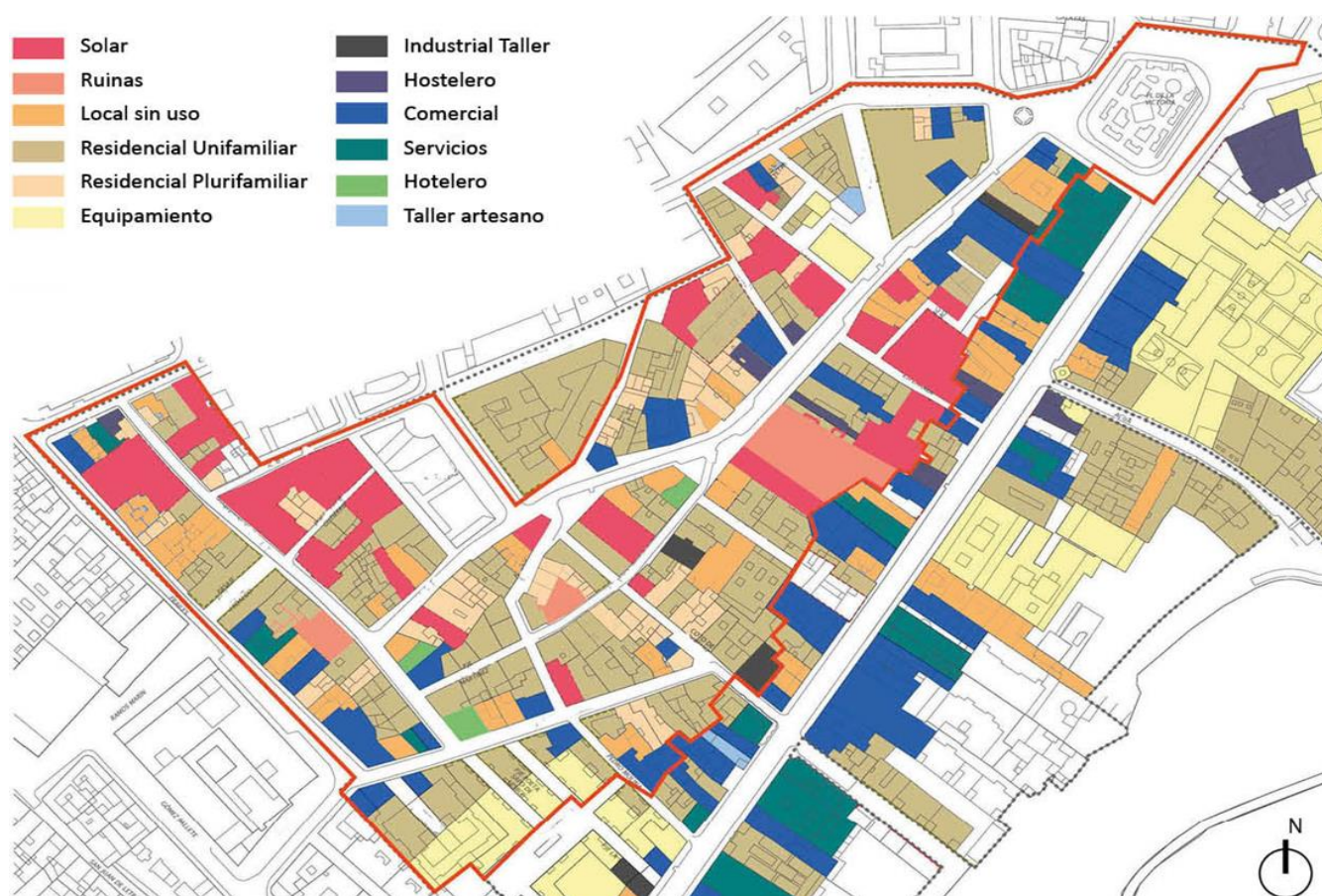
Social challenges are also for great concern. The population of the city as in many other European cities is aging the city there are several concerns about the aging population, youth unemployment and lately the rise of poverty in certain sectors.

In the economic area the city has been able to diversify activities from tourism and construction and implement a hub for the technological companies, the Málaga Tech Park. This park provides services to tech companies from abroad that are eager to relocate some of their services in smaller size city less congested.

The Las Yucas Urban Garden is in the Lagunillas Neighborhood with a particular landscaper context. The neighborhood is made up of 272 plots, of which 219 are built and 53 are empty plots, representing 80% and 20% respectively of the total. That is, 20% of the plots lack a building, so they cannot host any activity. In addition, there are many abandoned or unused commercial premises.

Of the 219 built-up plots, 868 dwellings are quantified, of which it has been found that 582 (67%) are inhabited, 107 (12%) are uninhabited, and of 179 (21%) no information has been obtained. Therefore, residential use constitutes the majority use of the neighborhood and a large part, 32% of the total of these homes, have been dedicated to tourism purposes.

Residential use in Lagunillas



Lagunillas is a very central neighborhood in the heart of the city, but somehow the access is quite difficult because it lays behind long housing blocks. This neighborhood was built centuries ago without proper planning resulting in very narrow streets and small edifications, many of whom are closed or abandoned making an area of social exclusion.

The areas of social exclusion, defined by the regional government, are those territories with a high concentration of excluded households. Many of those household are in the Downtown district and are basically made up of five neighbourhoods: Capuchinos Sur, Cruz Verde-Lagunillas, Ollerías, Perchel Norte and South Trinidad are the urban areas that border the so-called “almond” of historic city center.

From the 70s, the neighborhood began to reduce its population. Many of its inhabitants were relocated in other areas of the city due to the problems of ruins in their homes. Most were abandoned. It entered the vicious circle that is repeated and again in degraded neighborhood: less population, less attention, less resources, more problems.

In the years 70-80, the historic center, on either side of the river, is in full stage of deterioration and urban abandonment, resulting in an escape from good part of the population towards the periphery, where they find better urban conditions to live.

In the center it is mostly what was called "population trapped" characterized by a low level of income that prevented them from buying or rent homes in another neighborhood.

Following the floods of **the years 87 and 89**, the eradication of traditional housing begins and a policy of construction of transitional neighborhood in the outskirts of the city begins, being from 1995 when the suburbs begin to consolidate its urban and housing renovation, with new and modern buildings but supporting a high construction and population density.

From this whole process, the consolidation of three large segregated urban areas results, bordering and enclosing the noble zone of the historic center, constituting today a threat to social cohesion and the integral development of the city.

The group that predominates in most of the exclusion zones would be framed as a lower working class, which resides mostly in the field of social housing. A large percentage of this social aggregate falls within the parameters that define the groups at risk of social exclusion and the “subculture of marginalization”.

In the defined exclusion areas, 19,209 people reside, which represents 23% of the population of the Central District, distributed in 7,681 families and living units. 27.5% of families and living units live in social housing (2,109 families of 7,681).

Truancy affects 10% of the school-age population mandatory, a situation that poses a worrying threat to the future of a significant number of minors from social exclusion zones.

The environmental needs are also high. Over the last 20 years the useful urban green areas per inhabitant have improved markedly since 1.35 m²/hab. of 1995 (or earlier in 1980, when the first General Planning of democracy begins, 0.4 m² /hab.). In the data included in the 2015 Urban Agenda, the useful green surface / inhabitant in the city is 7.10 m² / room, establishing a 10 m² target (the O.M.S. recommends between 10 and 15 m² per inhabitant). Without However, although the area of parks and gardens is important, it is more important its situation of proximity to the population.

About the whole scope of action, the zone indicator Greens exceeds the municipal average with 12.90 m² / hab. mainly due to Park of Malaga and Mount Gibralfaro. In the case of Mount Gibralfaro, an ecosystem with high natural value, the sector requires interventions of reconditioning and enhancement. The Gibralfaro Special Plan has received provisional approval and stands in the final approval phase. The Plan contains specific management objectives and guidelines for the protection, conservation, and maintenance of the mountain environment, as well as to enhance its territorial and environmental uniqueness.



If we descend to certain areas, the situation is quite differentiated between the Old City, the Ensanche Heredia and the Port, and the rest of the areas, Arrabales, the Ejido and Trinidad-Perchel. As in other issues these three areas are clearly in an environmental situation, just like the socioeconomic, much inferior.

Thus, in Arrabales, as in Trinidad Perchel, the Ensanche Heredia and the Ejido, the provision of green areas per inhabitant is below the optimum settled down. Therefore, it is necessary to propose actions that allow recover existing spaces, and as far as possible, study the possibility of creating new green areas within the limitations of the sector due to its historical urban configuration.

Another factor to consider is the proximity of the population to at least one useful green area or space, understood as those spaces of stay for citizen use, such as squares, gardens and large green areas like parks or walks. It is desirable that natural spaces be close to the citizen and therefore are integrated in the area urban consolidation of the city, so that the population can access to them covering short distances, since this distance clearly influences in which citizens can enjoy daily or with some regularity of these areas.

In Lagunillas, there are several places that have a high degree of physical and functional impairment and therefore, require actions of remodelling and reconditioning. The places that require intervention are Plaza Miguel de los Reyes and Plaza de la Victoria, known as the Plaza de los Monos (Monkey Square).

The economic activities in Lagunillas are not very abundant (12%) and are concentrated in the upper part of Lagunillas street, and in Frailes street with the southern part of Huerto del Conde Street, next to the Merced market, as a complementary trade of this market. There is also a small concentration on the corner of Cruz Verde and Frailes, being here the only local business in the Green Cross, apart from another small business in Altozano street.

The high percentage of unused premises stands out (18%), which together with the large number of lots (20%), means that 38% of the neighbourhood's ground floors are without any activity. The premises without activity are related in most cases to abandoned buildings.

STEP 3 Embedding multiple functions into the planning, delivery, and stewardship of the nature-based solution

The planning phase is crucial in the development of the exemplar and must follow a cocreation and coproduction process with all the actors involved. In this coproduction process the area where the nature-based solution needed first to be defined and designed. The plot was implemented was subdivided in three plots, each plot to be used by a group of persons generating benefits for three different groups (schools, neighbours, and seniors). The landscape context was of an abandoned plot in a neighborhood, so the possibilities of improvement were important. From there on, the design was made, the elements to plants and the compost to use were all decided in this phase and the use of the plots were also determinate in this phase. The urban garden is then designed to provide educational and social benefits and minimising trade-off, since the subdivision and the timing will entitle all the groups from benefiting of it use equally. Another cobenefits from this nature-based solution is that nice and beautiful garden has been created from an abandoned plot.

The transition from technical planning to technical delivery was well managed since the Nature based solution cluster was among the coproduction process in the planning phase. Even though some adjustments had to be made with the delimitation of the plots and the plants. Those adjustments were considered during the coproduction meeting.

STEP 4 Monitoring and evaluation

Stewardship phase must make good use of the information related to the use of the natural based solution. The main tool here is to monitor and evaluate the correct use of the green spaces distribution, the water management, the plants turnover, and educational value through the selected indicators and focusing on the primary benefits of the urban garden. Benefits must be steady and align with what was initially planned. In the stewardship phase, management was assigned to the environmental department to set initial evaluation of the plot, but the idea was to shift it slowly towards the associations and the local participants from the senior projects. This shift needs also to be monitored to measure the overall success of this measure.

Benefits may vary over time, but the technical solution aims at reducing costs and maintenance costs over time since monitoring the nature-based solution should end up maximising its benefits and reducing its cost in the long run.

STEP 5 Build an evidence base to promote nature-based solutions to a wider catchment

Technical barriers may arise when the stewardship management does not have the skills to evaluate properly technical solutions and then cannot apply proper changes to avoid trade-offs. This can incur in a raise of the costs of maintenance or in a loss of interest for the activities managed in the plot.

The participatory process is key to get in the right tracks for the planning delivery and stewardship of the nature-based solution since all the experts are involved in the process from the beginning. In the planning phase is extremely important in the selection and planning of the exemplar since all the work is going to be related to the right selection of the right elements to have a soft transition from planning to implementing and then monitoring the results.

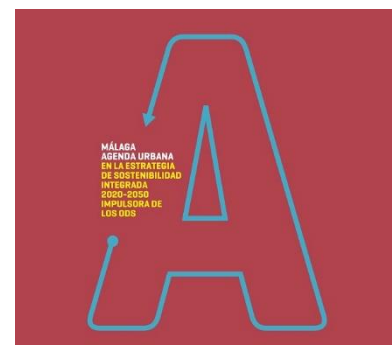
GOVERNANCE

STEP 1 Make the case: aligning nature-based solutions with the wider goals of a city or a community

The urban department owns all plots and parcels belonging to the City Hall. And within the city hall several departments can call for responsibility. Here the land belonging to the city Hall is managed by the Urban Planning department, but sometimes like in the cases of gardens and parks, management of the land relies on the environmental department. What happens is that Urban planning department is responsible for the classification of the land in several categories depending upon its use. In this case the land has been classified as green land, meaning the purpose of the land must be for green spaces like gardens and parks. Once this is established, the ownership is shared with the environmental department since the purpose of the land is to be an environmental asset but also because the garden and the park need to be built and maintain and that is a task performed by the Environmental department. In some other case figures maintenance of the gardens and parks are subcontracted to private companies though public procurements. It is also important to ensure collaboration from other departments or other institutions to secure the right activities and to be able to carry out those activities.

In the case of Urban Garden La Yuca, the plot was already formally integrating in the PGOU which is the General Urban Planning Plan, a general planning instrument defined in the urban planning regulations of Spain as a basic instrument for the comprehensive planning of one's territory. Since the adoption of the strategic plan the city of Malaga has developed many comprehensive plans to tackle the development of the city in all the aspects (see all the plans in annex)

Since the strategic plans the city of Malaga has acquire compromise with sustainability. In March of 2015 the city approved in the city council plenary the revision of Urban Agenda for the city. Revising and updating the Malaga Urban Agenda also had the assumption of a strategic framework for the city, as indicated in the Association Agreement between Spain and the European Commission. Since then, numerous plans have been developed by the city to fight climate change and therefore to improve the life of its citizen. The Urban Agenda is a strategic plan that seeks to promote integrated sustainability strategies until 2050 where it should reach the zero-emission goal. (<https://www.oma-malaga.com/agendaurbana/>)



The 2050 Forum is a working group made up of citizens, public and private entities, and the local administration, through which a participatory process is established that allows collaboration in the development of the sustainability strategy of the city of Malaga with the objective to provide a participatory and transversal perspective. This 2050 Forum is structured into four working groups that coincide with the thematic blocks of the Malaga Urban Agenda:

1. Territory and city configuration
2. Natural resources management
3. Social cohesion and economic development
4. City government
5. Indicators

The Malaga Urban agenda will substitute the Malaga agenda 21 which was the previous agenda for urban planning and sustainability. The new agenda contains 5 blocs, the first two have issues related to the environment.



2050 Forum working group

The government of the Community of Andalusia has committed itself to the progress of the objectives of the agenda 2030 of the United Nations through the elaboration of two specific strategic plans: the Andalusian Strategy for Sustainable Development 2030 (EADS 2030) and the Andalusian Strategic Plan for the fulfilment of the Objectives of Sustainable Development (Agenda 2030 Andalusia). The Andalusian Strategy for Sustainable Development 2030 (EADS

2030) has been conceived as an indicative instrument of public and private policies by defining lines of action and measures based upon two axis, the promotion of green economy and the strength of social cohesion.

At the National level the Spanish government approved in 2018 the Action plan for the Implementation of the 2030 Agenda for sustainable development. This Agenda represents a plan for the people, the planet and prosperity. This inclusive plan has been carried out with the participation of all the ministries of the National government, the regions and the autonomous regions, the Unions, local entities, public administrations, academics, and civil society as it was aiming to reach maximum consensus. A year later the Spanish Urban agenda (AUE) was approved in the Minister council of Spain. This Urban Agenda is drawn up to fulfil several commitments made by Spain in various international agreements: the Agenda for Sustainable Development 2030; the New Urban Agenda of the United Nations and the Urban Agenda for the European Union. The Spanish Urban Agenda is a national urban policy, a strategic and non-regulatory framework, which seeks to guide the decisions and policies that affect the territorial and the urban planning with a global, integrated, and continuous vision in time. Besides the Spanish Agenda tries to focus on a new vision of Urban planning. The main contents of the documents are: A diagnosis of urban and rural reality; A strategic framework structured around 30 specific objectives and 291 lines of action; A system of indicators that will allow the evaluation and monitoring of compliance with the objectives; Some fact sheets that illustrate how action plans can be drawn up for the implementation of the Spanish Urban Agenda and An Action Plan for the General State Administration with specific proposals from the sphere of state powers. One of the proposals approved has been the creation of a ministry of ecological transition to fight against old and conservative policies develop sustainable policies and align new environmental policies to the SDG's. It is true that this agenda will certainly require improved versions as the different actors incorporate new implementation processes and mechanisms.

The urban Garden La Yuca itself is a small part of the big picture but it represents a new way of doing thing. In this case the urban garden align itself with several United nations sustainable goals



Goal 2: Zero Hunger: The Yuca garden produces vegetables that can be eaten o sold out by the Lagunillas neighbours with low income.

Goal 3: Good Health and wellbeing: One of the main objectives of the Yuca Garden. Gardening is good as a moderate and healthy activity that bring wellbeing. Besides gardening in a community Garden also helps to fight loneliness

Goal 4: Quality education: The garden will host classes to teach children about the autochthonous plants and insects from the city.

Goal 10: Reduced inequalities: Like goal 3 in the sense that community garden like the Yuca garden help increase social cohesion and fight loneliness mainly among elderly people.

Goal 11: Sustainable cities and communities: Urban gardens can contribute to the community as spaces to meet people and improving neighborhood and sustainable cities by increasing green spaces. Malaga has increased his green spaces from 0,4 square meters per inhabitant in 1980 up to 7 square meters per inhabitant in 2018.

Goal 12: Responsible consumption and production: Urban Garden enables for small scale production and natural consumption with low carbon print since small production are made to be consumed by the locals

Goal 13 Climate action: Urban Garden helps mitigate heat islands in hot summer days and provides shades to people.

Goal 15: life on land: Organic agriculture and autochthonous insect increase biodiversity of the area. The Yuca Garden not only has been set to have autochthonous plants, but it is also home for insects from the area.

STEP 2 Current status of the location: identify the current use, ownership, and management of where you want to implement your nature-based solution

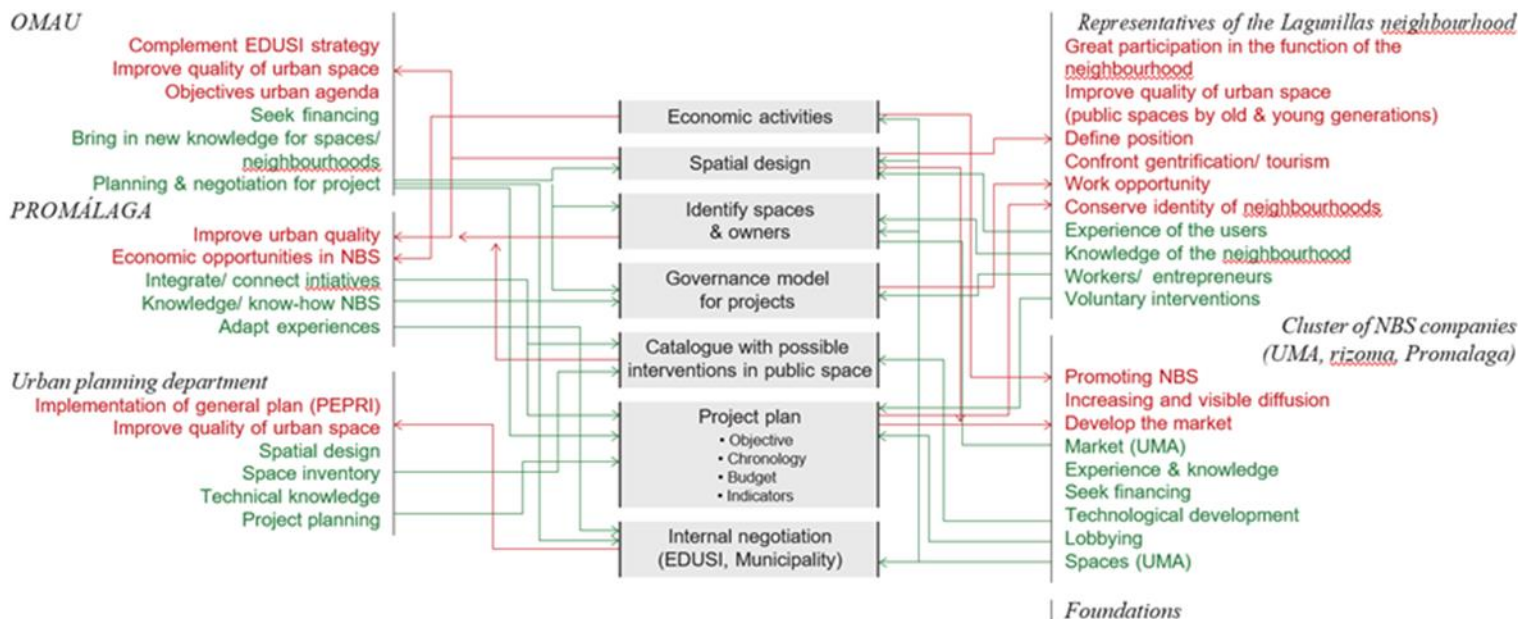
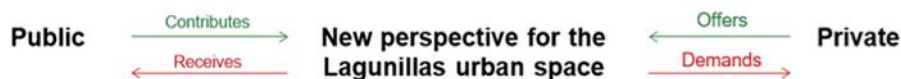
The Yucca Garden was a space in transition. The Garden has been used in the past as a recreational space for the neighbours to meet. Then the garden became an orchard garden where people could go there to plant some vegetables for proper consumption or to sell on street markets.

Now the garden has been transformed in an educational and recreational area for the residents of Lagunillas. The Yucca Urban Garden has been divided in three distinct areas to host different activities. There are many activities happening in the **Las Yucas Urban Garden**, from educational classes for children, workshops for neighbours, meetings to realize some physical activity through gardening makes that the space is used by the following actors:

- Environmental Area from the City Hall.
- Seniors' citizen from the Lagunillas Neighborhood.
- Urban Land (ASPA) Main energizers of the Yucca Urban Garden.
- Fantasy Lagunillas (they carry out workshops with children, they work with 4 schools in the area)
- Cluster NbS. Execute the project (Advice, participation, and training)
- Lagunillas Neighbours Association.
- Children from schools nearby.

The space is owned by the City of Málaga, who lets it for a period to private companies or to Institution to run it. The space is currently managed by the Environmental Area from the city Hall along with Urban Land (ASPA). The plot belongs to the city, but it can be transferred to a private organization for its exploitation, within a framework of very common public-private collaboration.

STEP 3 Who are the required partners: identify all relevant partners and bring everyone together to co-create a vision and goals for the nature-based solution



There are several central actors and partners that are key in the development of a nature-based solution. It is important to consider the process design principles of inclusivity, openness, and legitimacy to ensure the credibility of the project. In the planning phase the OMAU is of great importance to plan in a coproduction way with all the other actors. Usually, OMAU sets the bases of the project in accordance with the other partners involved like Promalaga, NBS cluster, Environmental department, Promálaga and Urban Planning for the public stakeholders and Rizoma Foundation, UMA, NBS Cluster and associations for the private side since public-private collaboration model is a mixed model often used by the city. In this stage the plot is planned, the activities selected and the budget and resources are allocated depending upon a previous study from an NBE to estimate the cost of planning, delivery, and stewardship.

The execution phase carried away by the Nature based enterprises from the cluster. In this phase the Natured based companies followed the guidelines that have been established during the planning phase and report all the coproduction process.

problems they may encounter to the other partners to be later discussed. At the end of this phase an evaluation is done by the partners in a coproduction way to see if the initial planning was would still work. Here it is important to review the output design principles resulting from



coproduction like actionable knowledge for policy making and planning, usable knowledge and empowerment for valuable outputs and Institutions to connect and strengthen agendas within the city.

In the stewardship phase some different actors are involved for the maintenance and the monitoring of the results. This is completely different from the way it is normally done. A traditional evaluation will look upon the initial planning to see if the execution coincides with the planning phase and will allocate the resources initially planned instead of the ones resulted from the stewardship monitoring.

In this case the stewardship phase demand to start with the maintenance of the Garden and monitor the objectives through the set of indicators previously establish but not set in stone since this process always changes. The analysis of the results may vary and demand a reflexivity process to adjust.

STEP 4 How will you work together? Develop and agree a collaborative governance framework so that the different partners work together effectively, sharing roles and responsibilities

This is a process and an exercise where all partners will share responsibility in the development of the exemplar. It is also to say that collaboration is frequent in the city, but the usual collaborative type is different, it is more vertical with a top to bottom line of command and with less interaction among the people who collaborate. Those people also must report always to the same person in the line of command.

Here the idea is to make a group where actors are involved throughout the process and will play a role in the development of the exemplar. OMAU will do the planning along with the other partners and will assume the leading role. The cluster will do the delivery of the exemplar. Urban planning will let the plot and collaborate with Environmental department in the stewardship phase for the maintenance. Promalaga will check upon the process and the right procedures to follow and ensure the coproduction and governance process and the different associations will design the schools' programs and the activities for the elderly.

STEP 5 What will you need to succeed? Identify conditions, skills, and reflexive learning capacities to ensure ongoing success

The city has already gone through different Nature based solutions project. Maybe here in the south there is a different line of command that usually works with a responsible figure that will be accountable for the work. This figures usually has a team and can look for collaboration in another department to develop a product.

With Nature based solution the focus is different. Here a team with different specialists will be crated to develop the same product.

To ensure success it is important to follow h guidelines stated in the coproduction guidebook which are the following: "Inclusivity to bring together different actor of equal knowledge, openness to adopt integrate and share knowledge throughout the process and legitimacy to ensure that the process is credible.

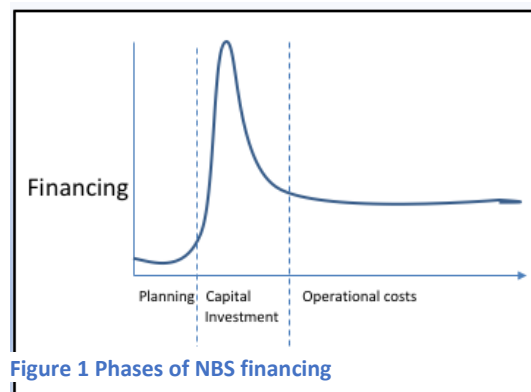
In this changing world, process and procedures are changing frequently and collaboration has gone from being occasional to be almost compulsory. It is evident than in a collaboration several people will come out with better ideas, and they will be able to collaborate to polish the plan or ideas in a much more efficient way. Collaboration also empowers people and helps them work in a more relax and effective manner since success is shared but failure is also shared.

Neutral organisations are important to build trust. We have in Malaga the case of Ciedes foundation, a private non-profit organisation composed of the main institutions and entities of the city. Created in 1994, Ciedes is seen as an example of all institutions and the main economic and social agents of a city joining forces to work together on strategic planning and urban development.

FINANCE AND BUSINESS MODELS

Objectives of this section:

Connecting Nature identifies three distinct phases in the planning and implementation of NBS from a financing perspective. Specific financing is required for the planning phase, the capital investment phase, and the operational phase of NBS. This section of the framework document focuses on identifying sources of financing required for the up-front NBS capital investment costs and the development of a sustainable business model to identify how the ongoing operational costs of NBS will be covered. The costs of financing the planning phase are not covered in this document.



The objectives of this section for cities are to:

- Build an understanding of how NBS have been financed to date in cities and current NBS business models.
- Encourage cities to identify opportunities for innovation in the financing and business models of future NBS.
- Provide cities with tools to support the planning of new approaches to financing, business, and governance models of NBS.
- Capture learning throughout the implementation process and through reflexive monitoring to identify appropriate adaptation and change strategies.

Format:

The format for this section encourages cities to follow a series of four steps in the planning and implementation of financing, business, and governance models for NBS.



Figure 2 Steps in Planning & Implementation of NBS Financing, Business & Governance Model

Step 1: Lessons learned from how NBS has been financed in each city to date

How the capital expenditure costs of NBS have been financed to date in your city?

Up to date capital expenditure costs are financed by the city hall areas. The city Hall is currently divided into 8 areas. Each one of these areas prepares a Budget with an expense forecast for the following year. There are several different types of expenses depending upon the characteristics of the expense. In the case of connecting nature:

- Infrastructure costs for new investments and developing new activities.
- Public procurement costs to develop new activities or to support existing ones.
- Personal and material costs will be used within other costs to quantify general costs of developing new projects.

- Expertise and evaluating costs as part of the technical costs of developing and maintaining projects.
- Community campaign costs are needed to sensibilise the population area and to inform on the projects and developments that are going to take place in the area.
- Community works will be at a second stage to see if the project can be run and maintain by the community
- Educational and training costs are needed to carry on the projects with good practices and knowledge on what needs to be done.

OMAU is the overall coordinating body for this process; other partners include CIEDES (indicators), other partners such as Promalaga, OMAU submits projects to city hall for funding. City Hall can ask OMAU to develop projects and OMAU can submit suggestions for funding independent projects funded by city from own funds (City fiscal budget, taxes etc) comes through city planning (feasibility) environment, tourism etc depending on purpose of project.

It is important to say that within the country there are several layers of financing available depending on the type of project, the site of the project and the relevance of the project. In case of capital expenditure local City Hall get support from regional and national government, European funds and sometimes in the case of a public and private cooperation mixed funds.

Local funds usually are given to the municipality departments to develop projects but in the case of NbS o green and blue infrastructures like parks and beaches the amount can be divides in expenses in materials, maintenance, and investments.

Regional funds: are usually reserved to develop bigger projects in the cities like the Green Ring or the Climate Plan. Several actions can be mixed budget between regional and local governments.

National Funds: Usually used for bigger infrastructures and for building o renovate public spaces.

Private funds: in Spain, this modality is very rare unless it is made through a public and private partnership

• How ongoing operational costs of NBS have been financed to date in your city?

The Operating costs for European projects are usually financed by Promalaga. One of the steps in evaluating a Project is to quantify all the costs and prepare a Budget for the Project where it considers all the different costs that emanate from it. Operating costs will cover daily expenses of creating and maintaining the project going. The goal is to have steady operating costs through creation and maintenance of the project.

For the projects that are not financed by European funds, the city uses to cover operational costs unless is stated otherwise. Like in some housing projects where private companies can cover those costs for grounds maintenance. Another way to cover those costs is through public procurement. Public procurement is used frequently in Spain to subcontract services to the private sector. It is usually done to subcontract full projects or maintenance costs from a project. The are limited in time to four years per contract, then another public procurement process must be made. As far as community management there is no precedent for community managed public spaces.

What is the governance structure of NBS in your city - how are NBS managed?

NBS projects get to the city through the OMAU, which is the environmental urban observatory of the city of Malaga. The OMAU looks for the projects that can be developed in the city in function of the needs of the city and the different neighbourhoods. Then the OMAU distributes the projects depending on the nature of it. Projects can go to the environmental area for development and application; they can also go to Promalaga if they must be executed in a certain time frame or if they need an investment in infrastructure or other type of expenses.

The governance usually follows the collaborative model. In the first stage, the local authorities usually set the basis for developing projects and take care of the financing of the projects given the solvency and experience of the public administration.

In a second stage public administration will set the base to collaborate with businesses to involve them in several steps of the project, to get training, expertise, and experience in implementing and running projects. The final stage appears when private businesses can carry on projects with the help and implication of the community.

The City Hall, OMAU, Promalaga confer and collaborate with private entities as well. This is the case of the development of the Yuca Garden in Lagunillas where a private company from the cluster has been commissioned to select and plant the autochthonous plants and to run the maintenance of the garden. In practice City Hall covers and manages Nature based solutions. Looking to move to this collaborative model described above.

•Who are the key stakeholders involved in financing and governance – internally in your organisation and externally?

There are many parts that can be involved in financing and governance. Usually, OMAU, Promálaga, the City Hall and the concerned areas are the most implicated in financing and governance within the city at the early stages of project creation or development. OMAU looks for European projects that will fit the needs of the city. The OMAU gets the information from different areas and from the City Hall. With the information the OMAU looks for projects or looks for the best way to develop the existing projects. Usually there is a prior study made by the area or by Promalaga to quantify the feasibility of the project in terms of time and costs. OMAU and Promalaga have internal partners usually city Hall departments to develop and execute projects.

In this same early stage but for strategic development of the city we can have the following organisations involved at the earliest stages of developing projects:

- Ciedes foundation, OMAU
- City development Agency, Promalaga
- Planning Department
- Environmental department
- Politicians, policy maker's
- Monitoring University up front studies

At this stage of the project all the above-mentioned partners must contribute to put together the project and study the feasibility of it.

In a second stage where the local authorities are looking for private partners new entities can be incorporated such as:

- Innovative incubators companies
- Local companies, local business, and shops.
- Clusters
- Cooperatives
- NGO's
- Associations like UICN
- Foundations like the Rizoma Foundation
- Private land owners willing to collaborate.

•What have been the main challenges and enablers to financing, business models and governance to date?

In Spain there are three layers of governance, local regional and national. If we consider, the European Union we can reach four levels. In each level there is a financing enabler depending upon the characteristics of the projects. Usually for big projects involving creation and maintaining of infrastructure financing can come from the national or regional level, like the Malaga subway project.

The complexity of governance with its multiple layers and different political ideologies is a challenge – a source of friction and can slow down the approval, planning and delivery of projects.

Some other project can get local sources of financing by the city hall for example. In the case of NBS this financing aims at developing NBS solutions to be applied in the city, by developing new green areas like the aqueduct of San Telmo or the improvement of certain neighbourhoods like the Lagunillas one.

The OMAU in accordance with the city Hall and the concerned areas and Promalaga set the bases in NBS.

Financing in general is quite difficult nowadays and it will depend upon the nature of the project. If the governance model follows a collaborative model that starts with traditional public administration financing projects, the model the stages a network collaboration between local government and businesses to look for capital investment. In Spain this capital can be found in form of:

- Grants or green loans given by the banks
- Funding by Associations like UICN
- Budgetary items by City Hall Areas
- Private funding, local Businesses, shops, etc...

Some other financial sources like crowdfunding can work for other types of financing but it is extremely difficult to crowdfund NBS projects or any kind of projects because the nature of them but also because crowd funding and fundraising are not usual way of financing here, financing is more rigid and means like crowdfunding or fundraising are not that much in use in this country.

•What is the level of knowledge and skills of the Connecting Nature team in your city from a financing, business model and governance perspective? If skills gaps have been identified, how do you plan to address them?

This is a difficult question to answer. More that the ability of the Connecting team the characteristics of the project and its benefits are key in all mentioned perspectives. The team should always rely on experts for the development and execution of projects approved by the city. Besides the team can rely on the Málaga Nature based solution cluster to overcome difficulties.

Step 2: Explore opportunities for innovation in financing, governance, and business models

We can talk about three different sources of financing:

The first source of financing may proceed from European funds like EDUSI or FEDER funds allocated to project proposals with a budget broken down by items as it has been done in the past with several proposals in the city.

Another source of financing is though participatory budgets. This is a novelty and a pilot project in Málaga where the city Council has approved participatory budgets for the people to be able to present projects like parcs, kinder gardens, plants, or other kind of proposal to improve life of residents.

But usually, the city covers upfront capital costs. Those costs occur often at an early stage of the project and generally budgets are planned that way. In other stages usually when we reach maintenance stages the city Hall can pull out from financing and through public procurement designate private companies to take over those costs.

In a second stage capital expenditure costs will need to drift from the public administration to some other organisations like associations, Banks, and businesses. The city will have to somehow develop plans:

To incentivise companies with low interest loans or grants, to develop some volunteering plans in the neighbourhoods, to provide starting budgets to communities and to engaging NGO's and associations.

Recurrent costs are usually periodical, like payroll maintenance, material costs. In the case of NBS once the city reaches level 2 or 3 in governance some actions could be taken to reduce those costs like for example:

Choice of plants and trees to reduce costs but also to boost production that could later be sold out to private parties.

Finding free volunteers will help reducing the cost of maintenance as well as improving lives of those volunteers.

Cooperatives could bring expertise in means of production.

Implementing new technologies will also optimise production at a lower cost.

Charging a fee to users like a lease.

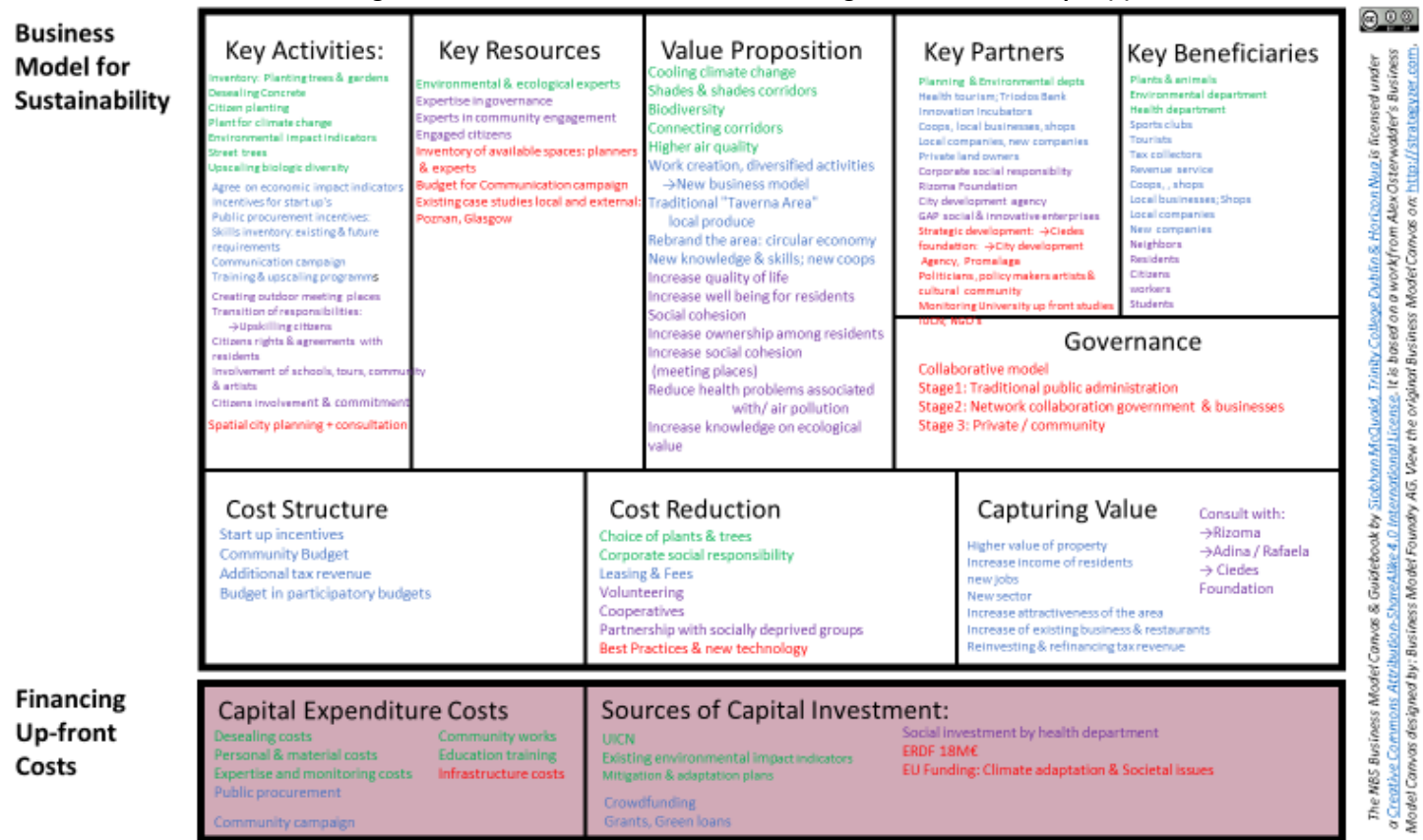
Selling products of the urban gardens could also help

Have you identified and changes in governance models which you would like to explore in future NBS e.g., new organizational structures/stakeholders who could be involved in the management of future Nature based solutions? It will be difficult to change governance models for governance management since the city planning belongs to the local authorities. In the field of Nature based solutions the city could involve environmental organisations or environmental companies to take over projects. These organisations have a know-how on developing these projects because they have the skills to do so. They can also work on budgets reduction through expertise and new tools like the circular economy.

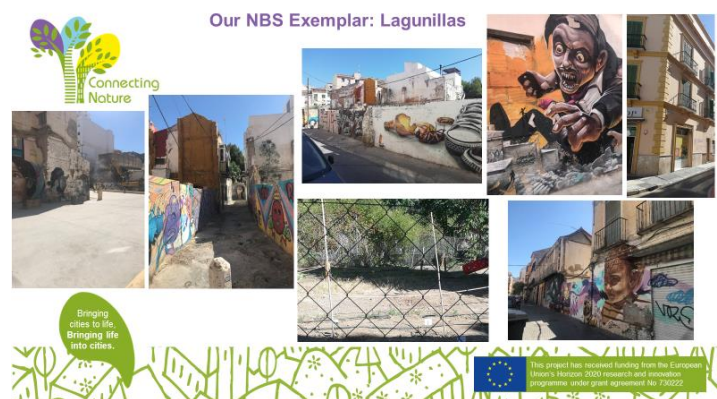
Step 3: Planning the financing and business model of Connecting Nature NBS exemplars

Version 1: Promalaga BMC for Lagunillas exemplar (following workshop but prior to analysis of poll results)

Figure 3 Business Model Canvas and Financing Plan for NBS exemplar(s)



Brief Description of exemplar



Lagunillas is a neighbourhood of Malaga which is very close to both the historic (and touristic centre) and the university. However, to date the Lagunillas has been overlooked in terms of development and has many derelict and vacant spaces often walled up and covered in (amazing) graffiti. There is a strong community spirit which was galvanised through a local artist who inspired a lot of the graffiti. There is a strong resistance to real-estate developers coming in to the neighbourhood as gentrification has already started to occur with rents going up in the area and short-term accommodation being offered.

The city of Malaga has identified this region for development in their current development plan and an NGO - Rizoma has completed a survey of approx. 1000 residents in the area to find out what they would like in terms of development. One idea of the city is to engage citizens in NBS e.g., reopening the derelict spaces to create a network of pocket parks (NBS) and encouraging citizens to use the characteristic balconies of the area to create green corridors connecting the pocket parks with the larger green areas around the University and the city centre area. Promalaga is interested in exploring how Nature based solutions in this area can be used to reskill construction and unskilled workers, to address high youth unemployment and to expand from NBE into other activities supporting a green circular economy. The area already has a lot of shops which 'fix stuff' so repair, recycle & reuse services could be encouraged to develop in this area as a complement to Nature based solutions. In one of the photos, you see a shop selling organic produce – the idea would be to explore how this could be perhaps connected with local community gardens which may also be developed in some of the vacant spaces. Finally, just to mention that Lagunillas also borders with another area called Cruz Verde where several social housing projects have been built to accommodate migrants and other lower income communities. There have been some lovely community projects in this area encouraging residents to improve this area through planting internal gardens.

Brief explanation of major elements/assumptions:

1. Value proposition: how will your exemplar create environmental, social, economic or any other type of value?

The NBS will address **social issues** by providing access to connected missing green spaces through Lagunillas with a core focus being to improve health and Quality of Life of the community living in the area. It is expected that the pocket parks created will provide a space for people to connect, interact and for some, participate in urban gardening projects together. Feelings of isolation should be reduced, and intergenerational relations will be improved through providing a combination of seating and play areas. The **Environmental Value Proposition** should address issues such as the heat island effect – providing much needed shade and vegetation to cool the heavily concreted exposed surfaces currently in place, the green corridors envisaged will support biodiversity and provide safe pathways for residents to traverse during high temperatures and the increase in vegetation should also have an impact on the air quality in the area absorbing emissions and dust particles from the heavily trafficked streets bordering Lagunillas. From an economic perspective the planned NBS will provide opportunities to address regeneration in a way that is sensitive to the

communities that already live there. The area has as strong tradition associated with recycling and upcycling – fixing. The circular economy will feature strongly in the development plans for the area and jobs in this areas and in nature – based enterprises will be the focus of our economic strategy.

There is a real fear among residents that the area will become gentrified – that rents will rise pushing families out and the area will be sucked into the tourism offering of Malaga – Air BnB offerings instead of apartments to rent for families is an example. Any redesign and implementation of a Nature based solutions exemplar will consider and mitigate in so far as possible against this type of gentrification activity.

2. Value creation:

- a. *Key activities and resources:* what are the most important services or activities which need to happen to deliver the environmental, social, economic value?

From an **environmental perspective** key activities that must be undertaken is to map out the areas in Lagunillas that are vacant – identify whether they are publicly or privately owned and enter negotiations with the land owners to create community services such as pocket parks on these sites. From there a design plan for the area is needed with special consideration being given to the type of planting that will be required to provide sufficient shade, increase biodiversity and ensuring that appropriate native species suitable for growing in this part of the city are planted. Environmental indicators to measure the impact of the planned activity need to be identified.

From a **social perspective** the key activities identified include the development of relationships with local communities - identifying the different residents associations, community and cultural groups, schools and other groups who will stand to gain directly from the redevelopment of the Lagunillas area. It is vital that their buy in and support for the plan is harnessed at the outset and that they are equipped with the necessary capacity building skills to ensure their voice is heard through this process and beyond. Agreements between the city and citizen groups may need to be entered.

From an **economic perspective**, an inventory of existing skills and a plan for future skills required in the area needs to be developed. If the plan to develop Lagunillas a champion of the Circular Economy., opportunities for new businesses and start up's need to be identified that come under this remit. The feasibility for supports for new business (tax incentives, start-up grants etc) need to be examined and if necessary, enterprise support programmes and actions like fairs to sell products need be put in place to stimulate the local economy in the area. The economic indicators to capture the intended outcomes from the economic value proposition will have to be identified and measured

- b. *Key partners and beneficiaries.* Who needs to be involved to deliver the different value propositions? What is your city's 'ideal' governance model for the long-term management of the NBS e.g., city-managed, or citizen-managed?

- *City of Malaga* – Environmental and Urban Planning departments – Environmental department will have a central role in the design and possible implementation of the Nature based solution. Urban planning is important for land use and land management.
- *IUCN Mediterranean* (headquarters for the Mediterranean area are in Malaga) instrumental in establishing a NBS cluster in Malaga – can provide expertise and guidance on optimum Nature based solutions for the rea. The person in charge is Andrés Alcantara
- *University of Malaga* – Also a founding partner of the NBS Cluster. Experience in implementing NBS and can provide expertise in environmental monitoring. The Uma through its area of Smart-Campus (directed by Raquel Barco Moreno) has developed the green island project aiming at giving extra green spaces and shades to students on Campus.
- *Nature Base Solution Cluster.* With a mix of private and public companies from different activity sectors it could provide expertise and resources to the development of Lagunillas.
- *BioAzul* is a company with experience in Nature based solutions and could provide expertise

From a social perspective the following partners have been identified:

- Rizoma – NGO active in Malaga currently conducting a needs analysis of the community in Lagunillas. Expertise in community development, skills facilitation, and capacity building.
- Any other NGO's, community groups, residents, and neighbours (Association Fantasia, association neighbours of Lagunillas, Association Lagunillas Cruz Verde, Association Lagunillas Por Venir
- Local health centre to measure the impact on health.
- Local and elected politicians from the districts that usually are aware of the problems first hand from the neighbours.

From an economic perspective the following partners have been identified:

- Local businesses – repair shops, local tavernas, craft shops etc (Association of businessman of Lagunillas)
- Chamber of commerce
- Local Co-ops
- Social enterprises active in the area
- Enterprise support agency
- Corporate and social responsibility departments of Banks like Triodos Bank or La Caixa.

Other partner who needs to be invited include:

- OMAU – projects broker, collaborate with City and Promalaga to identify, source funding and implement projects
- CIEDES Foundation – strategic development role.
- Promalaga which is the Malaga local development agency.

3. Value capture

a. Cost structure – what are the major ongoing costs associated with delivering key activities?

We identified the following cost structure and opportunities to reduce costs for the Lagunillas district. Ongoing costs such as personnel and materials, monitoring for impact measurement and continually working to increase the capacity of residents in the area to enhance their sense of pride, and encourage them to take ownership of this NBS and manage it for the community good. We also looked at ways of funding these costs by identifying funding through participative budget programmes, introducing tax incentives into the area or encourage start ups and using the tax revenue generated for these start-ups to finance part of these ongoing costs.

b. Are there opportunities to reduce costs e.g., through volunteers?

Cost reduction measures can be utilised through the careful selection of appropriate planting and vegetation; working with corporates to implement CSR programmes in the area that will help maintain the NBS and perhaps introducing opportunities to adopt a tree, or a park and take responsibility for the ongoing maintenance and care.

c. Capturing value- what does success look like? How will you know if you have succeeded in delivering your value proposition e.g. economically – is direct revenue generated or new business supported? What are the indicators for capturing social or environmental value?

The indicators have yet to be identified using the Connecting Nature Indicator as a basis. Impact measurements required by EU funding programmes if used for this exemplar will also be used to measure success. (Check chapter 7 on impact assessment to see chosen indicators)

Version 2: BMC following analysis of poll results

NbS Model Canvas City of Malaga				
Key activities	Key resources	Value proposition	Key Partners	Key beneficiaries
Inventory: Planting trees & gardens Decealing Concrete Citizen planting Plant for climate change Environmental impact indicators Street trees Upscaling biologic diversity Agree on economic impact indicators Incentives for startup's Public procurement incentives: → Carrot + stick skills inventory: existing & future requirements communication campaign Training & upscaling programmes Creating outdoor meeting places Transition of responsibilities: → Upscaling citizens Citizens rights & agreements with residents Involvement of schools, tours, community & artists Citizens involvement & commitment Special city planning + consultation	Environmental & ecological experts Expertise in governance Experts in community engagement Engaged citizens Inventory of available spaces: planners & experts Budget Communication campaign Existing case studies local and external: Poznan, Glasgow	Cooling climate change: covenant of mayors Shades & shades corridors Biodiversity Connecting corridors Higher air quality Work creation, diversified activities → New business model Traditional "Taverna Area" local produce Rebrand the area: circular economy New knowledge & skills new coops Increase quality of life Increase well being for residents Social cohesion Increase ownership among residents Increase social cohesion (meeting places) Reduce health problems associated with/ air pollution Increase knowledge on ecological value	Planning department Environmental department Health tourism Triodos Bank Innovation Incubators Coops, local businesses, shops Local companies, new companies Private land owners Corporate social responsibility Rizoma Foundation City development agency GAP social & innovative enterprises Strategic development: → Ciedes foundation → City development → Agency, Promalaga Politicians, policy makers artists & cultural community Monitoring University upfront studies IUCN NGO's	Plants & animals Environmental department Health department Sports clubs Tourists Tax collectors Revenue service Coops, , shops Local businesses Shops Local companies New companies Neighbors Residents Citizens workers Students
Cost Structure	Cost reduction		Governance Collaborative model Stage1: Traditional public administration Stage2: Network collaboration government & businesses Stage 3: Private / community	
Start up incentives Community Budget Additional tax revenue Budget in participatory bases	Choice of plants & trees Corporate social responsibility Leasing & Fees Volunteering Cooperatives Partnership with socially deprived groups Best Practices & new technology		Capturing Value Higher value of property Increase income of new residents new jobs New sector Increase attractiveness of the area Increase of existing business & restaurants Reinvesting & refinancing tax revenue	
Capital expenditure Costs			Sources of capital investment IUCN Existing environmental impact indicators Mitigation & adaptation plans Crowdfunding Grants, Green loans Social investment by health department ERDF 18M€ EU Funding Climate adaptation Societal issues	
Decealing costs Personal & material costs Expertise and monitoring costs Public procurement Community campaign	Community works Education training Infrastructure costs			

The initial exemplar and the final exemplar are very similar, but some changes appeared in key activities, key resources, key partners, and key beneficiaries. Some changes also affect the cost structure, the cost reduction, capturing value and sources of capital investment

The value proposition is till the same as in the first business model canvas, the changes are in other blocks with no effect in the prioritization of environmental, social, economic propositions.

Some of the changes are due also to the pandemic that has been disastrous in all the aspects of the development of the exemplar. The development of the exemplar did not get a communication campaign to disseminate the activities of the Yuca Garden nor we were able to establish and disseminate information about the training programs and educational courses that were initially planned. Same happened in the key resources with the communication campaign and dissemination as a resource. Due to covid, most activities have been cancelled then it was a nonsense to disseminate information.

Key partners has change substantially from the first BMC. For the planning development and stewardship the partners involved in the the urban garden la Yucca were, Urban planning department, environmental department,

OMAU, NbS cluster and Promalaga. The governance model remains a collaborative model between Institutions, public administration, associations and private companies. This collaborative model is based on a public- private collaboration much to the liking of the local administration.

Key beneficiaries ended up also having some slight changes since sport clubs, tourists, tax collectors do not benefit from the urban garden la Yuca.

The key activities remain the same as planned as well as the financing aspect of the Garden financed integrally by the municipality. In order to deliver the exemplar, securing financing with the public administration is key and a guarantee for success, besides financing sources like crowdfunding or fundraising are not used very much in Spain. These sources usually are a good opportunity to raise finance for the initial stage of the project but they fade as the project enters the maintenance phase.

The urban garden La Yuca delivers an environmental improvement by creating a green space for people to learn and to meet through

The social value is at the core of the development of the Garden, created to attend societal challenges in a neighborhood that is growing older. Out of the three subdivided plot two of them are for the seniors and for the neighbours for them to cultivate, meet or just spend sometime in a pleasant place

Brief explanation of major elements/assumptions: *(Reflection on consistencies or conflicts)*

1. Value proposition: has there been a change in the prioritization of environmental, social, economic or any other type of value proposition?
2. Value creation:
 - a. Key activities and resources: what are the most important services or activities which need to happen to deliver the environmental, social, economic value? Have these changed?
 - b. Key partners and beneficiaries. Who needs to be involved to deliver the different value propositions. What is your city's 'ideal' governance model for the long-term management of the NBS e.g. city-managed or citizen-managed? Has this changed?
3. Value capture
 - a. Cost structure – what are the major ongoing costs associated with delivering key activities? Has this changed?
 - b. Are there opportunities to reduce costs e.g. through volunteers? Has this changed?
 - c. Capturing value- what does success look like? How will you know if you have succeeded in delivering your value proposition e.g. economically – is direct revenue generated or new business supported? What are the indicators for capturing social or environmental value? Has this changed?

Step 4: Implementation of financing and business model plans for specific NBS exemplar

In this section, cities are asked to translate the BMC and financing plan into an actionable implementation plan by identifying from a resource perspective, **who** will be following up specifically on the plans for implementation of the financing and business models of NBS exemplars identified in Step 3 and to set out a timeframe and actions for implementation.

Implementation actions may involve follow up on:

- Preparation of applications/bids for funding/financing (where relevant).
- Engagement with investors and other stakeholders for alternative sources of financing.

- Continued engagement of all stakeholders in preparation for implementation of business model.

Specific quarterly calls will be organized by TCD with the responsible person(s) on each team to follow up on progress on implementation of this planning.

Please complete the following Financing & Business Model Implementation Plan:

Name of NBS exemplar	Action to be undertaken (arising from BMC & financing plan)	Responsible person	Timeframe for implementation
Lagunillas	First version of BMC and explanation completed (Step 3)	Cristian	21 November
	Results from community poll analysed and compared with BMC to see consistencies or conflicts - updated BMC taking into account poll results	Cristian	End November
	Step 3 updated and shared with Stephan to prepare December 3-4 workshop focusing on engaging Key partners, beneficiares and identifying potential governance model	Cristian	21 November
	Section 5 overall completed (brief paragraph Step 1 and Step 2)	Cristian	21 November
	Follow up on up-front costs and sources of financing from BMC (more specific actions to be identified once BMC is updated)	Cristian	December....
Lagunillas	Check possibility for development of other plots into pocket gardens	Cristian	January june 2021
Lagunillas	Other actions to be realised in Lagunillas	Cristian	End of project

Cities are asked to reflect from a longer term perspective on how they will measure success in terms of financial, business and governance planning. Please identify potential indicators for measuring success here.

Reflexive Monitoring and Adaptation

Throughout the process of NBS implementation, the existing monthly reflexive monitoring process in place with all FRCs will be used to identify critical turning points, key learning questions and follow up actions. Reflexive monitoring supports learning by doing, helps in the early identification of roadblocks and challenges and stimulates the development of adaptive solutions. The current reflexive monitoring process facilitates a 6 monthly reflection on key lessons learned.

Please identify here the learning outcomes on financing, business and governance models which have emerged through the reflexive monitoring process to date.

NATURE BASED ENTERPRISES

STEP 1 Awareness and strategic alignment

- What are the priorities for economic development in your city? E.g., priority sectors for development, priority geographical areas for economic development, other economic priorities?

Malaga is a well-known city for its touristic characteristics. Every year the city receives more than four million tourists or even more. Through the past two decades the city has been working on planning and developing hotels, resorts, activities to get the blessing from tourist. At that time tourism was the main activity for the city. In the past two decades also, many people came to Malaga to visit and to stay. By doing so those people created awareness for the city abroad and the city was able to develop other touristic products like museums and cruises. The city has always been an attractive destination for tourism but once tourism has taken off, the city was in need to develop other activities in other sectors. Business and entrepreneurship came next, with the Malaga Tech Park, which is a parc with a lot of IT companies from Spain and from abroad. The city also built a Trade fair center for exhibitions and a network of incubators to stimulate and develop entrepreneurship.

At the same time the city became aware that all the progress that was made in the development of the city will somehow raise some important environmental issues, that would have to be addressed and solved in the close and near future. To organise itself the city of Malaga prepared with the contribution of all the political and social agents in the city reaching maximum agreement, the strategic plan (Written by Fundación Ciedes and published in 1994 <https://ciedes.es/el-plan/i-plan-estrategico.html>) based in the following 5 lines of work:

Line I: "Metropolitan city of Mediterranean scope". It encompasses, among others, the issues of the role and context of Malaga in the territory, the large transport and communications infrastructure, the government of the city and the urban system, resulting in a set of 5 programs.

Line II: "Metropolis of high quality of life and respect for the environment". It deals with aspects related to the "sustainability of the city". In addition to environmental issues, these lines refer to the population, social structure and articulation, the health system and housing, as basic needs.

Line III: "Economic and technological capital of Andalusia". This line analyses matters relating to the labour market, infrastructures, economic competitiveness, and the industrial sectors - financial, construction, etc...

Line IV: "European tourist and leisure capital". Its objective is to project the city abroad and make it more attractive. It is concerned with cultural, tourist and commercial issues.

Line V: "Educating and formative city". It encompasses the topics of education and training developed in three programs. It is considered to have a horizontal or transversal nature (as well as quality of life) insofar as it invades and/or interferes with the other lines.

Since the strategic plan the city has developed the following actions to deal with environmental changes and to increase the quality of life of its citizen: (detailed information annexed)

- Sustainable Urban Mobility Special Plan (Pemus) (2015-2035)
- Territory Plan for The Urban Agglomeration of Málaga (Potaum) (2009)
- Urban Agenda in The Integrated Sustainability Strategy (2020-2050) (Former Agenda 21)
- Alicia - Climate Plan 2050
- Municipal Health Plan Málaga City Healthy (2016-2020)

- Plan For Disadvantaged Areas of The City of Málaga 2019-22
- Goal: Málaga Advanced Territorial Strategy
- Málaga Strategic Plan for Technological Innovation (2018-2022)
- Action Plan SDG Málaga
- Evaluation of the II Strategic Plan of Malaga (2007-2014) and framework proposal for an Integrated Strategy for Sustainable Development Málaga 2020

STEP 2 Building alliances

Traditional economy or market economy is reaching a point where new ideas must be developed towards a sustainable environmental economic and social model. New proposal like SDG's, the Green Deal, circular economy is becoming a reality and the traditional economic model is shifting towards other more resilient and sustainable models. This change of scenarios will facilitate the growth of Natural based solutions and natural based enterprises. In this sense Promalaga created in 2018 a cluster for companies aware of nature-based solutions to join forces and create a panel of experts for advice and development. The cluster started with 8 companies and now has more than 30. Currently, the main activities of the cluster are: (see web page: <https://clustersbn.org/>)

- Advise on sustainable development and develop some Nature based solutions projects (i.e., Senda Litoral)
- Disseminate Nature based solutions in different spaces, events, and conferences.
- Create a Nature based solutions good practices catalogue to be a reference guide for Nature bases solutions
- Write and participate in European Projects related to environment and nature-based solutions
- Develop and advise on Cluster own projects and publications

Also, the planning and development of the Yuca garden as describe above has been done by NBE companies from the cluster, setting a pilot project for Nature based solutions. This first step should be the beginning, but Nature base solutions encompasses concepts that are yet to be known and its development will increase proportionally as efforts are made to improve climate change adaptation and mitigation, but also as local authorities pronate policies to promote greener and cleaner cities as described above.

Nature based solutions are part of the future environmental, economic, and social development of cities. Traditional model is shifting towards more resilient model like the circular economy model and other models that consider environmental issues and well being of citizens. At the city level, Nature based solution is a brand-new concept involving many actions that make it complex and difficult to grasp. The main barriers to the development of NBE are:

- New and complex concept
- Lack of projects/market
- Not enough dissemination of the projects and the benefits (environmental, economic, and social)
- Public sector is key for its development to include in new legislations
- NBE's need further integration in Municipality.

On the other side enablers of Nature based enterprises are strong

- Cost efficient companies and efficient management.
- Nature Based enterprises have a cluster since 2018 to join forces and disseminate projects and activities. One of the Cluster mission is to support the growth of NBE's, promote and support the implementation of NbS by NBE's.
- City is developing new plans and projects around the environment that will generate green jobs.

- How can the planned NBS contribute to these economic development priorities?

- For each NBS exemplar please consider, how could NBEs contribute to the planning, delivery, maintenance and sustainability of these solutions?
- What are the challenges and enablers from a city perspective in involving NBEs in the implementation of NbS

STEP 3 Planning, implementing, and monitoring a customised support programme

Cities today are facing many challenges in the environmental economic and social aspects shifting from a traditional model to new models that will increase quality of life of its citizen by making their cities more liveable. Malaga is one of those cities pushing to increase liveability in the city following a process of continuous improvement. In that sense the city is looking to improve some of the older neighborhood located in the center of the city. With new methods of doing things arising, Promalaga through Fundación Rizoma started a participative action through a survey and several activities among the population of Lagunillas to see what residents, business owners and citizen wanted for their neighborhood.

Most of the NBE in Malaga are in the cluster as the cluster itself is composed by all the city main actor in a public and private collaboration. In order for NBE to emerge there is a need to disseminate the Nature based solutions to the Institutions and to the public (see Conama Foundation web page with all the info available in Spain on Nature based Solutions and Nature Based enterprises, <http://sbn.conama.org/web/>) but it is important also to try to educate students of the importance of Nature based solutions and the possibilities they offer for future implementations. Within the Connecting Nature project and after several talks with Glasgow, one of the front runner cities in the project, about the accelerator they created for natural based solutions, the cluster tried to set up a program to create an Incubator for NBE and a program for future entrepreneurs. This is a comprehensive, online incubation program for social entrepreneurs, based on IUCN Global Standard for Nature-based Solutions, and the principles of economic localization, as defined by the non-profit organisation Local Futures. The main characteristics of this incubation program were:

- 4 months (January - April 2022), early-stage projects, with potential to become “Nature-based Enterprise” (H2020 Connecting Nature)
- Preincubation (1 month, January - February): Training on NbS (2 weeks): IUCN Global Standard for NbS and its recent applications, adaptation to entrepreneurship, sector specificities (water, forests, rivers, coastline, urban & rural contexts...), scale-up (Connecting Nature Framework)
- Training on economic localization (2 weeks): principles and good practices (Local Futures), local economy ecosystems around NbS, opportunities and inspiring examples of NbS local entrepreneurship (LF, Connecting Nature Entrepreneurship Platform)
- Incubation (3 months, February - April):
 - (3 weeks) Project design with NbS Canvas (merged with H2020 Connecting Nature’s NbS Business Model Canvas)
 - (2 weeks) Identification of hypotheses, validation, and enhancement of the value proposition via consultation of stakeholders
 - (2 weeks) Business model design: cost structure and market study
 - (4 weeks) Market test: MVP (Minimum Viable Product), price, test
 - (1 week) Feedback, conclusions, improvements, and preparation of final presentations
 - Online monthly exchanges with Glasgow’s NbS Accelerator (H2020 Connecting Nature): best practices, mentors, B2B synergies
- Pitch & Launch Day (1 day): final presentation of projects to potential clients, investors, and partners

Other aspects of the program were already introducing items from the **Connecting Nature** project as the Nature based solution canvas and the Nbs Business model canvas shown below this figure

Challenges (global) <i>Inequalities, poverty, climate impacts, loss of biodiversity ...</i>	Nature-based solutions <i>(NbS, IUCN Global Standard) Societal challenges, design at scale, biodiversity net-gain, economic feasibility, inclusive governance, balance tradeoffs, adaptive management, mainstreaming and sustainability</i>	Economic localization <i>(M. Shuman, Local Futures, Utopies) Place, regeneration, connectivity, diversification, property, culture, innovation, reinvestment, equity, and democracy</i>	Opportunities (global) <i>Multiple crises, social & cultural changes, replicating innovations, finance, science & tech ...</i>
Challenges (local) <i>Detailed info and context of challenges on the local level</i>	Value proposition, beneficiaries, and partners <i>Shared value created for beneficiaries, together with partners, in terms of services and products offered, to meet the challenges identified, and seizing the opportunities emerging, by leveraging the tools of NbS and economic localization through social innovation</i>		Opportunities (local) <i>Detailed info and context of opportunities on the local level</i>
Engagement strategy <i>Target audiences, goals, key messages, channels...</i>	Objectives, mission, vision and expected impact <i>From challenges to objectives to sustainable impact indicators</i>		Business model <i>Customers, revenue sources and costs</i>

The incubation project had also a budget included to have a precise estimation of costs of the program:

1. Learning platform (IUCN Academy): hosting of the course and its materials (4 months, 2 editions)
2. Preparation: content design and translation (Spanish edition): 70h + 25h → 95h
3. Communication, marketing & project selection: 50h
4. Preincubation (1 month):
 - a. Training on NbS (2 weeks): two 2h sessions x 2 weeks x 2 editions → 16h
 - b. Training on economic localization (2 weeks): two 2h sessions x 2 weeks x 2 ed. → 16h
5. Incubation (3 months):
 - Incubation with merged NbS Canvas: two 2h sessions + 2h follow-up x 12 weeks x 2 ed. → 144h
 - Mentoring by partners: one 2h session x 12 weeks x 2 ed. → 48h
 - Exchanges with Glasgow's NbS Accelerator: four 2h online sessions x 2 ed. → 16h
 - Pitch & Launch Day: presentation of projects (1 day): 6h execution + 6h preparation + 6h communication x 2 ed. → 36h

This budget was estimated for the incubation classes to pay teachers, materials, and dissemination. The proposal had some extra interesting activities to be executed outside in nature to be realised over the four months that the incubation lasts:

1. Pitching of ideas, training & mentoring on NbS with IUCN-Med, PROMALAGA and NbS Cluster, at PROMALAGA's facilities (Month 0)
2. Day of Sustainable Mediterranean Entrepreneurship (marine projects), at Regional Government's Blue Economy Innovation Hub (Month 1)
3. Day of Youth-led Eco-entrepreneurship at University of Malaga's Green Ray business incubator (Month 2)
4. Day of Sustainable Rural Entrepreneurship and Art at Regional Government's Rural Social Innovation Hub & Rancho Limon (Month 3)
5. Launch day and NbS Impact Investment Forum, at PROMALAGA's facilities (Month 4)

Finally, the program had important key partners from the cluster involved as always in a public private collaboration:

- **IUCN & IUCN-Med:** learning platform, knowledge, and compliance with Global Standard for NbS
- **H2020 Connecting Nature:** seed funding, experience via Glasgow's NbS accelerator
- **NbS Cluster** (IUCN-Med, Bioazul, PROMALAGA, UMA ...): training, mentors
- **Spanish NbS Observatory:** mentors, promotion
- **Promalaga:** mentors, events, promotion
- **University of Malaga (UMA):** training, applied research
- **Local Futures:** knowledge on economic localization, mentors, promotion

It is very difficult to launch a new product specially one that is not yet well known so many difficulties arose to try to disseminate this program and to have students willing to do it. One of the best dissemination action was to create a climathon and to disseminate the idea during this event that consisted in creating and developing a Natural based solution in and for the Lagunillas neighborhood.



The project did not have the expected success and not enough inscriptions were made so finally it was cancelled/postponed. Financing is an important issue but other factors like the academic one is important as well. With a different approach and with the collaboration of the university or other consolidated educational centers implementing this program will certainly gain in importance. It is to say that Nature based solutions remain relatively new and complex in essence and some new projects are needed as well as new developments to demonstrate the efficiency of Nature based solutions.

STEP 4 Planning a programme to support nature-based enterprises

<i>NBS</i>	<i>NBS Phase</i>	<i>Type of NBE Involved</i>	<i>Challenge</i>	<i>Goal of NBE Program</i>	<i>How will this be achieved?</i>	<i>Partner</i>	<i>What does success look like and how will you measure it?</i>
La Yuca Garden	Delivery	Urban Garden in the city center as a pilot project	NbS urban garden for educational purposes, neighbor's meetings and activities for elderly for moderate activity and fight loneliness	Educational for the children and social for the elderly. Part of a strategy for the future.	The Yuca Garden has been set up and financed by the City	NBE companies, NBS Cluster, Environmental department, OMAU, Promalaga.	In this case success is measured by the use of the Garden for whom is it intended. In the future need to apply the selected indicators to see evolution
Climathon	Planning	Any NBS project that will fit in the Lagunillas context	Development of ideas to implement in the Lagunillas Neighborhood	Idea generation and NBE startup creation	Winner will get a free of charge place in the incubation program	Bioazul, UICN, Social Climate, Promalaga, University of Malaga,	To be able to implement the winner's idea in Lagunillas
Incubaeco Incubation Programme	Planning	All types	to be able to set the program and to carry it all the way to the end	To create NBE startups	Through a four months incubation program	Bioazul, UICN, NBS Cluster, Promalaga, University of Malaga, Local Future Organization, Spanish NbS Observatory	Success will be to carry out the program and to find projects to execute afterwards

CO-PRODUCTION

STEP 1 Define the goals of the co-production process

Co-production is a governance method which can be used by cities and other stakeholders when developing nature-based solutions. This method intends to improve the process and the quality of the proposals by engaging several agents in the planning development and delivery of the proposal. It is important to secure participation of all the agents engaged in this process.

During the development of the Yuca Garden all the actor participating in the project were involved from the beginning. OMAU, Promálaga, Environmental department, Urban planning, Cluster, Neighbours group called Lagunillas Porvenir, Urban land (ASPA), Lagunillas Neighborhood Association, and a School called Nuestra Señora de Gracia.

The goals were to create an urban garden to fit three objectives, the first one was educational and for the kids from the schools nearby to be able to learn about plants and trees, the second was a leisure one encouraging neighbours to use the garden as a meeting point outside the concrete from Lagunillas and the third objective was intended to fight loneliness and have a moderate activity for the elderly people from Lagunillas.

The design of the garden was made after a brainstorming session of ideas generated by the people involved during the planning phase. In this phase the garden was designed and divided into several plots following the idea of the people involved. At this stage there was already a bond between the people involved in the project and it certainly improved the quality of the design, a better and more fluid communication among all the parties a better understanding of the whole picture with the barriers and the enablers leading to a new perspective to frame the project. This stage also improves a better understanding of the materials and resources, that will lead to lower costs of maintenance and finally will lead to a better execution in time and costs

It is important that all the actors are involved in the process all the way throughout the process even though the roles are not the same for every involved party. In the case of the Yuca Garden we had a participatory process with several meetings, to talk and exchange ideas on the project, the process, and the expected results. The participatory process permits also to assign tasks to the people involved.

STEP 2 Use the design principles to flesh out the coproduction goals and structure

Principles	What for?	How?	Challenges
Inclusivity	<ul style="list-style-type: none"> Depends on specific NBS: e.g. urban garden need to get political will, urban planning on board, experts (cluster)neighbours & associations Bring in diverse knowledge, needs and expertise, e.g. gardening companies (interested in NBS development), private stakeholder/bank (for financing), experts (how long does it need) 	<ul style="list-style-type: none"> Political will – politicians need to recognise and support it (co-creation/solution) First bilateral communication to let them know/get to know them, then joint meeting Important is at every step to define who is in charge of what part, one party needs to coordinate Engage actors by going door-to-door 	<ul style="list-style-type: none"> Can be chaos to involve too many actors; especially regional power has different political colour than local one People who live in an area can also be afraid of gentrification, difficult to work in some areas on revitalisation with neighbourhood associations
Openness	<ul style="list-style-type: none"> Critical because of long-term process from design to implementation: new needs come up, technologies and budget change 	<ul style="list-style-type: none"> Communication: when a public project is approved, there is communication in press, important to get buy-in, to give them details - important not to be vague so there are no assumptions/new questions raised 	<ul style="list-style-type: none"> Every time new discussions are needed the process is delayed Difficulties to carry out the project
Legitimacy	<ul style="list-style-type: none"> Ensure legitimacy of different opinions and equal representation 	<ul style="list-style-type: none"> To find balance: who is involved, who is not 	<ul style="list-style-type: none"> Involving too many actors can create chaos
Actionable knowledge	<ul style="list-style-type: none"> There are always opportunities to learn from project implementation Sense of belonging and empowerment of the actor involved. 	<ul style="list-style-type: none"> Learning: learning about process and solutions Cooperation between public and private institutions 	<ul style="list-style-type: none"> Break silos, traditional (from top to bottom) implementation is very strong.
Usable knowledge	<ul style="list-style-type: none"> Important to disseminate project and the results of it. Good results will result in possibilities to replicate in the area 	<ul style="list-style-type: none"> Organisation of educational activities for children Moderate physical activity for neighbours 	<ul style="list-style-type: none"> Promote coproduction projects
Extending institutions	<ul style="list-style-type: none"> Collaboration across departments in municipality and financing. Collaboration between local and regional institutions 	<ul style="list-style-type: none"> Need to frame the project and equally level competencies among institutions. Split leadership and financial participation 	<ul style="list-style-type: none"> Working with other departments because they don't support the project or don't have a leading role Get local and regional institutions to collaborate.

STEP 3 Plan the co-production steps and activities

Four participation sessions have been held to specify, coordinate the actions and co-design the space that will be carried out in the Yucas urban garden. These collaborative meetings have been held at the Observatory of environment of Malaga (OMAU) and in the Yucas urban garden, participating in each meeting representatives of the different groups involved and with participation of more than 6 people in each meeting.

- OMAU
- Urban department
- Urban land (ASPA) Main energizers of the yucca garden with the current “ownership” of the cession of space.
- Fantasy Lagunillas Association which carries out environmental educational workshops, working with four schools in the area
- NbS Cluster, to advise and execute the project.
- Neighbours group called Lagunillas Porvenir
- Lagunillas neighbours Association
- Schools Nuestra Señora de Gracia has shown interest to teach some classes in the Yuca Garden.



All participants except the school were involved in the planning phase to bring ideas for the execution and the latter use of the urban garden. In this case we can outline the collaboration between public and private sector which is very important in the city.

In the execution phase the Nature based solutions cluster had a leading role to implement the ideas from the planning phase and choose the autochthonous plants that will be planted in the garden as well as the timing to do so and the nature based enterprises that will do the execution.

The stewardship phase was set up for the different association to take over the exploitation of the garden by setting different time frames in which to use the garden depending on the availability. Schools were supposed to visit in the morning, neighbours, and elderly to do so in the afternoons.



STEP 4 Select the co-production tools

Several tools are used in the Yuca Garden depending upon its use. To attend schools some paper and some colour pens are used for them to draw a tree or a plant as part of an educational process.

For the neighbours and the elderly some gardening tools if they wish to cultivate some plants. The space is also used to exchange used books. A first selection of books was set up in the little barn with a mailbox big enough at the entrance of the plot to return it in case the plot was closed. Some chairs are available for the people who desire to read their book in the garden

STEP 5 Reflect on the co-production process and results

It is difficult to measure success in a coproduction way since many variables from different actors must be considered. The planning phase and the execution phase are simple to set and to execute in the way that the ideas generated in the meetings will provide the design of the garden. At this stage all the groups involved are in a collaborative and positive mode. But inclusivity is not a very common practice here so involving too many people can create confusion in the process in the way that everyone is eager to collaborate and not all the ideas generated are applicable, but still there is a sense of empowerment among the people integrating the project.

The execution phase of the garden went well, since the species were already previously selected, and the budget was set up in advance. This phase has had less actors involved at the beginning but while executing the phase many new questions arose and the group had to bring some solutions. This had a negative effect on the established schedule by delaying the timing. Since new questions arose the group had to be informed of the Private companies from the nature-based solution cluster did the work following the guidelines established in the planning phase.

The stewardship phase is more difficult since there are several groups using the plot. In the morning with the schools attending the Yuca Garden runs smoothly but in the afternoon it is different. Day to day operation sometimes show deficit in the budgets to buy new seeds or other materials that were underbudgeted or were not considered.

Coproduction process is a new way of doing things that is not yet well implemented in Malaga. Here the structure of command is usually vertical and from top to bottom and this process is difficult to change. Here collaborations are frequent but in other aspects, everyone has a role to execute but each person's role is predetermined and there is not such a space as inclusivity. Another lesson learned is related to the participatory processes in the co-production. It is difficult to bring the right people but also difficult to get the right number of people. Co-production could work a small-scale intervention like this one if the number of people is small. If the group is too big anytime decision last longer to come out since quorum is difficult to obtain delaying the process over time.

Finally, the coproduction method helps throughout the process. At the planning stage it brings more and better ideas to set the idea and the idea becomes similar and familiar to all the actors. This phase is also tricky in the empowerment of the people who participate in it that are sometimes eager to collaborate. The implementing phase is easier to manage since almost all the aspects have been decided in the planning phase.

Finally, the stewardship phase allows for a broader use of the space by different groups. This stage needs constant adjustments to fit all the necessities. Besides as far as budget is concerned, it is difficult to find private actors to take over public spaces for exploitation and make them profitable without charging fees.

REFLEXIVE MONITORING

STEP 1 Rethink what learning process you need to achieve the goals of the nature-based solution

The reflexive monitoring is a method developed to monitor and evaluate transformative solutions. In the case of Malaga, it should monitor and evaluate the transformation of a classic approach from top to bottom to a more co-productive approach where actors and decision makers are at the same level. The development of the Yuca Garden has several goals like the regeneration of a disused space for the neighbours and the community, to increase environmental awareness starting by education. Finally, this pilot project will give insight information for further replications in the neighborhood.

Reflexive monitoring is a novel approach. The first time we set bases with this concept was in the Nicosia Meeting where Genk presented a dynamic learning agenda. The presentation was educational but the concept difficult to grasp. Reading the guidebook helped also to understand the concept.

As stated, before Malaga works on a more vertical way and cooperation exist between department but usually the tasks are set separately.

STEP 2 Define the roles within the project team

At the beginning the idea was to try to set a stage with all the partners and to try to follow this concept with all the people involved in the process of the Yuca Garden. It was not until a one-on-one conversation with Glasgow that we realised that Reflexive monitoring was a method to use internally. These meetings with Glasgow have been very productive because the examples were concrete on the way to focus this method. Our reflexive monitoring team was composed of Cristian (reflexive monitor), Mariano and Virginia. and we have tried to involve the participants from other department or other institutions and companies. It is difficult to ensure fluidity because each person involved sees things from its own perspective but at the same time involving more partners in this real time evaluation gives a wider perspective and a wider range of ideas and solutions.

STEP 3 Recording important events and analysing critical turning points

- How do you track the important events in time? When do you discuss what happened with your team and formulate to critical turning points? Is it connected to 'regular' project meetings? Do you organise an additional meeting for this step and if yes, who is involved in this 'timeline meeting'?
- Who is involved in updating the dynamic learning agenda? How often are the updates made? With whom is this agenda shared?
- How do you keep track on the follow-up actions, especially when they are executed by colleagues who are not (closely) involved in the reflexive monitoring process?
- Can you give 2-3 example(s) of follow-up actions and describe who was responsible for them and how they relate to the critical turning points and learning questions?

Reflexive monitoring is connected to regular meetings since many actors are involved. When we started with the Lagunillas idea with Fundación Rizoma we had several meetings to within a month to try to focus on the best approach to prepare a comprehensive questionnaire for the residents of Lagunillas, but we also had to think on how to conduct the questionnaire and set a time frame. In other meetings we were trying to see the best way to use the information we would collect from those surveys and set procedures to do so. You keep track of things from meeting to meeting since notes are taken during the meetings

We also had meeting with the OMAU and the cluster to see the different ways to develop a nature based solution in Lagunillas that were inclusive and cost effective, the follow up action was to combine efforts and resources to

develop the Yucca Garden. Usually, the best way to track performance is to step back and see how things are progressing, at the same time is difficult to do this exercise daily.

STEP 4 Use learning sessions to identify learning outcomes

Reflexive monitoring is very useful in a coproduction context when problems arise, and the solution is not clear. This method allows to step back and visualise several solutions that could fit and resolve the problem or give a better solution, in this sense Reflexive monitoring is a proactive tool.

During the planning session it is important to visualise what the outcome must be, then you share ideas, and the best ones will fit together with no effort. Then you monitor the meeting and in the next session you need to go to the place to take context into account visualise again and make the changes.

STEP 5 Share your findings with others

We learned from Glasgow that Reflexive monitoring was used as an internal process within the Glasgow team meanwhile we shared with them that it was an open process to evaluate coproduction and to monitor the efficiency in the changes that could be made in the project. The concept of daily evaluation is not generally in use in the city because the approach is more traditional, here evaluation usually happens at the end of the project.

One on one conversations are very helpful, for us Glasgow has been an inspiration to help in the process of creating an incubator for companies. We had already tackled that idea, but Glasgow has been very helpful in guiding and supporting us with ideas. The Zoom sessions with Marleen have been very helpful also in trying to understand the concept and the way it works. Still is it very difficult to visualise the learning questions and therefore to come out the right follow up action.

STEP 6 Reflecting on the method and peer-to-peer sharing

Reflexive monitoring is very different from the way we work. Projects in the city are planned executed and once they are implemented then they are evaluated. If the evaluation lacks some of the initial objectives or do not reach expected results, then an evaluation is made, and the corrections are implemented. Reflexive monitoring focus on evaluation daily or on real time allowing for more flexibility and perhaps more creativity in the development of a project. At the same time is a very technical issue which requires a process of analysis, communication, records and thinking and rethinking and experimentation. The learning procedure is difficult, but it is a method that works well with coproduction processes, to ensure optimal stewardship.

Dynamic Learning Agenda

City: **City of Málaga**

Reflexive Monitor: *Cristian García-Espina (team Mariano Morán, Virginia Walsh)*

Critical turning point/Event (optional)	Learning question	Connecting Nature Framework element	Follow-up action
Meeting with key partners to study BMC framework and find ideas to implement in Lagunillas. The Key	Lagunillas Area analysis. What do the people from Lagunillas would like to change in their neighborhood. Develop	Governance Key Partners: Strategic development, Rizoma foundation,	Study from the area, survey to the residents, business neighbours and associations.

partners are: OMAU, Environmental department, Promalaga, Rizoma Foundation, NbS Cluster.	methodology and questionnaire for Lagunillas people. <i>Learning question:</i> <i>How can we use the data from the survey to prepare a meeting with the residents?</i>	Promálaga, Environmental area with OMAU, NbS Cluster Key beneficiaries: environmental department, residents neighbours Value proposition: increase Knowledge on ecological value from the bottom up (kids to elderly or retired people)	Gather information for analysis
Meeting with OMAU, which is the environmental observatory in Málaga.	<i>How to develop an NbS solution in Lagunillas?</i>	Expertise in governance	Combine efforts and resources to create an NbS solution within Lagunillas
What would be the most appropriate action to develop the land since it is located in a traditional neighborhood.	Involve neighbour's and residents to contribute to the rediscover autochthonous plants and trees. <i>How to involve the community, by linking them to the associations who will develop the educational plans for the kids and activities for the elderly?</i>	Technical solution & co-production Key activities: Citizen and resident's involvement Planting trees and gardens	Create an association to inform and to educate neighbours. Create a series of master classes for kids' young people and adults.
New CTP (Evolving from previous FUA). Realised the need to attract new businesses to the area, incubator - not just 'street' businesses, including services. Give projection to NBS. To create an incubator for nature but need to educate peoples.	<i>How to attract other types of businesses to the area?</i>	Technical solutions Co-production	How can we answer the learning question we formulated = Educational activities, setting up incubator to educate potential businesses.
Meeting OMAU, Promalaga, Cluster	<i>How to create a project that will imply the community in the short and long run?</i>	Co-production Key activities will go towards	Develop activities to be realized in the space in co creation manner

NbS, to develop a strategy for Lagunillas		community involvement and commitment.	(with associations, neighbours, and local establishments)
Meeting Promalaga, OMAU, Cluster NbS and Lagunillas associations: -Colectivo Lagunillas porvenir -Asociación de vecinos Lagunillas -Colegios Nuestra Señora de Gracia	Give an overview of the project to develop in the Lagunillas plot. The idea is for the different associations to create activities for the neighborhood and to maintain the plot as an educational tool for youngster but also to keep active elderly or retired people who are quite numerous in the neighborhood. <i>How to create an attractive project and at the same time create awareness on NbS?</i>	Value proposition is going towards social cohesion, and increase well-being for residents, through the classes and the associations. Key beneficiaries are the community, the residents, and the neighbors	Associations and NBE to develop activities to create value around ecological awareness
Call with Stewart and one to one sessions with Glasgow, gave opportunity to talk about NbS incubator	.	Reflexive monitoring and entrepreneurship.	Meeting with Cluster companies to share idea
Meeting with Cluster company, Climate Alliance	Need for economic activity in Lagunillas, need to see business for the cluster, need for economic development of the area. <i>How to find stakeholders and financing to develop incubator?</i>	Entrepreneurship	Look for emplacement, create program

IMPACT ASSESSMENT

STEP 1 Engage in structured reflection on NBS impacts, pathways and trade-offs

The city of Malaga is firmly committed to the United Nations and sustainable development since 1992, when it began a process of participative strategic planning, which is still going strong. This plan, promoted by the Foundation CIEDES, has produced many other plans and policies, such as the Agenda 21, today Urban Agenda, which specifically contains the sustainability criteria to be followed for Malaga's development.

On September 25, 2015, the United Nations General Assembly unanimously approved the 2030 Agenda for Sustainable Development. This is a universal, comprehensive, and transformative action plan aimed at promoting sustainable human development. The main objective is to face social, economic, environmental, and good governance challenges, putting people, the planet, prosperity, peace, and alliances at the center, under the motto of "leaving no one behind".

The 2030 Agenda is broken down into 17 Sustainable Development Goals (SDGs) and 169 targets.



The plenary session of the Malaga City Council at the beginning of 2018 approved that Malaga join the global process of localizing the 2030 Sustainable Development Goals (SDGs). The Board of Trustees of the CIEDES Foundation is actively involved in aligning the city's strategic plan with the SDGs and designing an SDG Malaga 2030 Action Plan.

Thus, a collaboration process is established between the Malaga City Council (Participation Area), the CIEDES Foundation and the CIFAL Center of the United Nations UNITAR Agency in Malaga to localize the 2030 Agenda in Malaga. This process has always sought the involvement of the largest possible number of local agents and citizens, especially the main leaders and those responsible for the city's projects, most of whom are in the CIEDES Foundation. The main areas of work are:

1. Awareness, training, and involvement of agents
2. Creation of image and communication plan
3. Municipal planning alignment of all agents
4. Definition of goals and system of indicators
5. Identification of good practices and actions by SDG
6. Alignment of municipal budgets
7. Annual progress and accountability reports

In addition to the above-mentioned good practises, the city has developed a continuous and solid system to measure the progress made, with over 170 indicators and synthetic indicators of development. In 2020, with the construction of a digital tool that not only gives a clearer view of the degree of implementation of the agenda, but also provides a bigger and better rendering of accounts of these achievements. A report is filed every year with



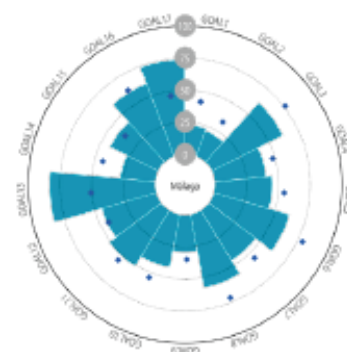
Finally, Malaga is pioneer in Spain in submitting voluntary reports (https://ciedes.es/images/stories/Laura/ODS/180_memoria_CIEDES_P.pdf) on compliance with the United Nations SDGs.

Malaga is the first Spanish city to have a follow-up and monitoring system for compliance with the SDGs and its 169 goals, compared to other territorial areas such as the province, Andalusia, and Spain. This computer tool, incorporated this year, makes it possible to measure how the city is progressing annually in the implementation of the SDGs.

MÁLAGA

Andalucía

▼ EVALUACIÓN POR OBJETIVO DE DESARROLLO SOSTENIBLE



▼ INDICADORES

ODS1 - Fin de la pobreza		ODS9 - Industria, Innovación e Infraestructura	
20-20 ratio	3.72 ●	Índice de penetración 3G y 4G	23.22 ●
Gasto en servicios de promoción social	95.29 ●	Índice de penetración de banda ancha	19.90 ●
Tasa de población en pobreza alta	15.30 ●	Empleados en Industria	4.79 ●
Tasa pobreza infantil	36.50 ●	Gasto en I+D+i por habitante	6.27 ●
Tasa de población en riesgo pobreza	27.90 ●	Patentes solicitadas	3.50 ●
ODS2 - Hambre cero		Superficie de suelo prevista para actividades económicas	11.38 ●
Agricultura ecológica	6.14 ●	ODS10 - Reducción de las desigualdades	
Precios de consumo de alimentos	105.90 ●	Población por debajo de la línea de pobreza	21.10 ●
Tasa de empleados en agricultura	0.94 ●	Integración de personas con discapacidad en el trabajo	1.49 ●
Explotaciones agrarias y forestales	1.44 ●	Estranjeros empleados	28.00 ●
Superficie de cultivos por municipio	22.46 ●	Índice Gini	0.47 ●
ODS3 - Salud y bienestar		Índice de dependencia	48.74 ●
Fertilidad adolescente	4.31 ●	Riqueza en el 1% de la población	7.38 ●
Muertes por abuso de alcohol y drogas	0.70 ●	ODS11 - Ciudades y comunidades sostenibles	
Muertes por enfermedad infecciosa del sistema respiratorio	28.71 ●	NO2	24.00 ●
Muertes por hepatitis vírica	2.78 ●	O3	70.00 ●
Mortalidad infantil	3.56 ●	PM10	9.00 ●
Muertes por enfermedades no transmisibles	715.21 ●	Días en los que la peor estación supera los límites de PM10	12.00 ●
Muertes prematuras (<65 años)	223.24 ●	Media anual de PM10	23.00 ●
Muertes por suicidios	7.31 ●	Índice de acceso a la vivienda	5.23 ●
Muertes por accidente de tráfico	2.44 ●	Plazas en residencias	39.18 ●
Muertes por tuberculosis	0.70 ●	Resiliencia urbana	9.00 ●
Muertes por tumores del sistema respiratorio	71.87 ●	Infraestructura de transporte	5.29 ●
Esperanza de vida	81.27 ●	Vivienda protegida	3.61 ●
Muertes por SIDA y VIH	2.09 ●	Vulnerabilidad urbana	8.25 ●
ODS4 - Educación de calidad		ODS12 - Producción y consumo responsables	
Población matriculada en un título superior	86.00 ●	Reciclaje de plástico y envases	11.55 ●
Gasto en educación	36.70 ●	Residuos impropios	20.16 ●
Acceso a servicios en la educación preescolar	69.13 ●	Reciclaje de papel	13.86 ●
Población con nivel de educación máxima secundaria	45.10 ●	Turismo sostenible	1.33 ●
Población con educación máxima de 2º ciclo de secundaria	19.46 ●	Reciclaje de vidrio	15.52 ●
Población con nivel de educación terciaria o superior	35.43 ●	ODS13 - Acción por el clima	
ODS5 - Igualdad de género		Emisiones de CO2 por cápita de edificios e industria	— ●
Brecha salarial en pensiones	27.35 ●	Emisiones de CO2 por cápita	3.38 ●
Brecha salarial en asalariados	21.81 ●	Emisiones de CO2 por cápita de transporte	— ●
Violencia y explotación sexual	36.37 ●	Pacto de Alcaldes	100.00 ●
Violencia de género	133.20 ●	ODS14 - Vida submarina	
Paridad en cargos electos	45.16 ●	Banderas azules	0.00 ●
ODS6 - Agua limpia y saneamiento		Calidad de las aguas de baño	100.00 ●
Balance de ingresos y gastos en la gestión de agua	— ●	Suelo construido en la franja costera de los primeros 500 m	57.89 ●
Precio de canon para abastecimiento y saneamiento de agua	3.20 ●	Dominio público marítimo terrestre protegido	0.67 ●
Índice de esfuerzo para el pago de abastecimiento de agua	127.60 ●	Costa y hábitats naturales marinos protegidos	4.87 ●
Litros de agua distribuidos por día por habitante	279.71 ●	ODS15 - Vida de ecosistemas terrestres	
Precio de abastecimiento de agua	17.44 ●	Territorio y diversidad de hábitats. Cobertura artificial	17.28 ●
Precio de saneamiento de agua	8.58 ●	Protección territorial de espacios naturales protegidos	12.41 ●
ODS7 - Energía asequible y no contaminante		Territorio y diversidad de hábitats. Zona forestal	51.05 ●
Reducción del gasto en alumbrado público respecto a 2014	4.13 ●	Zonas verdes	1.48 ●
Impacto del gasto en electricidad sobre la renta media por hogar	2.85 ●	ODS16 - Paz, justicia e instituciones sólidas	
Energía renovable	33.65 ●	Tráfico de drogas	60.04 ●
Índice de calidad de suministro	0.81 ●	Tasa de criminalidad	47.76 ●
ODS8 - Trabajo decente y crecimiento económico		Tasa de homicidios y asesinatos	1.04 ●
Accidentes en el trabajo	4653.20 ●	Participación electoral	61.41 ●
Tasa de desempleo	18.73 ●	Índice de participación y colaboración ciudadana	90.91 ●
Impacto del covid19 en el desempleo	25.54 ●	Solidez y autonomía de la institución municipal	53.75 ●
Tasa de jóvenes en paro	7.68 ●	Índice de transparencia	76.92 ●
Parados de larga duración	7.90 ●	Índice de transparencia económico-financiera	92.59 ●
Índice de dependencia por sector de empleo	1.98 ●	Violencia a menores (0-13 años)	21.13 ●
Tasa de crecimiento anual del PIB real per cápita	3.83 ●	ODS17 - Alianzas para lograr los objetivos	
Tasa de crecimiento anual de la productividad	2.08 ●	Proyectos de cooperación y desarrollo	9.18 ●
		Índice de Open data	100.00 ●
		Redes nacionales para lograr objetivos	57.79 ●
		Zonas blancas	0.05 ●

the United Nations Sustainable Development Goals (SDGs)

City's strategic goals	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Employment rate			•	•	•												•
Meeting point			•		•						•						•
Gender equality				•							•						•
Reduce loneliness			•							•							•
Co-production in urban settings			•								•						•
CO2 reduction							•						•				

NBS DESCRIPTION

Type: Scale

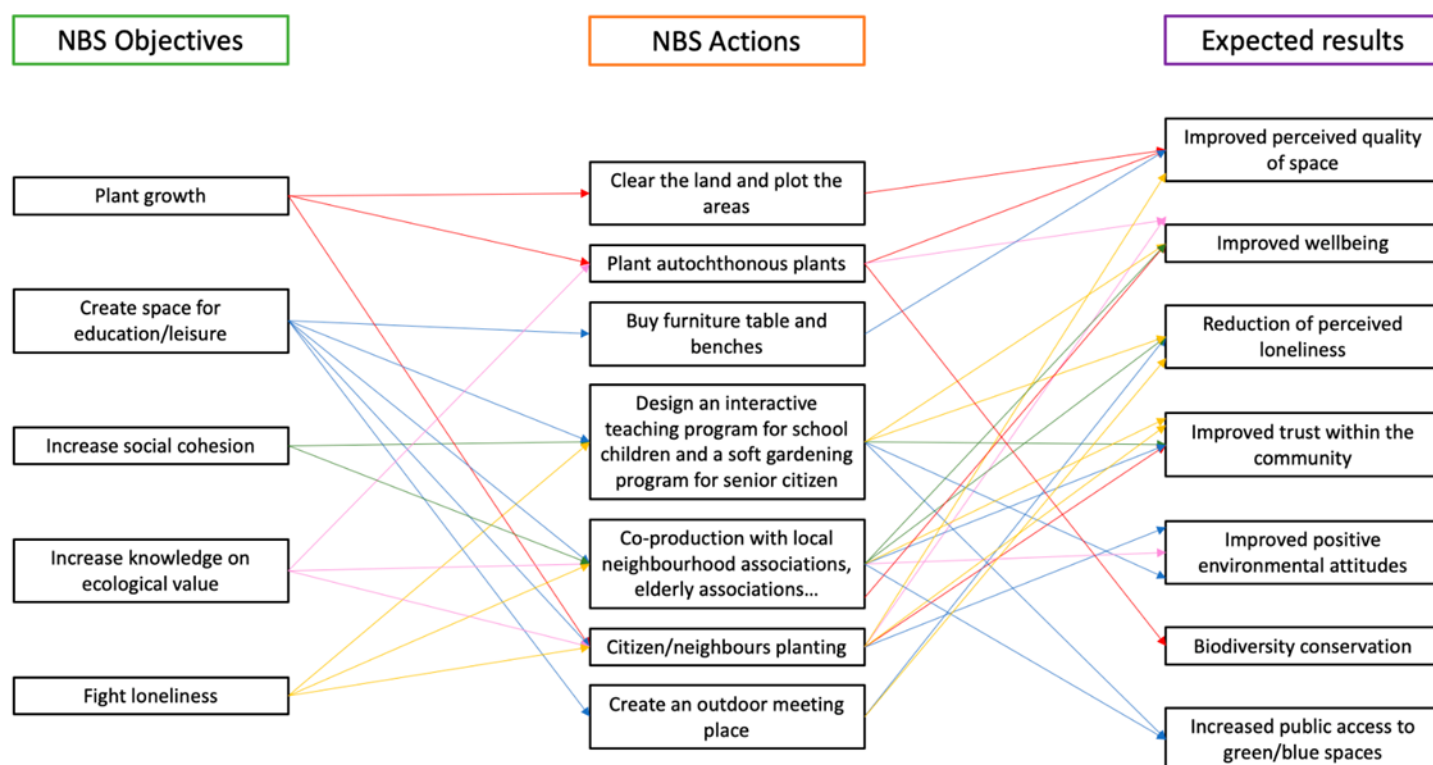
Urban garden 400m2

Context description : in the city center

Process of design and implementation

It's a public plot in a poor neighbourhood where little green is found. The idea was to create a plot to plant and cultivate autochthonous plants and insects from the area as well as having a meeting point for the neighbours. Several meetings have been taken place between local authorities and neighbourhood associations. The idea was to build urban garden for the neighbourhoods and for the children to learn in an interactive and interesting way. This plot was also pursuing other objectives, like training and upscaling educational programs, dissemination of NbS among neighbours, neighbour's involvement and commitment, citizen planting and maintaining.

Málaga's Theory of Change



Assumptions, synergies and trade-offs

NBS Actions	Expected results	Assumptions	Synergies	Trade-offs	
Clear the land and plot the areas	Improved local participation and perceived quality of space	Regular activity will fight loneliness	Neighbours will have a periodic activity to look for → could generate wellbeing and happiness	None	
Plant autochthonous plants	Improved perceived quality of space	neighbours will have the sense of belonging	they will care and take care of the space → trust and access in the community	Rivalry among neighbours may arise.	
Plant autochthonous plants	Environmental education opportunities	Will help to assess the importance of green and its usefulness.	generate positive environmental attitudes motivated by contact with NbS.	None	
Buy furniture table and benches	Improved social cohesion	Neighbours will have a place to talk and interact	Will improve interaction and fight loneliness	None	
Buy furniture table and benches	Improved perceived quality of space	Neighbours will have a nice meeting point	Will improve state of mind of neighbours as well as facilitate easier access to the community	May cause new disputes among neighbours.	
Design an interactive teaching program for school children and a soft gardening program for senior citizen	Improved education and knowledge	Will help to assess the importance of green and its usefulness.	Will improve level of knowledge and interaction and generate positive environmental attitudes motivated by contact with NbS	None.	
Co-production with local neighbourhood associations, elderly associations....	Improved confidence and sense of belonging	Build up neighbours' expectations.	Neighbours will show more interest in the project. and generate positive environmental attitudes motivated by contact with NbS.	None	
Co-production with local neighbourhood associations, elderly associations....	Improved integration of neighbours and facilitate social interaction	Fight loneliness	improve social cohesion and facilitates relationship among neighbours as well as trust in the community	With time could lose interest	
Citizen/neighbours planting	Fight loneliness	Users will interact with each other	Will improve social cohesion and trust in the community	Could create disputes among users.	
Create an outdoor meeting place	Improved perceived quality of space	Will fight loneliness and improve	Will generate wellbeing and happiness	None	
Create an outdoor meeting place	Recreational value of green spaces	Will improve perceived quality of green spaces	Will create positive environmental attitudes motivated by contacts with NbS	None	

Create an outdoor meeting place	Facilitate community accessibility	Will facilitate interaction among users	Will fight loneliness and improve social cohesion	Could create conflicts or group divisions as relationships grow
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STEP 2 Choose appropriate indicators

CHOOSING APPROPRIATE INDICATORS

CODE	NAME	NBS expected result	Selection reasoning
PI4	Perceived quality of space	Improved perceived quality of green space	Know the perceived quality of the new park
ENV2 4	Recreational value of blue-green spaces	Improved perceived quality of green space	Measure decrease loneliness among users
ENV2 5	Cultural value of blue-green spaces	Improved perceived quality of green space	Measure the level of engagement of neighbours
ENV2 9	Supporting/increasing biodiversity conservation	Positive environmental attitudes motivated by contact with NBS	Plant autochthonous plants and disseminate for support
ENV3 5	Species diversity	Improved perceived quality of green space	Will improve positive environmental attitudes towards NbS
ENV4 2	Land use change and greenspace configuration	Improved perceived quality of green space	Try to measure the perceived quality of green spaces
ENV2 6	Community accessibility	Trust in community	Will this improve relationship between community members? Between users?
ENV3 8	Mapping ecosystem services and spatial-temporal biodiversity legacies	Improved perceived quality of green space	Questionnaire to the neighbors
ENV4 1	Accessibility of greenspaces	Community accessibility	Questionnaire to the neighbors
ENV5 5	Green space area	Improved perceived quality of green space	Since the establishment of the plot what has improved?
ENV6 6	Air quality change	Improved perceived quality of green space	Since the establishment of the plot what has improved?
HW3	General wellbeing and happiness	Improved perceived quality of green space	Try to find out neighbors perception
HW12	Enhanced physical activity	Community accessibility	Questionnaire to the neighbours
HW13	Perceived chronic loneliness	Decrease loneliness	Benefits of community planting
HW15	Exploratory behaviour in children	Improved perceived quality of green space	Can we establish a new way to teach children?
SC4.1	Trust in community	Community accessibility	Measure wellbeing and happiness
SC4.2	Solidarity between neighbours	Trust in community	Try to find out how relationship between neighbors has improved. Factors
SC4.3	Tolerance and respect	Trust in community	Direct link between trust in community and general wellbeing and happiness
SC6	Place attachment	Decrease loneliness	How does place attachment decrease loneliness
SC9	Empowerment	Trust in community	Show link between empowerment and trust in community
SC11. 1	Positive environmental attitudes motivated by contact with NBS	General wellbeing and happiness	Measure the degree of happiness related to NbS activity
SC11. 2	Environmental identity	Positive environmental attitudes motivated by contact with NBS	Measure the degree of happiness related to NbS activity
SC10	Environmental education opportunities	Positive environmental attitudes motivated by contact with NBS	How to manage educational opportunities for all age layers.
ECO1	New Businesses 'attracted' or started and additional rates received	Positive environmental attitudes motivated by contact with NBS	Positive effect on neighbourhood future employment?

ECO6	Innovation impact	Positive environmental attitudes motivated by contact with NBS	How will this motivate/generate positive attitude in a typical neighbourhood?
ECO11	Overall economic, social and health wellbeing	General wellbeing and happiness	Show how to improve all those factors
PPG5	Activation of public-private collaboration	Trust in community	Evaluate cooperation
PPG6	Trust in decision-making and decision-makers	Trust in community	Is this a participatory process, who is involved?
PPG15	Governance innovations for participatory governance	Community accessibility	What can be done to improve the participatory governance
PPG16	Community involvement in NBS implementation	Trust in community	How to improve effectiveness of this process
PPG23	Team cohesion	Trust in community	What measures do we need to implement to reach team cohesion
PPG25	Engagement	Trust in community	Try to integrate all stakeholders in project development

STEP 3 Develop a data plan for impact evaluation

DEVELOPING A DATA PLAN FOR IMPACT EVALUATION

Available baseline in the city of Málaga

Code	Indicator	Baseline data	Source (year)	Granularity	Periodicity
ENV24	Recreational value of blue-green spaces	•	Datos abiertos - Málaga (2021)	City	Specific study
ENV25	Cultural value of blue-green spaces	•	SIG - Málaga (2021)	City	Specific study
ENV29	Supporting/increasing biodiversity conservation	•	OMAU - Málaga (2009)	City	Specific study
ENV35	Species diversity	•	OMAU - Málaga (2009)	City	Specific study
ENV42	Land use change and greenspace configuration	•	OMAU - Málaga (2019)	District	Every year
ENV26	Community accessibility	•	OMAU - Málaga (2019)	District	Every year
ENV38	Mapping ecosystem services and spatial-temporal biodiversity legacies	•	OMAU - Málaga (2019)	District	Every year
ENV41	Accessibility of greenspaces	•	OMAU - Málaga (2019)	District	Every year
ENV55	Green space area	•	OMAU - Málaga (2019)	District	Every year
ENV66	Air quality change	•	OMAU - Málaga (2019)	District	Every year
HW12	Enhanced physical activity	•	OMAU - Málaga (2019)	City	Every year
HW13	Perceived chronic loneliness	•	OMAU - Málaga (2019)	City	Every year
PPG5	Activation of public-private collaboration	•	Datos abiertos - Málaga (2021)	City	Specific study

Note. By clicking on the information in the "Source" column, you can access the original data.



STEP 4 Implement the data plan

IMPLEMENTING THE DATA PLAN

New data collection on the exemplar scale from the methods proposed in the Connecting Nature Indicator

		Reviews	
CODE	NAME	Baseline method	Connecting Nature method
PI4	Perceived quality of space		Questionnaire (ad hoc)
ENV24	Recreational value of blue-green spaces	•	
ENV25	Cultural value of blue-green spaces	•	
ENV29	Supporting/increasing biodiversity conservation		Biodiversity monitoring programme Pocock et al. (2015)
ENV35	Species diversity		Urban Biodiversity Inventory Framework (UBIF 2017)
ENV42	Land use change and greenspace configuration	•	
ENV26	Community accessibility	•	
ENV38	Mapping ecosystem services and spatial-temporal biodiversity legacies	•	
ENV41	Accessibility of greenspaces	•	
ENV55	Green space area	•	
ENV66	Air quality change	•	
HW3	General wellbeing and happiness		Satisfaction with Life Scale (Diener et al., 1985)
HW12	Enhanced physical activity		International Physical Activity Questionnaire (IPAQ)
HW13	Perceived chronic loneliness	•	
HW15	Exploratory behaviour in children		Ethnographic case study (e.g., Stanley, 2011)
SC4.1	Trust in community		Trust and Solidarity" scale (SC-IQ) (Grootaert et al., 2004)
SC4.2	Solidarity between neighbours		Items measuring perception of solidarity from "Trust and Solidarity" scale (SC-IQ) (Grootaert et al., 2004)
SC4.3	Tolerance and respect		Neighbourhood Social Cohesion – 'Tolerance or Respect' Scale (Stafford et al., 2003)
SC6	Place attachment		Place Identity Scale (Williams & Vaske, 2003)
SC9	Empowerment		"Empowerment and Political Action" (SC-IQ) (Grootaert et al., 2004)

SC11.1	Positive environmental attitudes motivated by contact with NBS	Environmental Attitudes Inventory (EAI – Milfont & Duckitt, 2010)
SC11.2	Environmental identity	Environmental Identity Scale (Clayton, 2003)
SC10	Environmental education opportunities	Ethnographic case study
ECO1	New Businesses 'attracted' or started and additional rates received	No. of new start-ups in 'close proximity' to NBS
ECO6	Innovation impact	Annual revenue arising for sales of new products / services;
ECO11	Overall economic, social and health wellbeing	Human Development Index
PPG5	Activation of public-private collaboration	Measurement or count data for number of collaborations activated
PPG6	Trust in decision-making and decision-makers	Questionnaire (ad hoc)
PPG15	Governance innovations for participatory governance	Questionnaire (ad hoc)
PPG16	Community involvement in NBS implementation	Questionnaire based on Arnstein's (1969) ladder of citizen participation
PPG23	Team cohesion	Social support scale from The Job Demands-Resources Questionnaire (Bakker, & Demerouti, 2014)
PPG25	Engagement	Utrecht Work Engagement Scale Short version (Schaufeli, Shimazu, Hakanen, Salanova, & De Witte, 2019)

STEP 5 Integrate evidence into the policy process

INTEGRATING EVIDENCE INTO THE POLICY PROCESS

CODE	NAME	Documentary report	Visual chart	Spatial dashboard	Scientific partners	Higher political levels	Media
PI4	Perceived quality of space	•		•		•	
ENV24	Recreational value of blue-green spaces	•	•			•	
ENV25	Cultural value of blue-green spaces	•	•			•	
ENV29	Supporting/increasing biodiversity conservation	•		•	•	•	•
ENV35	Species diversity	•		•	•	•	•
ENV42	Land use change and greenspace configuration			•		•	
ENV26	Community accessibility			•		•	
ENV38	Mapping ecosystem services and spatial-temporal biodiversity legacies			•		•	
ENV41	Accessibility of greenspaces			•		•	
ENV55	Green space area			•		•	
ENV66	Air quality change			•		•	
HW3	General wellbeing and happiness	•	•		•	•	
HW12	Enhanced physical activity	•	•		•	•	
HW13	Perceived chronic loneliness	•	•		•	•	
HW15	Exploratory behaviour in children	•	•		•	•	
SC4.1	Trust in community	•	•		•	•	
SC4.2	Solidarity between neighbours	•	•		•	•	
SC4.3	Tolerance and respect	•	•		•	•	

SC6	Place attachment	•	•	•	•
SC9	Empowerment	•	•	•	•
SC11.1	Positive environmental attitudes motivated by contact with NBS	•	•	•	•
SC11.2	Environmental identity	•	•	•	•
SC10	Environmental education opportunities	•	•	•	•
ECO1	New Businesses 'attracted' or started and additional rates received		•	•	•
ECO6	Innovation impact		•	•	•
ECO11	Overall economic, social and health wellbeing		•	•	•
PPG5	Activation of public-private collaboration	•			•
PPG6	Trust in decision-making and decision-makers	•			•
PPG15	Governance innovations for participatory governance	•			•
PPG16	Community involvement in NBS implementation	•			•
PPG23	Team cohesion	•			•
PPG25	Engagement	•			•

Note. Columns 3, 4 and 5 show how the city wants to disseminate the results obtained. The last 3 columns indicate to whom the city will communicate the impact of its NBS assessment.



ANNEX: CHAPTER 4 NATURE BASED ENTREPRISES

Process chart for a transferrable key performance indicators approach to nature-based solutions

Overarching city goal or challenge taken from key City strategic document/s
<p>SUSTAINABLE URBAN MOBILITY SPECIAL PLAN (PEMUS) (2015-2035).</p> <p>City Special Plan</p> <p>https://movilidad.malaga.eu/opencms/export/sites/movilidad/.content/galerias/Documentos-del-site/PEMUS.pdf</p> <ul style="list-style-type: none">- Create comfortable, safe, functional, and accessible itineraries and spaces for mobility on foot.- Achieve quality public transport, integrated and competitive compared to the private vehicle.- Encourage the use of bicycles as a regular mode of transport.- Promote the rational use of private vehicles.- Manage the parking supply as a tool to achieve a sustainable mobility model- Promote intermodality to achieve efficient use of the different modes of transport and their tariff policy- Achieve an agile and orderly urban distribution of goods and products.- Achieve safe mobility- Inform, train, and educate in the principles and strategic lines that are formulated in this Plan- Establish in future actions a configuration of the urban public territory that guarantees the needs of the plan's mobility model.- Develop the necessary regulations to meet the new mobility criteria
<p>TERRITORY PLAN FOR THE URBAN AGGLOMERATION OF MÁLAGA (POTAUM) (2009)</p> <p>City Territorial Plan</p> <p>http://www.juntadeandalucia.es/medioambiente/web/Bloques_Tematicos/Calidad_Ambiental/Prevencion_Ambiental/evaluacion_ambiental_planes_y_programas/planordenaciondelterritorioaglomeracionurbanamalaga/informesostenibilidadambiental.pdf</p> <ul style="list-style-type: none">- The definition of a territorial framework that serves as a reference to ensure progress and balanced economic and social development of the urban agglomeration of Malaga, adapting urban growth to its environmental, social, and economic load capacity.- Consolidate the agglomeration as a Regional Center corresponding to the first level of the Andalusian City System and configured as an urban area of a metropolitan nature.- Strengthen the territorial articulation, economic integration, and social cohesion of the urban agglomeration within the framework of the Andalusian, Spanish and European community- Encourage an increase in the quality of life, social welfare, and the rational use of natural and cultural resources.- The conservation of natural resources and soils of agricultural, coastal and landscape value, considering them as strategic resources for economic development, social cohesion, and the well-being of the population.- The conservation and protection of the areas and relevant elements of the historical and cultural heritage.- The generation of new facilities of interest and supramunicipal scope in a strategic position, together with the creation of new centrality areas aimed at structuring and uniting the territory of the agglomeration.- The strengthening of the relations and links of the cities of the agglomeration with the nearby urban areas and especially with those of the Western and Eastern Costa del Sol.- The improvement of accessibility of the agglomeration with the outside, especially with the rest of the main regional centers.- Maintaining tourist activity as the economic engine of the agglomeration, through its renewal, diversification, and qualification, while making it possible to take advantage of its drive for the empowerment and improvement of the remaining economic sectors.- The prevention of catastrophic natural risks in the municipalities of the agglomeration.- The protection of the productive space of agriculture- Ensure proper management and integration of the water cycle, energy, and telecommunications infrastructures, establishing the measures that ensure foreseeable demand.

URBAN AGENDA IN THE INTEGRATED SUSTAINABILITY STRATEGY (2020-2050) (Former Agenda 21)

City Urban Agenda

<http://static.oma-malaga.com/oma/subidas/archivos/7/9/6997/00-introduccion..pdf>

<http://www.oma-malaga.com/18/agenda-malaga-2015>

The territory and configuration of the city - TERRITORIAL AND URBAN DEVELOPMENT

- Commit —compared to dispersed urban models— to the compact city, reasonably dense and endowed with complexity and articulated urban variety.
- Develop urban configurations that, beyond geographical particularities, consider the main characteristics common to sustainable Mediterranean cities, such as a certain population density, sufficient levels of urban compactness and a high complexity in the mix of uses and functions
- Minimize land consumption, protecting cultural spaces and the fundamental elements of the urban image and historical memory, as well as the most valuable natural resources from an environmental point of view, and respecting the singularities and complementarities between the urban and the rural .
- Systematically integrate the landscape dimension in policies for protection, management and planning and urban planning following the Florence European Landscape Convention
- Promote greater spatial integration and social cohesion.
- Promote the enhancement and improvement of the built heritage and the integrated urban regeneration of the consolidated fabrics against the indiscriminate consumption of rural land and the construction of new works.
- Apply sustainable design and construction and promote high-quality architecture by favoring new construction technologies.
- Regenerate and reuse degraded and abandoned areas.
- Promote the diversity, quality, and versatility of urban public spaces
- Favor access to nature (green areas)
- Improve accessibility to facilities and equipments.
- From the instrumental point of view, the aim is to overcome the deficiencies and recover the credibility, potential, agility and social transparency of the planning instruments, also promoting coordination at the vertical and horizontal levels.
- Incorporate urban metabolism into urban planning.

The territory and the configuration of the city - MOBILITY AND ACCESSIBILITY

- Promote Sustainable Mobility such as that which responds to the basic needs of access and development of individuals, companies, and societies, safely and in a manner compatible with human health and the environment
- Integration of mobility policies in which territorial and urban planning and management are taken into consideration together with transport management
- Promote economic development and improve competitiveness based on sustainable mobility.
- Improve road safety and in all modes of transport
- Promote the modal shift towards more sustainable modes such as walking, cycling, public transport and car sharing in the urban environment.
- Promote a rational use of private vehicles, promoting a modal shift towards more sustainable modes of transport, promoting pedestrian networks, and cycling routes, as well as the use of electric or hybrid vehicles in urban centers and promoting acquisition support systems or rental of this type of vehicle
- Rationalize the number of motorized journeys: dissuasive measures (tolls, reserved accesses ...), labor flexibility and teleworking and generalization of new technologies for administrative processing, telecare,
- Develop new developable land, carried out from previously planned communication and mobility nodes, prioritizing the main, secondary, or resident road levels
- Increase the autonomy of social groups without access to the car: boys and girls, young people, people with disabilities, people with low income, the elderly and people who simply do not want to depend on the car or motorized vehicles
- Improve the efficiency and competitiveness of the global transport system by promoting functional integration as a whole through an intermodal approach
- Promote sustainable mobility and territorial cohesion, making their economic and social effects compatible with respect for the environment
- Ensure the effective contribution of infrastructure actions to the sustainability objectives established by environmental and territorial planning.
- Promote greater integration of modal networks and improve connections between airports, ports, railways, metro and bus stations, configuring multimodal connection platforms for passengers

- Design a comprehensive parking policy and involve residents

The management of natural resources - URBAN METABOLISM

- Respect for natural resources including water and soil, along with reducing the generation of greenhouse gas emissions, through the application of tools and incentives to promote the construction and rehabilitation of efficient buildings in consumption and treatment of water and energy

- Reduce emissions from diffuse sectors: Transport sector; residential, commercial, and institutional sectors, waste management, agriculture and fluorinated gases

- Protect the most valuable natural resources from the environmental point of view, respecting the singularities and complementarities between the urban and the rural

- Consider natural and technological risks, being mandatory to prepare a Map of Natural Risks of the area under management.

- Integrate the concept of energy efficiency in the organization of cities, urban design, construction, mobility and accessibility systems and urban management

- Promote a system of energy infrastructures that guarantee the energy supply to citizens in an efficient, stable, and quality way, and that facilitate the integration of renewable energies in the generation and consumption structure in an increasingly distributed energy system

- Incorporate an offer of competitive energy services aimed at an efficient final use of energy rather than pure energy supply

- Raise public awareness about reasonable consumption patterns that slow down the growth of energy demand

- Adaptation of Spanish cities to the effects of climate change. Double challenge: adaptation and mitigation.

- Achieve the "20/20/20" objective in terms of climate and energy (including an increase to 30% in the reduction of emissions if the conditions are met).

- Focus the R + D + i policy on the challenges our society faces such as climate change, energy, and efficient use of resources.

- Help to decouple economic growth and the use of resources, reducing the carbon emissions of our economy, increasing the use of renewable energies, modernizing our transport sector, and promoting an efficient use of energy.

- Encourage energy saving instruments that could increase efficiency in sectors with high energy consumption, such as those based on the use of ICT.

- Develop good waste management that favors the hierarchy of management by producers, distributors, and citizens in general (prevention, selective collection, and recovery)

- Reduce the production of waste, in weight but also in volume, diversity and dangerousness, decoupling waste generation from economic development

- Promote selective collection at source, as a strategy to obtain quality materials that have an outlet in the recycling market

- Promote the selective collection at source of the organic fraction of municipal waste to generate quality organic fertilizers (compost)

- Accommodate the waste management system to the urban management system, as one more element, interrelated with others such as the management of public space, mobility, or noise

- Promote the market for recycled products with measures such as the promotion of public green purchasing, as well as compost with environmental quality certification.

- Develop the necessary infrastructures for the treatment of the waste generated, promoting the territorial organization and the training of technicians, under the criteria of self-sufficiency and proximity

- Involve and train people (citizens and personnel involved in management organizations) in waste management.

- Bear in mind at all times that water is a finite natural resource, although regenerable, whose use must be based on principles of rationality, measure, equity, and solidarity.

- Develop comprehensive management plans that consider, among others, climatic cycles, spatial planning, supply, sanitation, and measures to avoid the effects of droughts

- Carry out a sustainable integral management of the urban water cycle (collection, transport, storage, purification, distribution, consumption, sanitation, purification, reuse, and discharge).

- Promote savings and efficiency in the use of water through mechanisms such as joint management between large users (agriculture, industry, and city), the reuse of treated water and the use, where appropriate, of rainwater.

- Recover the social scenarios of water as an essential part of cultural heritage and collective memory

The management of natural resources - BIODIVERSITY AND FREE SPACES IN URBAN SYSTEMS

- Consider open space as an essential element in the functioning of territorial systems, beyond its usual significance as green spaces for recreation. The free space must begin to be a term expressed in the singular and not in the plural. The free space system must be considered a resource for territorial and urban planning, at the same level as the equipment or infrastructure system, as a resource for making a city
- Develop free space networks that go beyond the usual concept of connection between spaces. Free space, as such, and according to this new definition, ceases to have a nature card if the spaces are isolated
- Include land and territories in free space networks that, without direct use value, do incorporate and offer essential environmental services. The effect on the conservation of urban biodiversity must be substantial, insofar as the urban areas themselves also become, through specific measures and techniques, places of connection and a green territorial matrix. In this way, not only "things" but also processes must be protected.
- Include this new approach in the definition of territorial and urban planning instruments in order to increase the land area capable of supporting vegetation and reduce the barrier effect of urbanizations and infrastructures.
- Guarantee the access of citizens to the enjoyment of nature, minimizing the impacts on biodiversity
- Control actions harmful to biodiversity that take place in the urban environment, also including research and education activities for the preservation of biodiversity
- Restore aquatic ecosystems to an optimal ecological state, avoiding any further deterioration
- Respect the conservation of the landscape, ecosystems, and biodiversity
- Introduce measures to improve the natural environment: recovery of riverbanks, water courses, environmental restoration (quarries, etc.), landscape rehabilitation, revegetation, and reforestation
- Value the landscape as a resource, taking care not only of its fragility and diversity, but also its vitality, taking special care of the key elements and components that make it up

SOCIAL COHESION AND ECONOMIC DEVELOPMENT

- Promote "flexicurity" as agreed by the European Council, with the aim of reducing labor market segmentation and facilitating transitions, as well as facilitating the reconciliation between work and family life.
- Regularly review and monitor the efficiency of the tax and benefit systems so that work is attractive, paying particular attention to low-skilled workers and removing obstacles to self-employment
- Promote new forms of balance between work and family life and active aging policies and increase equality between the sexes
- Promote shared collective and individual responsibility in the fight against poverty and social exclusion.
- Guarantee the full exercise, under conditions of equality, of civil, social, economic, cultural, and political rights.
- Generate social, economic and employment opportunities that guarantee quality of life
- Improve the levels of access and use of public services and benefits, especially education, health, employment, social services, and dependency, by all citizens and under conditions of equity
- Adapt sectoral public policies and structures of public services to the challenges and demands of a society
- Reinforce equity in all stages of the Educational System, including university, permanence, and academic success.
- Adapt the reception systems for people in vulnerable situations and specialized reception throughout the national territory to the current needs derived from the evolution of migratory flows, ensuring that they provide them with a sufficient degree of autonomy to access goods and services, exercise of rights and fulfillment of obligations
- Promote comprehensive policies for equal treatment and opportunities and non-discrimination that contemplate the prevention and report of all forms of racism and xenophobia as well as the protection and assistance to victims in all fields of social life, both in the field public and private
- Reduce the levels of social exclusion, marginalization, and poverty, with special emphasis on the child and youth population.
- Contribute to the development of a democratic and participatory culture as well as institutional legitimacy
- Promote construction and socio-community development processes that promote intercultural coexistence, the improvement of social, neighborhood and labor relations, respect for difference and the management of diversity in a shared project of Society
- The integration of social housing and that which receives public aid, together with free rental housing, avoiding social, generational and ethnic segregations, and exclusions

CITY GOVERNMENT

- Promote a new governance, based on cooperation and coordination both vertical and horizontal inter-administrative and between rural and urban territories
- Promote a greater openness and approach of the management to the citizenship that favors their direct participation
- Promote a cultural change towards sustainability
- Establish mechanisms for monitoring and evaluating urban and rural policies and systems
- Promote new information and communication technologies
- Execute collaboration, closely associating parliaments, social partners, and representatives of social organizations, to contribute to the development of national reform programs and their implementation
- Promote administrative transparency
- Strengthen cooperation between the various departments of the administration to articulate diversity and fragmentation with coordination or integration mechanisms, counting on the support that information and communication technologies provide to an integrated and systemic urban management and to achieve a new governance
- Promote the development of urban management instruments at the social, economic, and environmental level through a management system that identifies the environmental impacts produced.

ALICIA - CLIMATE PLAN 2050

City Plan for Climate

<http://www.omau-malaga.com/agendaurbana/pagina.asp?cod=65>

http://www.omau-malaga.com/agendaurbana/subidas/archivos/arc_277.pdf

Urban model

- Strategic line 1 - Adapt planning to the Urban Agenda and the Climate Plan, The compact, complex and proximity city
- Strategic line 2 - Sustainable Building
- Strategic Line 3 - Public Space
- Strategic line 4 - Comfort

Mobility

- Strategic line 5 - Transformation of the urban mobility model
- Strategic line 6 - Low emission urban areas
- Strategic line 7 - Improvement of the public transport service
- Strategic Line 8 - Electrification of Mobility
- Strategic line 9 - Promote external reduction plans for mobility emissions
- Strategic line 10 - Ensuring climate-ready mobility
- Strategic line 11 - Promote pleasant pedestrian routes

Urban metabolism

- Strategic line 12 - Energy rehabilitation of public residential buildings
- Strategic line 13 - Energy rehabilitation of residential, tertiary, private and public buildings
- Strategic line 14 - Promotion of renewable energies
- Strategic line 15 - Optimization of public lighting
- Strategic line 16 - Reduction of emissions of large structures
- Strategic line 17 - Promotion of mechanical CO2 sinks
- Strategic Line 18 - Zero Waste
- Strategic Line 19 - Green Purchase
- Strategic line 20 - Circular and local economy
- Strategic Line 21 - Responsible Consumption and Healthy Eating
- Strategic line 22 - Tourism
- Strategic line 23 - Management and efficient use of water
- Strategic line 25 – Health

Biodiversity

- Strategic Line 24 - Adaptation of the Coast to Climate Change
- Strategic line 26 - Evaluation of the capacity of carbon sinks in green and blue areas
- Strategic line 27 - Conservation and restoration of coastal, marine, coastal dune and river biodiversity

- Strategic Line 28 - Biodiversity Conservation (R&D)
- Strategic line 29 - Conservation of terrestrial biodiversity
- Strategic line 30 - Interconnection of natural systems

Social Cohesion and Economic Development

- Strategic line 31 - Urban policies for social cohesion and Climate Change
- Strategic line 32 - Local economic development and climate change policies

Governance: Transparency and Good Governance

- Strategic line 33 - Institutional Coordination
- Strategic Line 34 - Budget Capacity for Climate
- Strategic line 35 - Awareness and Awareness Plan for Climate Change
- Strategic line 36 - Participation Plan
- Strategic line 37 - Training Plan
- Strategic line 38 - Regulatory measures: Integration of the perspective / criteria of Climate Change / Climate in the PPP

MUNICIPAL HEALTH PLAN MÁLAGA CITY HEALTHY 2016-2020

City Special Plan

<http://derechossociales.malaga.eu/opencms/export/sites/dsociales/.content/galerias/documentos/Plan-Municipal-Malaga-Ciudad-Saludable.pdf>

1. Program for the prevention of psychosocial situations that affect the health of the population of Malaga.
 - Facilitate access to resources that promote healthy living conditions in those groups with particular difficulties.
 - Promote institutional coordination mechanisms that facilitate access to education at all ages and enhance school performance, as well as promote permanent training and job placement.
 - Develop active policies for the prevention of consumption and addictive behaviors, as well as for the reduction of harm.
 - Promote physical, mental, and sexual health by providing strategies and tools for personal development, focusing on the prevention of sexually transmitted diseases and unwanted pregnancies.
 - Reduce violence and discrimination by developing educational strategies with special attention to the most vulnerable groups.
2. Program for the promotion of actions aimed at increasing the quality of life of citizens through the improvement, surveillance, and environmental protection.
 - Guarantee municipal cleanliness, pollution control, and prevention of noise and light pollution.
 - Guarantee the quality of the water
 - Promote energy efficiency and renewable energies
 - Promote responsible consumption.
 - Guarantee the protection and improvement of the municipal flora and fauna with special protection of animal dignity.
3. Program for the promotion of active health habits that contribute to increase the quality of life
 - Contribute to the promotion of healthy habits in people with physical, mental, or sensory disabilities.
 - Promote multidisciplinary activities that allow the development of satisfactory aging.
 - Encourage physical activity in the Malaga population.
 - Promote healthy eating patterns in the entire Malaga population.
 - Promote accessibility to information, advice, and information on the healthy use of free time, as well as the promotion of activities to achieve leisure and healthy rest
4. Program to reduce the risk of domestic, work and road accidents
 - Contribute to the reduction of traffic accidents through road safety education.
 - Contribute to the decrease in occupational accidents.
 - Promote the reduction of accidents in the domestic, urban, and school environment
 - Prevention of food poisoning.
5. Citizen participation program in the field of health, as well as the promotion of research and training.
 - Encourage and promote the training and updating of social and health professionals.

- Mobilize and support the participation of citizens in the defense of their health rights.
- Collaborate with educational institutions and scientific research of the municipality.
- Promote the study of healthy habits in the population of Malaga.

PLAN FOR DISADVANTAGED AREAS OF THE CITY OF MÁLAGA 2019-22

City Special Plan

<http://derechossociales.malaga.eu/es/servicios-sociales/plan-local-de-zonas-desfavorecidas-de-la-ciudad-de-malaga/>
<http://derechossociales.malaga.eu/opencms/export/sites/dsociales/.content/galerias/1-ssociales/PLZD-MALAGA.pdf>

Axis 1. Sustainable economic and community development

Axis 2. Public policies for welfare and social cohesion.

Axis 3. Habitat improvement and Coexistence

Axis 4. Networking and innovation in social intervention

GOAL: MÁLAGA ADVANCED TERRITORIAL STRATEGY

City Strategic Document

https://static.malaga.es/malaga/subidas/archivos/4/4/arc_258944.pdf

1. SUSTAINABILITY

- Investment in the waste sector to meet the requirements of the Union acquis on the environment
- The promotion of the production and distribution of energy derived from renewable sources
- Support for energy efficiency, smart energy management and the use of renewable energies
- The promotion of carbon reduction strategies for all types of territory, including the promotion of sustainable multimodal urban mobility and adaptation measures with mitigation effect
- The promotion of energy efficiency and the use of renewable energies by companies
- Actions to improve the urban environment, revitalize cities, rehabilitate, and decontaminate old industrial areas (including reconversion areas), reduce air pollution, and promote noise reduction measures
- Support for investment aimed at adapting to climate change
- The promotion of innovative technologies for the improvement of environmental protection and resource efficiency in the waste sector and the water sector, and with respect to the soil or the reduction of atmospheric pollution

2. EMPLOYMENT, ENTREPRENEURSHIP, AND INNOVATION

- Access to employment for jobseekers and inactive people, including the long-term unemployed and people removed from the labor market
- Improving the adaptation to the labor market of education and training systems, facilitating the transition from education to work and reinforcing education and vocational training systems and their quality
- Expanding the deployment of broadband and the spread of high-speed networks and supporting the adoption of emerging technologies and networks for the digital economy
- The development of ICT products and services, and greater demand for these technologies
- Improvement of research and innovation (R&I) infrastructures and the ability to develop excellence in R&I
- The promotion of business investment in R&I, the development of links and synergies between companies, research and development centers and the higher education sector
- The promotion of entrepreneurship, in particular, facilitating the economic use of new ideas and promoting the creation of new companies
- Supporting the ability of SMEs to grow in regional, national, and international markets, and to get involved in innovation processes
- Provision of support for the development of business incubators and investment aid in favor of self-employment, micro-enterprises, and business creation

3. ECONOMIC AND PRODUCTIVE GROWTH

- Increase the quality and diversity of the province's tourist offer from a comprehensive sustainable planning and management, increasing excellence and promoting innovation.
- Conservation, protection, promotion, and development of natural and cultural heritage.
- Support for employment-generating growth through the development of endogenous possibilities, including the conversion of industrial regions in decline and the improvement of accessibility and development of specific natural and cultural resources.

- Promotion of the entrepreneurial spirit and values in SMEs in the commerce sector that improve their image and social recognition.
- Development of electronic commerce products and services, and greater demand for these technologies.

4. PEOPLE AND EQUALITY

- Reduction and prevention of early school leaving and promotion of equal access to quality early childhood, primary and secondary education
- Invest in education, training, and vocational training for the acquisition of skills and lifelong learning, through the development of education and training infrastructures
- Improve the quality and efficiency of higher education and equivalent cycles, and facilitate their equal access for all
- Improved equal access to lifelong learning for all age groups in a formal, non-formal and informal activity
- Strengthening of ICT applications for e-learning and e-culture
- Protection, development and promotion of assets and services of public culture and heritage
- Promotion of active and healthy aging and social inclusion by improving access to cultural and recreational services

5. EDUCATION, CULTURE, LEISURE AND SPORTS

- Promotion of social inclusion through improved access to social services and the transition from institutional services to local services.
- Providing support for the physical, economic, and social regeneration of communities in disadvantaged urban and rural areas.
- - Active inclusion, in particular to promote equal opportunities and active participation and improve employability

MÁLAGA 2020 STRATEGY

City Strategy

https://ciedes.es/images/stories/Libros_PEM/2020.pdf

MALAGA OF CULTURE

...

MALAGA OF KNOWLEDGE AND INNOVATION

...

COASTAL AND SUSTAINABLE MÁLAGA

8. Sustainable mobility

- Promote intermodality to achieve efficient use of the different modes of transport and their rate policy.
- Promote the use of any non-polluting means of transport as an alternative to private motorized vehicles, both in the city and in the metropolitan area.
- Increase by at least 10% the demand for bicycles for trips of less than 10 km to encourage the use of bicycles as a normal mode of transport.
- Create comfortable, safe, functional, and accessible itineraries and spaces for mobility on foot.
- Reach the goal of zero deaths, zero injuries, zero congestion and zero emissions pollutants.
- Facilitate the incorporation of the electric vehicle as an alternative to the vehicle for private use with conventional technology (thermal engines).
- Encourage the development of a support infrastructure for electric mobility, together with the increase in the demand for the use of electric vehicles.
- Define a series of actions that can favor industrialization activities related to the production of the components and infrastructures necessary for the development of electric mobility.
- Achieve an agile and orderly urban distribution of goods and products

9. Energy Efficiency and Climate Change

- Promote the use of renewable energies and energy accumulation.
- Promote energy efficiency and sustainable construction.
- Generate continuous programs of reforestation and growth of green areas.
- Innovate and optimize urban solid waste management.

- Innovate and optimize comprehensive water management.

12. Guadalmedina Integration

- Maintain the safety of the city and citizens against floods or avenues.
- Regenerate the space for coexistence.
- Promote accessibility and communications and improve mobility in the area.
- Regenerate, improve and enhance the neighborhoods adjacent to the riverbed.
- Encourage activities in the river in the short, medium, and long term.
- Articulate the formulas of management, execution, and maintenance of the project.

INTEGRATING AND INTEGRATED MALAGA

...

MÁLAGA STRATEGIC PLAN FOR TECHNOLOGICAL INNOVATION (2018-2022)

City Strategic Plan

http://malagasmart.malaga.eu/opencms/export/sites/msmart/.content/galerias/documentos/Plan_Estrategico_de_Innovacion_bajares.pdf

1. Sustainable and Safe Habitat
2. Smart Mobility
3. Innovative Economy
4. Digital Transformation
5. ICT infrastructures
6. Citizen Services

ACTION PLAN SDG MÁLAGA

City Action Plan

https://ciedes.es/images/stories/2019/Innformeprogreso%20planaccion_v4.pdf

1. End of poverty
4. Quality education
5. Gender equality
8. Decent work and economic growth
9. Industry, innovation and infrastructure

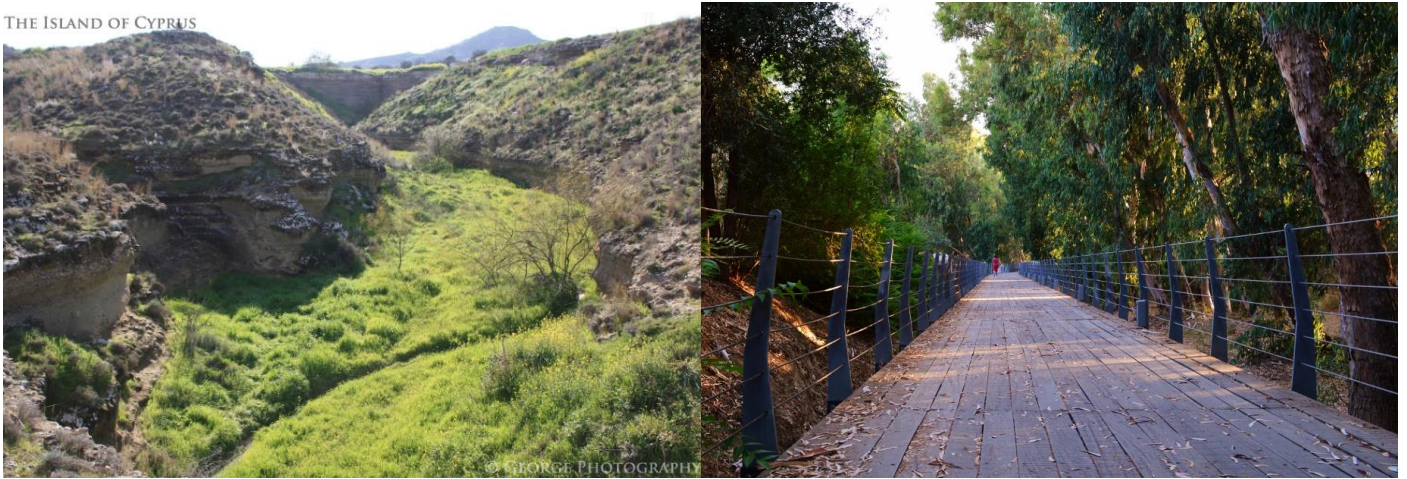
Evaluation of the II Strategic Plan of Malaga (2007-2014) and framework proposal for an INTEGRATED STRATEGY FOR SUSTAINABLE DEVELOPMENT MÁLAGA 2020

City Integrated Strategy

https://ciedes.es/images/stories/Libros_PEM/EvaluacionIIPEM.pdf

1. Malaga of knowledge and innovation (smart and inclusive growth)
2. Malaga of culture (smart, sustainable, and inclusive growth)
3. Coastal and sustainable Malaga (sustainable and smart growth)
4. Integrative and integrated Malaga (inclusive and sustainable growth)

THE ISLAND OF CYPRUS



Connecting Nature Framework

Urban Green Network of Nicosia

Nicosia Development Agency

2/25/22

Connecting Nature



Table of Contents

Table of Figures	3
Table of Tables	6
Summary	7
Connecting Nature Framework.....	9
Step 1: City context.....	9
Step 2: Define the goals of your Nature-Based Solutions	17
Step 3: Identify your target audience and other relevant actors.....	19
Step 4: Introduce your nature-based Exemplar	20
Step 5: Position this report	21
Technical Solutions.....	24
Step 1: Define the nature-based solution.	24
Step 2: Develop an understanding of the landscape context and the ecosystem service needs	26
Step 3: Feed understanding into design, delivery, and stewardship.	46
Step 4: Iterative monitoring and evaluation.....	64
Step 5: Iterative learning for city-wide scaling of Nature-Based Solutions.....	66
Governance	67
Step 1: Aligning NBS with the wider goals of Nicosia.....	67
Step 2: Current status of the location.....	71
Step 3: Required partners.....	72
Step 4: Collaborative governance framework.....	74
Finance – Business Models	75
Step 1: Lessons learned from how Nature-Based Solutions have been financed in Nicosia to date.....	75
Step 2: Explore opportunities for innovation in financing, governance and business models.	77
Step 3: Planning the financing and business model of Connecting Nature NBS Exemplars.....	80
Step 4: Implementation of financing and business model plans for NBS Exemplar.....	84

Nature-based entrepreneurship.....	86
Step 1: Awareness and strategic alignment	86
Building alliances	89
Accelerators and Incubators in Cyprus	95
Step 3: Planning, implementing and monitoring a customized support programme	97
Coproduction.....	100
Step 1: Define the goals of the co-production process	100
Step 2: Use the design principles to flesh out the coproduction goals and structure.....	100
Step 3: Plan the co-production activities.....	105
Step 4: Select the co-production tools.....	107
Day 2- Stage 2	113
Day 3- Stage 3	117
Map art	117
Step 5: Reflect on the co-production process and results.....	122
Nicosia's Impact Assessment Plan	123
<i>Choice of appropriate indicators</i>	123
<i>Developing a data plan for impact evaluation</i>	124
BUILDING BLOCK 1. ENGAGE IN STRUCTURED REFLECTION ON NBS IMPACTS, PATHWAYS AND TRADE-OFFS.....	124
BUILDING BLOCK 2. CHOOSING APPROPRIATE INDICATORS	129
BUILDING BLOCK 3. DEVELOPING A DATA PLAN FOR IMPACT EVALUATION	130
BUILDING BLOCK 4. IMPLEMENTING THE DATA PLAN.....	131
BUILDING BLOCK 5. INTEGRATING EVIDENCE INTO THE POLICY PROCESS	132

Table of Figures

Figure 1 - The green spaces of Nicosia, their spot in the map and a picture of the green space	14
Figure 2 - Existing and proposed Municipal/District parks.....	25
Figure 3 - Mobility Master Plan, 2010	25
Figure 4: Athalassa Forest Park key geographic location	27
Figure 5: The Pedieos River Basin with the Tamassos Dam in the foothills and the urban area of Nicosia downstream (left); google earth image of the linear park in the urban areas of Nicosia and Strovolos (right).	30
Figure 6: Users' perceptions of the most important services of urban parks (number of visitors), Giannakis et al (2016)	31
Figure 7 & Figure 8: Suspended pathways of the Pedieos Linear Park, showing the different heights of the built-up area next to the park.....	32
Figure 9: Walking – cycling path in Ayios Dimitrios Park.....	33
Figure 10: Walking – cycling path in Ayios Dimitrios Park	34
Figure 11: 3D plans of the Square, Zaha Hadid Architects.....	36
Figure 12: 3D plans of the Square, Zaha Hadid Architects.....	37
Figure 13: Walking path in Akadimias Forest Park.....	38
Figure 14: Green open area in Acropolis Park.....	39
Figure 15: Walking path in Acropolis Park	39
Figure 16: Kakkaristra Gorge.....	41
Figure 17: The gorge walls and floors were covered in various species of fossilised shells stacked one on top of each other in geological layering.....	41
Figure 18 & Figure 19: Visitor-guide map of the Kakkaristra-Apalos gorge trail.....	42
Figure 20, Figure 21 & Figure 22: Placement of signs with the name of the plants that are located on the path of Kakkaristra-Apalos (Latsia Municipality in cooperation with Forest Department)	42
Figure 23 & Figure 24: Plantation of 4000 trees (Private donation – Citizen's initiative in collaboration with Latsia Municipality and Forest Department).....	43
Figure 25 & Figure 26: Citizen's and NGOs helped on the plantation of 4000 trees initiative, under the Forest Department supervision.....	43

Figure 27: View of the Green Line (UN Buffer Zone) from Lourka Forest.....	44
Figure 28: Lourka Forest Park.....	45
Figure 29: <i>Ostrea edulis</i> and <i>Ballanus tintinabulum</i> fossils lie on the walls and ground of the elevated park.....	45
Figure 30: A list of the 79 different species of trees, shrubs and herbaceous plants that are included in the Botanical Garden.	47
Figure 31 & Figure 32: Athalassa Environmental Information and Education Centre Botanical Garden.....	48
Figure 33 & Figure 34: Render designs of the Square, Zaha Hadid Architects	51
Figure 35: Improvements on the walking and cycling paths, solar panels installation (lighting)..	52
Figure 36: Playground improvements.....	53
Figure 37: Cycling – Walking Bridge Improvements.....	54
Figure 38 - Lourka technical design proposal (a)	56
Figure 39 - Lourka technical design proposal (b).....	56
Figure 40 - Ayios Dimitrios park technical design proposal.....	58
Figure 41: Pallourokampos Masterplan.....	59
Figure 42, Figure 43 & Figure 44: Pallourokampos Masterplan.....	60
Figure 45, Figure 46 & Figure 47: Design Details of the Park	62
Figure 48: Pallourokampos park render images of the proposal	62
Figure 49 - Proposed Governance Model of NBS	74
Figure 50 - Business Model Canvas	83
Figure 51 – Connecting Nicosia Project Timeline.....	106
Figure 52: The Agenda of the three-day Workshop.....	110
Figure 53, Figure 54 & Figure 55: Photos from the first day of the workshop. (Memory Work)..	112
Figure 56: Photos from Kakkaristra Gorge visit	113
Figure 57: Photos from Lourka Forest visit.....	114
Figure 58: Meditation – Eco Therapy practice.....	115
Figure 59: Body Mapping exercise	116
Figure 60: Body Maps were hanged across the trees on a string.....	116

Figure 61 & Figure 62: Map Art Work.....	118
Figure 63: Map Art and Body Maps	118
Figure 64, Figure 65, Figure 66 & Figure 67: Some of the designs of the Illustrator, Eleana Chrysanthou.....	121

Table of Tables

Table 1: Connection between Nicosia's Exemplar's goals and the SDGs	69
Table 2: Current status of the NBS	71
Table 3: Engaged stakeholders	72
Table 4: Current status of the NBS	75
Table 5: Financing & Business Model Implementation Plan	84
Table 6: Connecting Nature Framework principles	100

Summary

Nicosia is the capital city of the Republic of Cyprus. It lies roughly in the centre of the island in the Mesaoria Plain, flanked by the northern range of Kyrenia Mountains with its distinctive 'Pentadaktylos' – the five-finger mountain.

The capital has two distinct faces: the old, original part of the city, surrounded by sturdy Venetian walls over 400 years old, and a busy modern metropolis, which has a population of 200,452 inhabitants ($\approx 16.6\%$ of the country's total population) together with the suburbs.

As the country's capital, Nicosia is the financial and business center of Cyprus. Besides the abundance of financial services within the city, Nicosia relies primarily on the tourism and shipping Industries. Though Nicosia is not a port (the closest port is Limassol), plenty of shipping companies have offices in the capital. Since Cyprus is at a strategic location for commerce between Europe and the Middle East, shipping is a major focus in the capital.

Regarding the urban quality of the city, it is deeply marked by the division of the island of Cyprus and faces at least two related challenges: (i) the performance of its mobility system, which is heavily biased towards the use of individual cars, and (ii) the lack of adequate and environmentally rich public spaces in the proximity of the densely built urban core.

Nature-based solutions (NbS) could operate a convergence of the solutions to both of these challenges. The term NbS is not so widely known or used in the urban planning context of Nicosia. Although NbS have been and are being implemented in efforts towards improving living standards and quality of life, they are not labelled as such. This new term has not been incorporated into development plans or adopted to the extent where planners, designers, policymakers, urbanists, and other experts in the field can easily comprehend its meaning and impact.

Through Connecting Nature Framework, Nicosia Development Agency team aims to help delivering NbS as part of a strategic plan that places environmental objectives and healthy, attractive, and natural surroundings for the local population higher on development agendas. More specifically, Connecting Nature Framework of Nicosia has been approached as a tool that aims to include NbS as policy theme in national and local strategies, which in turn would prepare and facilitate projects on the ground.

The Agency, as part of the CN project, decided to work further on the implementation of a very ambitious large-scale project: a **Network of open and green spaces** that will cover the district of Nicosia, which will promote the health and wellbeing of people, improve their quality of life, and enhance the environmental quality of the area of intervention (air quality management actions to reduce air pollution and its associated health impacts).

During the application of the Connecting Nature Framework a number of challenges addressed such as: Limited understanding of NbS and related concepts; Limited knowledge on the NbS implementation process; Lack of clear policies and legislation on co-production; Lack of a “common language” that caused troubles in communication between the involved actors, especially at the very early stages of the project; Limited funding for this scale of projects etc. All these challenges were identified throughout the process and additional actions were taken in order to overcome them.

It is worth mentioning, that Nicosia Development Agency has worked closely with the Directorate General for European Programmes, Coordination and Development of the Ministry of Economy as well as with its member municipalities to find the best possible way to achieve that. After several discussions, brainstorming sessions and meetings with several key people (policymakers), Nicosia Development Agency has managed to include the majority of the projects (parks) developed in the context of the Connecting Nature Framework, in the Integrated Spatial Development Strategy (OXA) plan for Nicosia. The OXA plan was submitted in February 2021 and was approved for funding in September 2021.

Concluding, Nicosia Development Agency approach the Connecting Nature Framework as a **living document** that will be continually updated and revised according to the city's and people's changing needs.

Connecting Nature Framework

Step 1: City context

The urban quality in the city of Nicosia is deeply marked by the division of the island of Cyprus and faces at least two related challenges: (i) the performance of its mobility system, which is heavily biased towards the use of individual cars, and (ii) the lack of adequate and environmentally rich public spaces in the proximity of the densely built urban core.

Nature-based solutions (NBS) could operate a convergence of the solutions to both of these challenges. The planning milieu in Nicosia, supported and partially led by the Nicosia Development Agency (ANEL), has started to explore mobility solutions based on connecting, densifying, and developing an urban network of green and open spaces. One example of such solutions is in the form of bicycle and pedestrian paths that take advantage of the calmer and safer surrounding of parks and gardens. These networks could serve as a tool for developing relationships between high-quality community life and other benefits, such as urban heat island (UHI) regulation, water management and anti-desertification.

NBS are defined by the European Commission as: "Solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience. Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions."

However, the term NBS is not so widely known or used in the urban planning context of Nicosia. Although NBS have been and are being implemented in efforts towards improving living standards and quality of life, they are not labelled or titled as such. This new definition/term has not been incorporated into development plans or adopted to the extent where planners, designers, policymakers, urbanists, and other experts in the field can easily comprehend its meaning and impact. Since there is no familiarity with the term 'nature-based solutions', projects and examples that fall under the NBS umbrella are often not acknowledged or considered as such solutions. Consequently, information, best practices and expertise surrounding NBS projects tend to be 'lost' or 'overlooked'.

However, implementing such ideas and solutions in Nicosia is not an easy task. Many of the planning tools at the disposal of the central and local levels of government and administrations are outdated, and there is an absence of participatory culture in urban planning in the city.

The Connecting Nature project can include NBS as policy theme in national and local strategies in a significant way, which in turn would prepare and facilitate projects on the ground. In addition, there is a need for better knowledge and understanding of how NBS can be adopted in Nicosia.

This creates a demand for knowledge-sharing around good practices from other cities, for instance on how to guarantee the (environmental, social and economic) sustainability of projects or how to identify appropriate funding mechanisms. Ultimately, the goal should be to help delivering NBS as part of a strategic plan that places environmental objectives and healthy, attractive, and natural surroundings for the local population higher on development agendas.

The urban planning and development context in the area of Nicosia is facing a series of challenges, which are analysed below.

Main urban challenges and opportunities

Divided city

The division of the island remains one of the characteristics that define the city of Nicosia. It is a city divided between the Northern territories occupied by Turkey and the EU member Cyprus in the South. The focus of Connecting Nature lies on interventions in Greater Nicosia, which includes the Municipalities on the South side of the divided city.

There have been attempts to overcome the division of the city, such as an agreement to prepare a common sewage system from 1979 and the bi-communal 'Nicosia Master Plan' from 1981 that aimed to improve the existing and future living conditions of all the city's inhabitants.

Despite the possibility to cross the Border on Ledras street and a general openness of the population towards cultural diversity, the city is marked by the division of the different communities living side by side on the island. The successive waves of immigration from other parts of the world (workers from the Philippines, retirees from the UK, businesspeople from Russia, students from the Middle East etc.) have so far not decreased the salience of the primary social categories that structure the unresolved geopolitical conflict over the island: Greek Cypriots, Turkish Cypriots, Turkish.

Car mobility

Nicosia is predominantly a car-oriented city, with a few safe, comfortable, and attractive alternatives. This has led to the dire consequences known from all car-centred cities: increased air and noise pollution, domination of public spaces by private vehicles and traffic congestion, which are intensified during peak hours. The dominance of the car is only exacerbated by the construction of highways.

Alternative transportation is poorly developed: bike and pedestrian routes are inconsistent, prone to frequent discontinuities (such as municipal boundaries) and inaccessible. Moreover, until recently, there was no proper bus system. There is a growing need for a city-wide bicycle and pedestrian master plan, even though a mobility master plan from 2010 has started to address the problem through rolling out cycling lanes. Well-designed green infrastructure could divert

pedestrian and bicycle traffic off the congested roads and provide attractive links between the different parts of the city – which has been proven by the Pedieos Linear Park.

Furthermore, Nicosia generally lacks high-quality public spaces. While all new development ought to contribute 15% of the development site to public spaces, there is seldom the finance to design and develop it properly. Moreover, the main urban expansion area in the south-west of the city allows for low-density housing speculation while providing no public space allowance. The tendency towards low density housing has placed pressure on land values, making housing within the Nicosia metropolitan area more expensive compared to housing closer to the coast. This encourages future residents to look towards the coast for both housing and lifestyle or to resort to driving to access quality green spaces (such as Athalassa Park or the Linear Park).

As a result, Nicosia has the bulk of the island's stable year-round jobs yet lacks many of the qualities of a capital city.

Green infrastructure

Nicosia includes a variety of green spaces that are intensively used by the local population. The most successful green spaces include the Pedieos Linear Park, Academia Park and the Athalassa Forest National Park, which are also the biggest green infrastructure sites within the metropolitan area. Since the city is situated in the centre of the island, access to green spaces is particularly important for Nicosians.

Besides the large parks mentioned above, there is a staggering number of small green areas in Nicosia. This is largely a result of urbanism rules that stipulate that 15% of the site must be turned public (or financially compensated for) when undeveloped land is built on or subdivided. With Municipalities accumulating hundreds of such plots, maintenance is regarded as virtually impossible, resulting in derelict sites or in the privatisation of 'public' space. The Municipalities claim that they lack sufficient maintenance staff and often contract the caretaking to private gardening companies. Such fragmented spaces do not allow for economies of scale and efficient use of maintenance technology, hence their relatively high costs (and low community value).

Similarly, the Pedieos park, which features a long stretch of rare pedestrian infrastructure, poses a different maintenance challenge due to the fact that it runs through different Municipalities who need to coordinate maintenance responsibilities. Another kind of challenge is that some Municipalities have turned ecological zones into sports fields, resulting in their ecological degradation.

A central theme for the further development of Nicosia's parks is to connect the different green spaces into a system of parks. While the Pedieos park is a prime example of how a park can function as a link, the potential of parks in this regard is not yet fully realised: parks could help connecting larger employment zones and public infrastructure. For instance, the big universities

in the East and West of the city; the pedestrian walk along Pedieos river could run further South; and more linear parks and paths through existing parks would help to establish a systems of active mobility parkways. The space necessary for such a development seems to be available, but what is lacking is a holistic vision for park development at the scale of Greater Nicosia, as well as funding for implementation.

Water management

Cyprus has a Mediterranean and semi-arid climate, with hot summers and warm winters. It suffers from chronic water shortage, especially during extended dry periods. Rainfall is sporadic, but then strong and intense. The endemic vegetation is naturally small in scale and frugal in its water consumption. Climate change is likely to escalate the water shortage on the island, but water pumping is already depleting aquifers.

The irrigation of ill-designed green spaces, (private) swimming pools and water demand from agriculture are mainly responsible for the water shortage. In 2018, the island experienced water shortages and cut-offs: only 25% of the normal water supply was allocated to perennials in agriculture, and no water at all for new crops. This meant that there were no new crops after July, so farmers had to do without the habitual second harvest.

In Greater Nicosia, a modern water recycling plant can only be found in Lakatamia. In this context, the development of NBS needs to attribute great attention to the choice of plans, to minimize the need for artificial irrigation. Ideally, NBS should be conceived to improve rainwater retention capacities, a challenging task given the low-frequency and high-intensity rainfall patterns on the island.

The drinking water either comes from desalination or rainwater collection with the help of dams. This system would provide enough drinking water, but currently cannot satisfy the demands for agriculture, green spaces and pools. To tackle this problem, the state aims to build new desalination plants for irrigation water. New technologies for this purpose are being tested by the Department Water Development at the Ministry of Agriculture, which notably investigates the plants' energy needs and techno-economic viability.

There seems to be no clear demand-side policy to curb the need for irrigation water. Property owners are free to build houses the way they want, which has led to the proliferation of swimming pools, water parks, golfs and large agricultural sites. Big consumers of water are allowed to build smaller desalinization plans as long as the Departments for Water, Hotels, Agriculture and Fishery provides them with the necessary permission. The process of obtaining such permission has recently been simplified and there is now a plan of areas in which desalination units are allowed. Because the desalination units produce substantial amounts of waste (in the form of sludge that is dumped into the sea), it contributes to the pollution of the Mediterranean Ocean. Moreover,

the land use requirements of the pipes related to desalination plants are an issue. Compared to the supply of fresh water, the infrastructure for sewage treatment is less problematic in Nicosia. Sewage sludge could be used as amendment in agriculture or in anaerobic digestion plants, however, it is often incinerated.

Biowaste management

The Municipalities of Greater Nicosia have yet to find ways to collect and treat biowaste separately, as foreseen by the EU Directive to occur at the latest in 2023. In Cyprus, the state has taken the lead to plan for the implementation of separate collection of biowaste, but the actual management of collection and treatment will be done at the municipal level.

The problem of biowaste is being addressed with new national regulations obliging each Municipality to establish a separate collection system for all plastics, metals, paper and organics. Public consultations for this new regulation have started recently and ended in February/March 2019, before the regulation went into parliament for approval in 2019. This process aims to involve the Municipalities more in waste management, who so far have focused only on the collection of unsorted waste. The handling of recyclables has been delegated to an Extended Producer Responsibility system (called "Green Dot" in Cyprus), which collects packaging waste (PMD and paper) through curbside collection and bring points (for glass). The sorting is not mandatory. Furthermore, tourism is a challenge that poses an additional strain on urban waste systems, since tourists are typically unfamiliar with local sorting practices. The Municipality of Nicosia is a partner in the EU project "Urban Waste" that sets out to inform tourists about waste management.

The new approach will force Municipalities to draft a local action plan for waste management; some Municipalities, like Nicosia, have already started this in the framework of their sustainability strategy. The Latsia Municipality has developed a waste plan for all fractions (including organics). And already has a scheme for collecting green waste once a month (for an annual cost of €8000 to collect the green waste of 20.000 people in around 7000 dwellings). The waste is treated in a privately owned plant, where no gate fee is charged if its composition is pure and first shredded. Furthermore, there have been some experiments with Pay-As-You-Throw schemes, which could be extended in the future.

The treatment capacity for separately collected organic waste still needs to be developed. There are around 12 plants for anaerobic digestion in the agricultural sector of Cyprus scattered across the island. They have been built to treat manure from livestock (pigs and cows), but the state believes that they can be adapted to treat urban biowaste. Additional plants will probably be necessary; a small unit is planned for Pafos.

The separate collection of urban biowaste constitutes an opportunity for NBS. According to a market study by the Ministry of Agriculture (Department of Environment), compost from biowaste

could be used as organic amendment to mitigate the desertification of the island; it could also be used in municipal green spaces or in agriculture. Biowaste management could become a key element of a wider sustainability strategy including waste, food, green spaces and water management. This could help transform spaces from “brown” to “green”, by increasing the soil’s capacity to absorb, retain, and provide water for the local vegetation.

Current state of Nature-based Solutions projects

There are several urban projects in Nicosia that could be approached as NBS. Some of these have already been implemented, some are at initial stages of implementation, whereas others are in their planning phase. An overview of the most prominent urban parks (NBS) in Nicosia is illustrated in the figure below.



Figure 1 - The green spaces of Nicosia, their spot in the map and a picture of the green space
Source: Zanos and Georgi (2017)

The geographical location of these NBS has been included in an interactive, open-access map, and can be found [here](#). Below are briefly presented the most relevant NBS initiatives in the city and metropolitan area of Greater Nicosia.

Some of these NBS (parks, urban green spaces, forests) that are included in the proposed Urban Green Network are the following:

- Athalassa National Forest Park
- Urban Linear Park of Pedieos
- Eleftheria Square
- Apalos - Kakkaristra Natural Park
- Urban Park of Pallourokampos
- Acropolis Park
- Akadimias Park
- Lourka Forest Park
- Ayios Dimitrios

Another intervention falling under the NBS umbrella is the LIFE UrbanProof EU-funded project, led by the Department of Environment, Ministry of Agriculture, Rural Development and Environment. The aim of this project is to increase the resilience of Municipalities to climate change, equipping them with a tool for supporting better informed decision making on climate change adaptation planning. The tool will be applied in Nicosia, where several small-scale green and soft adaptation measures will be implemented based on the results. Finally, local adaptation strategies for each of the Municipalities will be developed. Two Municipalities from Greater Nicosia participate in the project: the Municipality of Strovolos and the Municipality of Lakatamia.

Additionally, there are several other projects or initiatives related to NBS that are planned or ongoing in different Municipalities of Nicosia. Some of these include:

- The development of Lourka forest in the Yeri Municipality
- ANEL envisages initiatives for promoting NBS and local-level identification of NBS that can be used in the city of Nicosia (ongoing process)
- Between the north and the south, one particular project was initiated called 'Masterplan Nicosia', which created a walk to the most significant buildings and destinations in both cities
- Green infrastructure strategy of Latsia Municipality (aiming to adopt a General Green Infrastructure strategy in city level)
- Energy Improvement Plan for Municipal Buildings (promotes energy-saving and efficiency measures in Nicosia's municipal buildings and facilities)
- Municipal Gardens (urban horticulture) in Aglantzia Municipality (concept idea – early stages)

- Rainwater Harvesting and Management of Klimos River in Engomi (ongoing)
- Flood protection Project in Engomi (ongoing)
- Linear Park of Yialias in Dali

Step 2: Define the goals of your Nature-Based Solutions

In the context of the Connecting Nature project, the aims and goals to be achieved by the proposed NBS are to:

- Engage all interest groups and involved actors (stakeholders), as a response to Nicosia's weak participatory culture in city-making
- Improve the performance of Nicosia's mobility system, responding to the challenge of Nicosia being a car city
- Enrich the existing (poor) network of public open and green spaces, addressing the current lack of such spaces in the city and resolving urgent accessibility issues
- Deliver NBS as part of Nicosia's strategic and operational plans (under implementation)

The project's vision is to create, on a district level, an urban network of Linked Open and Green spaces (connecting them with an integrated bicycle and pedestrian network) using as a core the National Forest Park of Athalassa.

Connecting Nature in Nicosia aims to create a thriving **urban network of high-quality green spaces**. The different **parks will be linked** with each other, but also provide new mobility options to get around in the city, from residential areas to business districts and university centres. The network will also be **open** for different users and uses, and offer a series of environmental, social and economic benefits. The benefits derived from the project are analysed below.

A better network of green spaces will address several related challenges faced by Nicosia today. Regarding **environmental benefits**, the active mobility connections between green spaces will be a crucial step towards providing an alternative to the omnipresent car as means of transportation. This will improve air quality as more people use bikes and walking to get around the city. The landscaping interventions in the parks and along the mobility axes will also deliver other environmental advantages such as heat mitigation, better water management and increased biodiversity, notably by paying close attention to selecting appropriate species of plants and trees that are adapted to local conditions.

The **social benefits** include positive impacts on health and well-being that are commonly associated with more frequent contact with nature. The network of parks will stimulate physical activity by fostering active modes of transport and recreation (walking, cycling, skating, etc). The Urban Green network will also offer an attractive way for families, students, dog owners and other members of the community to experience the city and pristine weather of Nicosia, creating occasions for meeting and interacting with members of the community, as well as spending time in the natural environment, and increasing the social cohesion of the surrounding areas.

The economic **benefits** include an overall improvement of the image of Nicosia as a city to work and live in. The objective is to move from a congested, car-dominated agglomeration to a city

dotted with high-quality green spaces within walking or cycling distance from residential areas. This improvement will positively affect Cypriot enterprises; they could see their economic activity increase, especially if they are located in the vicinity of parks. Companies could promote healthier and environmentally friendly commutes to their employees and embrace a greener city among other values of their corporate responsibility. Moreover, the upgrade and maintenance of parks and green mobility connections will create sustainable local jobs in gardening and landscaping, but also other activities benefitting from a thriving park network such as kiosks/cafes in or around green spaces, or the production of park equipment.

Step 3: Identify your target audience and other relevant actors

The Exemplar of this project proposes the creation of a better city-wide park network through different work streams. Therefore, the implementation of this project in the case has certain particularities regarding its target audience and other relevant actors/stakeholders. It involves a network of park, where each park is considered a separate project and the stakeholders involved are differentiated between each park/green space. Below is a list of the relevant actors, stakeholders, and the target audience involved in the different NBS interventions.

Relevant actors/stakeholders

- Ministry of Interior
- Ministry of Employment
- Ministry of Agriculture (Forest Department, Dept of Environment)
- Commissioner of Volunteerism
- Commissioner of Environment
- Directorate General for European Programmes, Coordination and Development (DG EPCD)
– Ministry of Economy
- Municipalities (Local Authorities)
- Nicosia Development Agency (ANEL)
- Chrysallis Leap
- Universities (University of Cyprus, University of Nicosia, European University, Open University, Cyprus International institute of Management etc)
- CSR Cyprus
- Start-up incubators
- NGOs
- Schools / Hospitals / Health Departments

Target audience

- Youth Boards / Student Unions
- Citizens
- Businesses in the surroundings of the parks
- University (Technology, Advise/planning, Monitoring, Entrepreneurship)

Step 4: Introduce your nature-based Exemplar

Nicosia Development Agency (NDA) decided to work further on the implementation of a very ambitious large-scale project: Network of open and green spaces that will cover the district of Nicosia, which will promote the health and wellbeing of people, improve their quality of life, and enhance the environmental quality of the area of intervention (air quality management actions to reduce air pollution and its associated health impacts).

Nicosia's Exemplar deals with the implementation of a very ambitious large-scale project entitled: **"Network of Linked Open and Green Spaces"**, that will cover the district of Nicosia, which will promote the health and wellbeing of people, improve their quality of life, and enhance the environmental quality of the area of intervention (air quality management actions to reduce air pollution and its associated health impacts). The core of this network will be the National Forest Park of Athalassa.

The District/ Municipal Parks that have been chosen to form the proposed Network are: Athalassa Forest Park, Pedieos Linear Park, Ayios Dimitrios Park, Eleftheria Square, Akadimias Park, Acropolis Park, Apalos –Kakkaristra Natural Park, Lourka Forest Park, Urban Park of Pallourokampos. (see figure 2)

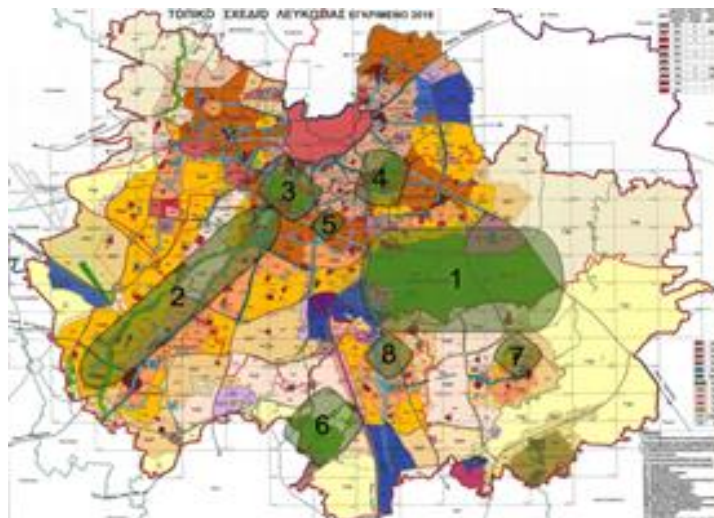


Figure 2 - Existing and proposed Municipal/District parks

The different parks will be linked with each other, but also provide new mobility options to get around in the city, from residential areas to business and commercial districts, and university campuses (integrated bicycle and pedestrian network). The network will also be open to different users and uses, and offer a series of environmental, social and economic benefits.

Complementary to the “**Network of Linked Open and Green Spaces**”, which is Nicosia’s main Exemplar, the Team of Nicosia Development Agency also proposes the “**Adopt a Park**” Scheme. The Scheme is being developed to promote long term partnerships between Local Businesses/Enterprises and Local Government, in order to maintain and beautify the neighborhood (small/ medium size) parks of the area of intervention.

The idea for the Network was based on the need expressed by all the Municipalities which are members of the Nicosia Development Agency to create new open and green spaces for their citizens in order to improve their quality of life and the available options provided in their area for physical activity, fun etc.

Step 5: Position this report

Nicosia’s Framework presents all the information and expertise gathered throughout the implementation of this project and aimed to be used in the wider strategic planning and development processes, as well as a tool for finding funding. It’s main aim is to include NbS as policy theme in national and local strategies, using Nicosia’s CN Framework as a tool, which in turn would prepare and facilitate projects on the ground.

The main phases covered in the Framework are:

Planning phase: included the formation of the idea of the proposed exemplar; peer-to peer sessions with FRC Poznan – sharing experience, knowledge, and best practices.

Main transformation points on planning phase:

a) Meet us at the forest event was a great opportunity first; to present the draft idea of Nicosia’s exemplar to citizens and other involved actors and second; to brainstorm and share thoughts on the proposed Exemplar.

b) Business Model canvas was seen as a very useful tool which helped the team to understand and structure better the Exemplar, to prioritize immediate actions and resources, to identify the involved actors in each phase, to set priorities regarding implementation and the tasks to be delivered. Additionally, it helped to build a common understanding as well as a common language among all, in order to communicate more efficiently as a team but also with the involved stakeholders and actors in each phase of the project.

c) Developing NBS in Nicosia (OSMOS workshop) helped the team to start working on this common understanding and language by working in more detail with the involved stakeholders (i.e. forest department, department of environment, municipal officers, engineers and urban planners involved, academics from University of Cyprus and NGOs)

in two of the projects (parks) of the proposed network, Lourka Forest and Ayios Demetrios Park. This process gave us a more structured understanding on how to approach each of the project and who to involve in the process.

Delivery phase: included activities regarding funding opportunities, exchange of good practices and inputs for the exemplar – preparation of the Integrated Spatial Development Strategy (OXA) plan for Nicosia – formation of the Adopt a Park Scheme – introduction of new coproduction tools (Sarajevo Process) – Public consultation Sessions.

Main transformation points on delivery phase:

a) Public Consultation was seen as a great opportunity first, to communicate the Local Strategic Sustainable Development Plan and the proposed Green Network to citizens, NGOs, Municipal Officers and Private Sector and also, to receive feedback and suggestions in order to improve the plans.

b) Sarajevo Process was a significantly useful process for Nicosia Team. Through the Sarajevo process, the participants (Core team of ANEL) had the opportunity to work in a very different manner. Art and nature helped the team to unlock a new perspective, utilize personal experiences and memories, approach the project and express in a very fruitful way, thus contributing to the overall team's tasks. After the three days session, Nicosia's team saw the Exemplar in a very different perspective. The Sarajevo Process is planned to be used to engage other groups of people as well such as professionals working on nature (e.g. people working for the Forest Department or the Department of Environment) who are often lost in the paperwork, screens and offices and rarely have the opportunity to connect with nature through their work.

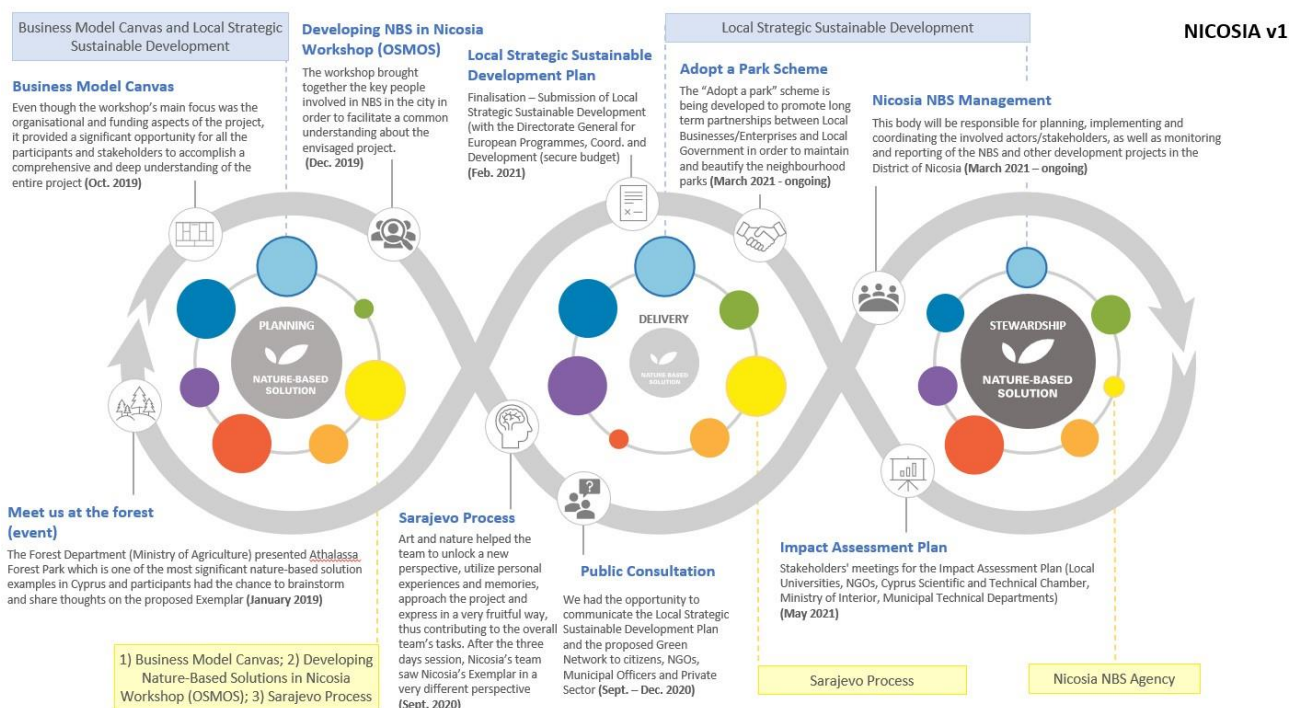
c) Integrated Spatial Development Strategy (OXA plan) has the General Objective to "Develop a common development framework based on the synthesis of advantages and opportunities that arise in the intervention area". The strategic goals, as outlined in the strategy, are the following: Become an attractive area with high living standards for new residents; Enhance local entrepreneurship through infrastructure developments that increase the area's attractiveness to visitors, by using the cultural and environmental characteristics of the area; Maintain the rich environmental resources and the agricultural landscape of the area. Nicosia Development Agency has included some of the projects (parks) developed in the context of the Nicosia Exemplar, in OXA, to receive funding. These projects were included in order to contribute to the realisation of the goals and actions highlighted in the development plan. The OXA plan (proposal) was submitted in February and was **approved for funding in September 2021**

d) Adopt a park scheme: The idea was born due to the main challenge that Nicosia faces to involve the private sector in these kind of initiatives (related to NbS), as larger parks in

Cyprus are all financed and operated by the Government (Ministry of Agriculture, Rural Development, and Environment – Department of Forest and Department of Environment). The identified opportunity was the existence of lots of small green spaces, most of them underused or abandoned, in the neighbourhoods, which had the potential for pocket parks. These spaces are owned and supposed to be designed and maintained by Local Authorities (Municipalities) which are more open to private sector involvement in investing and developing these smaller green spaces

Stewardship phase: includes the application of the Impact Assessment Plan (IAP), the formation of Nicosia NBS Management body which will be responsible of the overall maintenance of the exemplar and the application of the necessary checks related to the IAP.

All the above information is briefly presented on the CN Framework Narrative figure below:



Technical Solutions

Step 1: Define the nature-based solution.

Nicosia's Exemplar deals with the implementation of a very ambitious large-scale project entitled: **"Network of Linked Open and Green Spaces"**, that will cover the district of Nicosia, which will promote the health and wellbeing of people, improve their quality of life, and enhance the environmental quality of the area of intervention (air quality management actions to reduce air pollution and its associated health impacts). The core of this network will be the National Forest Park of Athalassa.

The creation of a better park network will involve different work streams. Firstly, there are the physical interventions in the parks themselves. Some of the larger parks with poor landscaping or equipment need upgrades; this is also the case for some smaller green spaces, but a series of smaller parks does not yet exist and needs to be developed. In other locations the parks will be extended, or their function will be redefined.

A second work stream is to develop the active mobility connections between the parks. These will take the form of interconnected trails, greenways, and paths that support bicycling, running, walking, skating, skiing, wheelchairs etc., reaching all the way from home to work for some users.

Complementary to the "Network of Linked Open and Green Spaces", which is Nicosia's main Exemplar, the Team of Nicosia Development Agency also proposes the "Adopt a Park" Scheme. The Scheme is being developed to promote long term partnerships between Local Businesses/Enterprises and Local Government, in order to maintain and beautify the neighbourhood (small/ medium size) parks of the area of intervention.

The idea for the Network was based on the need expressed by all the Municipalities which are members of the Nicosia Development Agency to create new open and green spaces for their citizens in order to improve their quality of life and the available options provided in their area for physical activity, fun etc.

The first stage that took place was to map several big and small green and open spaces that can be used for the enrichment of the existing (poor) urban network of open and green spaces and the exploration of mobility solutions based on connecting, densifying and developing this urban network (e.g. in the form of bicycle and pedestrian paths). The parks were classified into two categories: a) District and Municipal parks and b) Neighbourhood/Pocket parks.

Figure 2 shows the existing and proposed parks of the first category.

Figure 3 shows the proposed network for active mobility that builds on the existing road system - green lines (Mobility Master Plan, 2010). The network was suggested to be complemented with

more attractive and safe bike lanes that would run through the existing and proposed parks. The idea was to link the four shown clusters where the existing/planned/proposed parks are located.

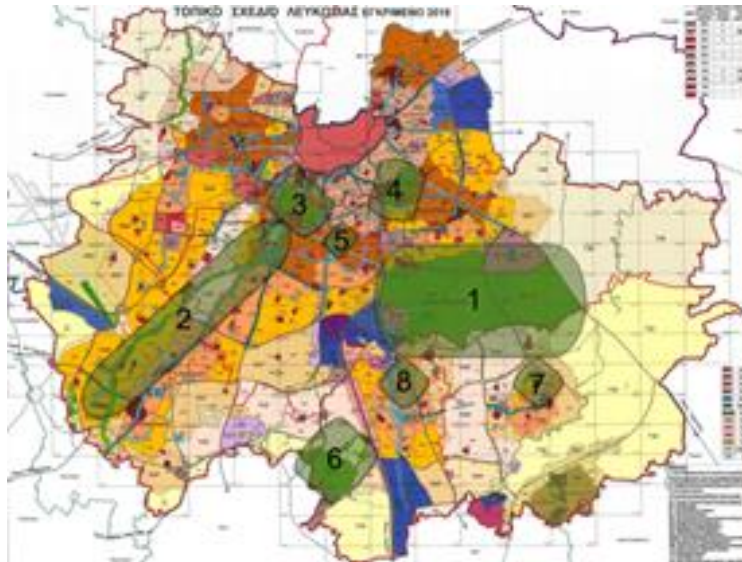


Figure 2 - Existing and proposed Municipal/District parks

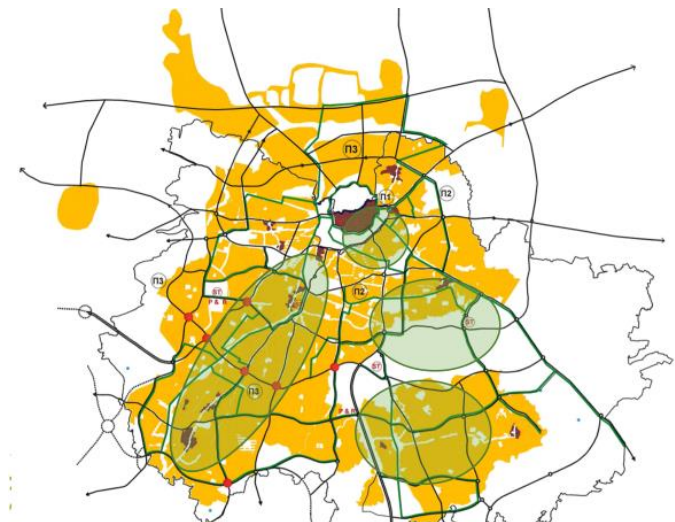


Figure 3 - Mobility Master Plan, 2010

The idea for the "Adopt a Park" Scheme was born due to the main challenge that Nicosia faces to involve the private sector in these kind of initiatives, as larger parks in Cyprus are all financed and operated by the Government (Ministry of Agriculture, Rural Development, and Environment –

Department of Forest and Department of Environment). The identified opportunity was the existence of lots of small green spaces, most of them underused or abandoned, in the neighbourhoods, which had the potential for pocket parks. These spaces are owned and supposed to be designed and maintained by Local Authorities (Municipalities) which are more open to private sector involvement in investing and developing these smaller green spaces.

Step 2: Develop an understanding of the landscape context and the ecosystem service needs

The District/ Municipal Parks which participate in the proposed Network and will be approached as NBS are: *Athalassa Forest Park, Pedieos Linear Park, Ayios Dimitrios Park, Eleftheria Square, Akadimias Park, Acropolis Park, Apalos –Kakkaristra Natural Park, Lourka Forest Park, Urban Park of Pallourokampos.*

A description regarding the landscape context of each park is presented in this section.

Athalassa Forest Park

The National Forest Athalassa is located about 5 kilometers southeast of Nicosia in the homonymous province of Cyprus, close to the capital's hospital and the university's campus (University of Cyprus). With a total area of 84000 square kilometers (840 ha) it is the largest forest of Cyprus. Part of it is in the buffer zone while the area of the forest was declared a National Forest Park in 1990 after a period of uncontrollable residential development. The administration and management of the park belongs to the Forest Department, while it is in the forest region of Nicosia, Larnaca and Famagusta. Located in a key geographic area of the island it encloses in its borders the developing areas of Aglantzia, Strovolos (to the west), Latsia and Geri (to the southeast).

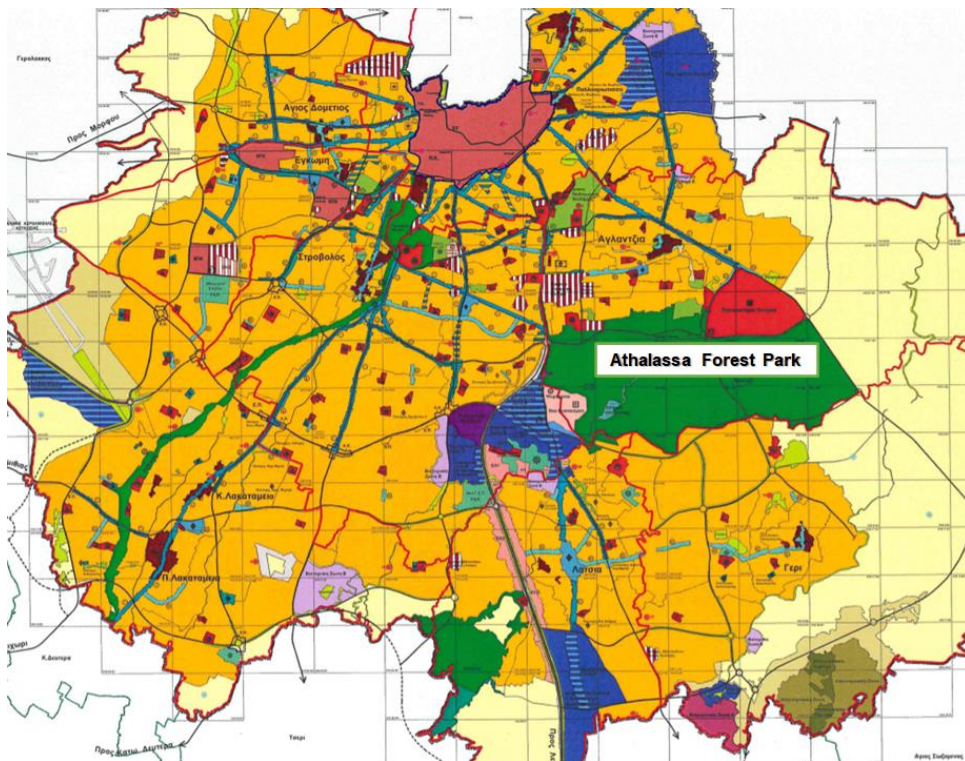


Figure 4: Athalassa Forest Park key geographic location

In the past it was a private barren place filled with shrubs but in 1904 it was bought by the colonial government in order to build a mansion. Few months later though the Forest Department intervened and planted many trees in the area. Today it is a source of leisure and oxygen for the locals and the visitors of the Cyprus' capital.

The National Forest Athalassa has plenty of underground waters, relatively smooth terrain and it consists of geological formations of the Troodos Mountain range, some of which were formed during the Cenozoic era. Throughout the area, there are growing more than 300 trees, shrubs and herbaceous plants, of which "natural" species are found only in the area around the two fences, while the rich fauna of the park counts about 173 species of birds, 27 species of butterflies 7 species of mammals, 6 species of reptiles, as well as an amphibian. Significant contribution to the development of the park has always been the standard planting of trees by schools and organized groups during the tree festival, organized by the competent bodies of the park.

During the last 20 years the park hosts a botanical garden where more than 200 exotic and native species of trees and bushes are hosted, a pine clone bank and the "park of the nations", where foreign prime ministers traditionally plant a tree every time they visit the capital of the island. Furthermore, it houses the Artillery Training Center. Finally in the same spot where the British

created the first animal farm nowadays there are bred domestic animals which can be visited by walking the pedestrian zone and reading the information signs for the biology and importance of these animals.

The Athalassa Park has become a European reference for how a natural area can combine green infrastructure and urban development. The maintenance is run on a shoestring with most funding channeled in paying for staff costs and not materials. Nevertheless, it is still seen as a priority for new investment, also in the context of Connecting Nature.

Although the Park is overall in good shape, it faces a series of challenges:

- Decrease in rainfall from past averages of 400 to currently 300 mm/yr. This causes severe stress to certain species such as pine trees.
- The transition of the vegetation: reduction of *Eucalyptus* and acacias, wider use of *Pistacia atlantica*, *Crataegus azorolus*, *Schinus terbiuthifolius*, *Cupressus sempervirens*, Carob.
- Pollution of its water bodies (from upstream waste carried by rivers).
- Geographical position of the Park next to the buffer zone between the South and North. This renders the maintenance and development of the Park more difficult. Additional trees can still be planted in the buffer zone, but access and building is limited.
- There is some illegal hunting in the park and the adjacent buffer zone. The Park needs to be patrolled by the forest rangers at serious financial costs (the proceedings of fines end up at the central government).
- Housing development in the neighbouring Municipalities encroaches on the park. This is spurred by high real estate prices in its immediate vicinity: plots around the park sell at around €1000/m².
- The Forest Department which is responsible for the Park's maintenance is strong and experienced and maintains good relationships with the surrounding Municipalities. However, it is understaffed and underfunded.

Upgrades – Extensions:

Some of the upgrades that are currently implemented / or have been recently implemented, through CN framework, in the park are the following:

- **Botanical Forest Garden C** is an extension of the first and second one. Its creation began in 2019 and since then it has been configured, upgraded and enriched with new species, up until the present day. 600 plants can be found, which originate mainly from the island's native flora, representing 290 different species and subspecies, belonging to 167 genera

and 79 families. Beyond the arboreal and shrub species, subshrubs, herbs, grasses and bulbs are included.

- **Athalassa Environmental Information and Education Centre Botanical Garden:** A botanical garden was also been created at the Athalassa Environmental Information and Education Centre, with the aim to combine aesthetic landscaping with environmental education. The layout was made using the natural environment as a guide, and includes elements of rocky brushwood which dominates the surrounding hills.

Despite its small size, the garden includes 81 different species of trees, shrubs and herbaceous plants. An effort was made to mainly use local drought resistant species, grouped with their ecological requirements as the basic criterion, as opposed to aesthetics. Today it is a unique botanical garden with its own peculiarities that is constantly being enriched and upgraded.

It is worth noting that this botanical garden has been included in the educational programs of the Pedagogical Institute, providing important information in the framework of environmental education for primary and secondary schools, always combined with additional outdoor educational activities.

- **Environmental enrichment**

[Pedieos Linear Park](#)

The Linear Park of Pedieos was constructed between 1999 and 2014, runs for 14 km long (86 ha) along the bed of the river. The park begins in the centre of Nicosia City and passes through the adjacement municipalities of Lakatamia and Strovolos. The park is narrow and shaded by large eucalyptus (*Eucalyptus camaldulensis* and *Eucalyptus gomphocephala*), pines (*Pinus brutia*) and palm trees (*Phoenix dactylifera* and *Washingtonia filifera*) along its first stretches in Nicosia (1.1 km) where it passes through a small forested area (1.4 ha) with a café. The path gains gradually in width in Strovolos, where it runs along the back of the gardens of the Presidential Palace. After about 3 km from its start in the city center, the path splits into a separate lane for walking and cycling. The river becomes wider and the path more open and less shaded. Suspended, steel-framed wooden pathways have been constructed at the narrowest parts of the river and inside the bridges that cross busy roads (Figure 7 & 8). Plans have been prepared to extend the park by 14.2 km, through the suburban and rural surroundings of Nicosia, all the way to the Tamassos dam at the foothills of the forested mountains (Figure 5).

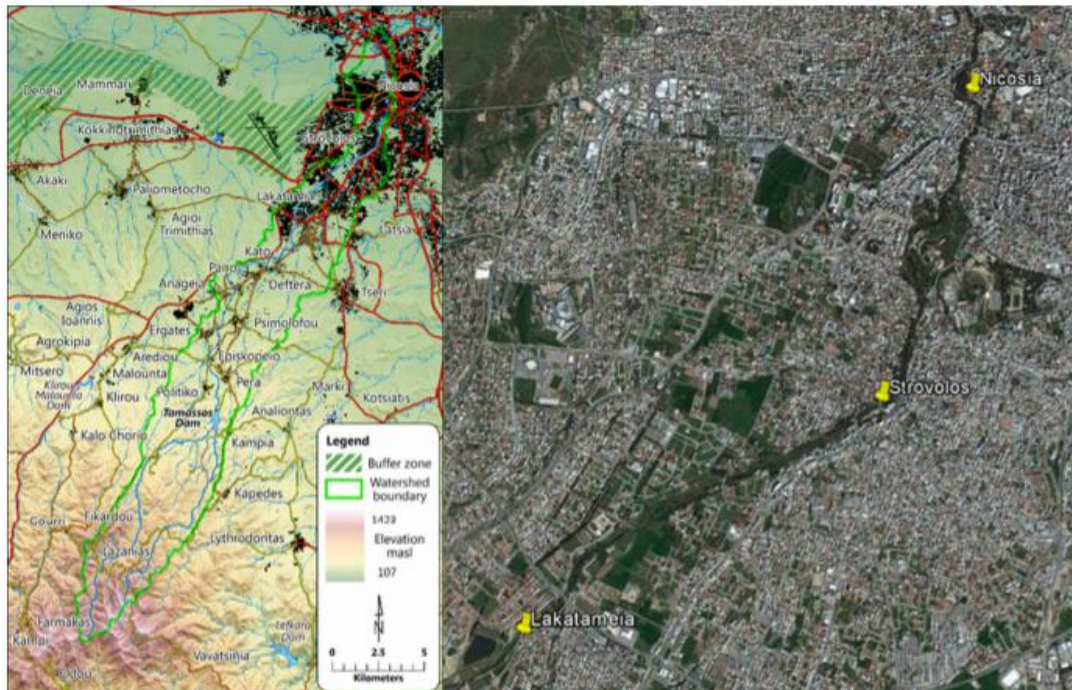


Figure 5: The Pedieos River Basin with the Tamassos Dam in the foothills and the urban area of Nicosia downstream (left); google earth image of the linear park in the urban areas of Nicosia and Strovolos (right).

The main intervention in the park consisted of a pedestrian and bicycle path that was formed on the river bank and the installation of lighting along the promenade as a safety device. The Linear Park of Pedieos is the most expensive green space of Nicosia in terms of maintenance costs, but also one of the most popular areas for walking, running, cycling and dogs.

According to a study of Giannakis et al (2016), regarding the users' (visitors) perceptions of the most important services of Pedaios River Park. More specifically, respondents were asked in an open-ended manner to identify the three most important services of urban parks. All visitors specified at least one main service of urban parks, while 145 and 32 visitors identified a second and a third service, respectively (Figure 6). Enjoying nature had a significant place in the eyes of the park users since 43% mentioned this as the first service. Engagement in physical activities such as walking, jogging, and cycling, was considered the most important service by 34% of the visitors, while it was mentioned as a second or third benefit by 24% of the park users. The provision of a venue for socializing, interacting, and relaxing, including activities such as meeting friends and other people, was mentioned by 22% of park users as the first benefit of urban parks. Only 1% of the Pedieos Park visitors considered cooling as a primary benefit and 3% of the park users mentioned it as their second or third choice.

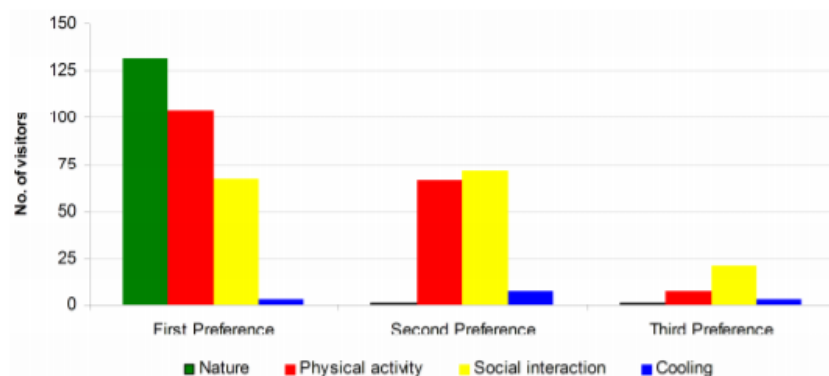


Figure 6: Users' perceptions of the most important services of urban parks (number of visitors), Giannakis et al (2016)

Respondents were then provided multiple choice options to indicate their reasons for visiting the Pedieos River Park. Respondents could select up to two choices. The major reason for visiting the park included physical activity and exercise (67%), enjoying nature (13%), cooling (4%), and socializing (3%), while close proximity was specified under the category "other" by 9% of the visitors. At the low vegetation cover location (Figure 3) only 1% of respondents visited the river park for observing nature, while at the high and medium vegetation cover locations the respective percentages were 22% and 21%. The low vegetation area, further from the city center, mainly attracted people interested in physical exercise (86%). The dominant physical exercise was walking, while 19 people were cycling and 15 people were jogging. The second most important reason for visiting the park, as specified by 177 responders, included observing nature (40%), physical activity (23%), cooling (15%), social interaction (12%), and other (10%). (Giannakis et al, 2016)

It is interesting to note that users' own reasons for visiting the Pedieos Park did not always match their visions about urban park services. For example, of the 132 people who mentioned experiencing nature as the main service of urban parks, only 15 indicated this option as their first reason for visiting the Pedieos Park. Similarly, of the 40 people who mentioned cooling as their first or second reason for visiting the Pedieos Park, only seven had identified cooling as an important urban park service. Cooling was more often mentioned as a reason for visiting the park by responders in the more densely built-up urban area, with 45% of the 40 respondents in Nicosia and 40% in Strovolos, than by the visitors in the suburb of Lakatameia (15%). However, we have to note that open-ended questions were used for the general question on the services of urban parks, while close-ended questions were used for exploring the reasons for visiting the Pedieos Park. (Giannakis et al, 2016)



Figure 7 & Figure 8: Suspended pathways of the Pedieos Linear Park, showing the different heights of the built-up area next to the park

According to Zanos and Georgi (2017), a research project currently studies opportunities for improving and extending the Linear Park of Pedieos in the areas of Lakatamia, Strovolos and Engomi Municipalities. The study will provide an analysis of planting schemes with local species that could contribute to the improvement of the microclimate of the city. The plans for the linear park were prepared by the Department of Planning and Housing. The environment and the geological singularity of the river were taken into serious consideration: "The materials used for the construction of the Linear Park are environmentally friendly, such as stone and wood. Stone bridges were built for the most part, so that the level of the river not to hinder the people's path during the winter months."

There are also plans to *extend the Pedieos River linear park into Turkish-held Nicosia*. The Pedieos River Rehabilitation Project as it is called which consist the extension of the Morphou and Famagusta wastewater treatment plants and the establishment of green waste composting facility in Nicosia are among the projects that are ready for implementation. It is noted that the European Commission completed a detailed feasibility study for the rehabilitation of the Pedieos River in 2019. The scope of the study includes the construction of a linear park along an approximate 5 km length of the river consisting of flood protection measures, cycling and walking paths, recreational areas and environmental educational facilities.

Ayios Dimitrios Park

The Municipal Park of Ayios Dimitrios is the biggest park in the district of Strovolos and is found between the Makarios Hospital and the English School. The Park is managed by the Municipality of Strovolos. It is planned in a smart way, resulting to give you the impression that it is a lot larger than what it is. Narrow earthen streets end up in open spaces where each one has themed exhibits.

From each open space, there are other narrow streets that begin, leading you in their turn to different directions into the park.

There are artificial lakes and fountains that visitors can walk by and appreciate the water's coolness. Playground and a small coffee shop and an amphitheater which host local events and exhibitions.

The theme of the park is mostly that of a forest (high tree and bushes that do not need much water and provide shades).

The main plans for the park, through CN framework are the following:

- Maintain the green in the area
- Recreation
- Aesthetic improvement of the area (walking- cycling paths, enrich the greenery, replace / maintain outdoor furniture etc).

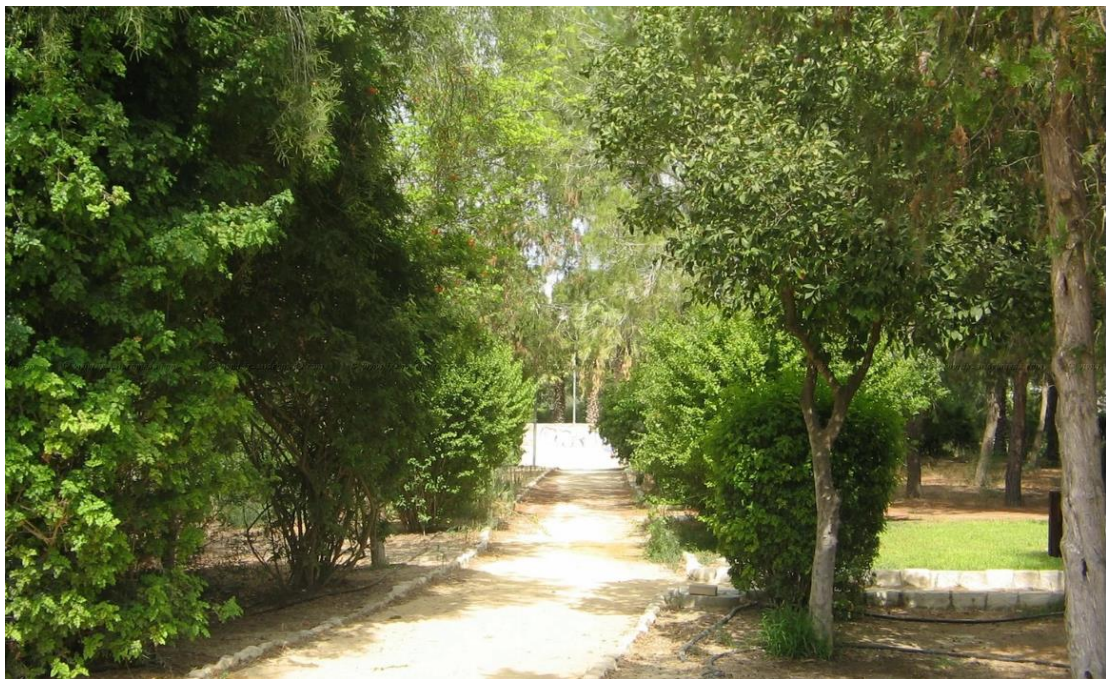


Figure 9: Walking – cycling path in Ayios Dimitrios Park



Figure 10: Walking – cycling path in Ayios Dimitrios Park

Eleftheria Square

Eleftheria Square is a high-profile square of 1 ha in the city center on a former moat of the Venetian walls. It is managed by the *Municipality of Nicosia*. The renovation of the square started 10 years ago (December 2011) and is still not completed, making it a delicate subject for local politicians and residents alike. The new square has been designed by the office of Zaha Hadid. Communication problems between the international architecture firm and local building companies are partly responsible for long delays in its completion. There was an incident, during which the main contractor went out of the construction deal. Other problems include the initial choice of materials that eventually could not be used in Cyprus, due to the island's hot summers. It was reported that the architects were fined 55.000 euros per month for their responsibility in the debacle. On any account, the failure to complete, for a number of years, the Eleftheria Square has added to the already difficult mobility situation in the city centre for pedestrians, cyclists and cars. The initial cost of the constructions was 18M, however, due to a number of problems throughout the last decade, the cost has risen to nearly 50M.

Eleftheria Square Timeline – Current Status:

March 2005: tenders invited for square design

December 28, 2005: Iraqi-born British architect Zaha Hadid and her associates Christos Passas and Saffet Bekiroglu win the competition to redesign Eleftheria square

August 29, 2011: final architectural plans unveiled to allow for archaeological finds

December 22, 2011: construction contract awarded

Feb 6, 2012: construction work starts by Miltiades Neophytou contracting firm

July 1, 2012: deadline for completion of Eleftheria square bridge and Eastern moat missed, pushed back to June 20, 2013

June 20, 2013: deadline for completion of bridge missed

Feb 6, 2014: project completion deadline at cost €23m missed, pushed back to June 17, 2014

Feb 24, 2014: amicable dissolution of agreement with contractor in exchange for €530,000 (against contractor's demands of over €1.5mIn)

April 4, 2014: project split into two parts (underground parking and redesign of square), new competition for construction contract opened

June 17, 2014: project completion deadline missed

June-July, 2014: Nicosia municipality cancels tenders process as bids received greatly exceeded budget

November 23, 2014: square redesign contract awarded to lowest bidder at 55 per cent over budget

December 12, 2014: underground parking contract awarded to new contractor

January 1, 2015: new contractor Lois Builders starts work on a March 2016 deadline

March 2015: municipality cancels decision to award new underground parking contract due to suspicions of collusion among bidders

November 11, 2015: project completion deadline pushed back to June 9, 2016

Dec 31, 2015: deadline for project completion for co-sponsorship of 85 per cent by EU structural funds missed, project included into new EU programme

February 8, 2016: project completion deadline pushed back to November 30, 2016

April 13, 2016: Mayor Constantinos Yiorkadjis announces "end-of-year" completion and €32m cost (excluding construction of the two-storey parking space)

March 31, 2017: official deadline for completion of bridge and square

September 1, 2017: deadline for opening the bridge to the public missed

January, 2018: Part of the upper section opened to public

July, 2018: deadline missed for delivering the square

December, 2018: Another section of bridge opened to public

January, 2021: Underground parking and large section of moat reopened to public

The project as a whole opened to the public the first semester of 2021 following years of delays.



Figure 11: 3D plans of the Square, Zaha Hadid Architects



Figure 12: 3D plans of the Square, Zaha Hadid Architects

Akadimias Forest Park

The creation of the park was initiated in 1983. The Park covers an area of 45 ha that is managed by the Forest Department. It is located between the municipalities of Aglantzia and Nicosia at a distance of 2Km from the town center. It falls in the municipal borders of Aglantzia Municipality. The park has a picnic area, walking paths, bicycle lanes, a playground, a kiosk and parking area.

Although the Park is overall in good shape, it faces a series of challenges similar to Athalassa Forest Park. More specifically,

- Decrease in rainfall from past averages of 400 to currently 300 mm/yr. This causes severe stress to certain species such as pine trees.
- The transition of the vegetation: reduction of *Eucalyptus* and acacias, wider use of *Pistacia atlantica*, *Crataegus azorolus*, *Schinus terbiuthifolius*, *Cupressus sempervirens*, Carob.
- Pollution of its water bodies (from upstream waste carried by rivers).
- The Forest Department which is responsible for the Park's maintenance is strong and experienced and maintains good relationships with the Municipality of Aglantzia (which is located). However, it is understaffed and underfunded.



Figure 13: Walking path in Akadimias Forest Park

Some of the upgrades that are currently implemented / or have been recently implemented, through CN framework, in the park are the following:

- Maintain and enrich the green in the area
- Recreation
- Aesthetic improvement of the area (walking- cycling paths, replace / maintain outdoor furniture, solar panels for outdoor park lights etc).

Acropolis Park

Acropolis Park is located at the Acropolis Area of Nicosia District. It is 3,5 ha and it is managed by the Municipality of Strovolos.

The Park is simple in its plans but the green is dominating in the landscape. There is a narrow street encircles the park which guide the visitor to different corners that are formed from the tree clusters and a small lake. It is ideal for walking and exercising as it has walking routes and a basketball court.

The Park also consists of a playground, a café restaurant a seating area and a kiosk and hosts a number of cultural and educational events and seminars.

Some of the upgrades that are currently implemented / or have been recently implemented or proposed, through CN framework, in the park are the following:

- Maintain and enrich the green in the area
- Frame a solid understanding of the priorities for Recreation in this location
- *Proposed upgrades to the park include:* basketball court improvements, playground improvements, new trees, picnic tables, benches, walking- cycling paths improvements (& bridge), replace / maintain outdoor furniture etc.



Figure 14: Green open area in Acropolis Park

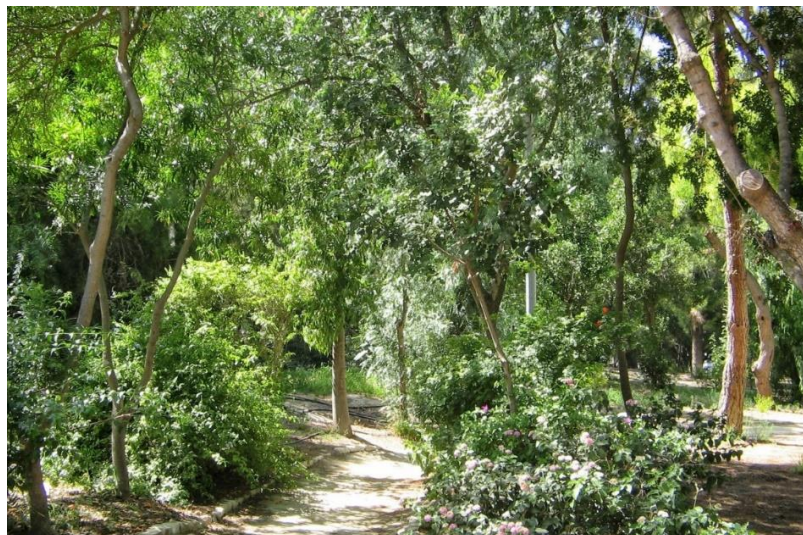


Figure 15: Walking path in Acropolis Park

Apalos – Kakkaristra Natural Park

Kakkaristra Natural Park (Gorge) represents a geologically important site located 500 meters southwest of Latsia Municipality. The gorge is a place of pre-historical importance, which holds geological evidence of Cyprus' emergence from the sea millions of years ago. The wild nature in

and around it made access difficult and its location has meant that it is largely unknown, which has potentially protected it. However, a number of locals used to do motorbike racing along the gorge and others collected fossils in order to sell them. The *Ostrea edulis* and *Ballanus tintinabulum* fossils lie on the walls of the gorge on what used to be a seabed. One could only imagine the millions of years that had made this place what it is.

The Latsia Municipality conceived the idea and has taken the initiative to preserve and upgrade the place, and make the area known, not only to Cypriots but to tourists as well. Unfortunately, discussions with the responsible governmental departments have not led to a budget for its implementation yet. Since 2008 the site is earmarked as nature reserve.

The ownership of the area is fragmented, and owners preferred building or agriculture to the function of the site as a natural park. The Municipality is developing the project in cooperation with ANEL and the Department of Environment (Ministry of Agriculture), but so far, no investment from the State has been secured. Even if a budget becomes available, the Municipality would need permission from the State to develop the park, which can be a long and bureaucratic process.

The Mayor and the Municipal Council have supported the project; ANEL has written a proposal for EU funding (Greece-Cyprus cooperation) to finance technical assistance. The first step would develop a masterplan and define in more detail the different purposes of the site (education, tourism, leisure).

In November 2018, a first element of the park was implemented in form of a nature path of around 3 km that invites to discover the area. The plan for the nature path was drafted by the State Department of Forests, while a private donation of €2000 allowed to build the path by a private contractor. So far, no further investment has been secured, but it has been included in the Local Strategic Sustainable Development Plan (OXA) for funding.

The site is currently only accessible by car (users from Latsia have to get on the other side of a major highway, which lacks bridges or tunnels for pedestrians or bikes).

Some of the upgrades that are currently implemented / or have been recently implemented or proposed through CN framework in the park, are the following:

- Enrich the green in the area and protect the place (nature reserve) **(Ongoing)**
- Frame a solid understanding of the priorities for Recreation in this location
- *Proposed upgrades to the park include:* finalization of the master plan that includes nature paths, benches, walking- cycling paths, viewpoints, fossiliferous horizons, placement of signs with the name of the plants and fossils that are located on the path of Kakkaristra-Apalos and a small amphitheater. **(Ongoing)**



Figure 16: Kakkaristra Gorge



Figure 17: The gorge walls and floors were covered in various species of fossilised shells stacked one on top of each other in geological layering.



Figure 18 & Figure 19: Visitor-guide map of the Kakkaristra-Apalos gorge trail.



Figure 20, Figure 21 & Figure 22: Placement of signs with the name of the plants that are located on the path of Kakkaristra-Apalos (Latsia Municipality in cooperation with Forest Department)



Figure 23 & Figure 24: Plantation of 4000 trees (Private donation – Citizen's initiative in collaboration with Latsia Municipality and Forest Department)



Figure 25 & Figure 26: Citizen's and NGOs helped on the plantation of 4000 trees initiative, under the Forest Department supervision.

Lourka Forest Park

The Lourka Forest Park consists mainly unused forest land and is a geologically important site that features a prehistoric monument. Similar to Kakkaristra Gorge, *Ostrea edulis* and *Ballanus tintinabulum* fossils lie on the walls of the elevated park that sits on a hill facing the vast emptiness

of the Green line (UN Buffer Zone). The park is located very close to the Athalassa park but is not well known. There is a dusty path with little shade that leads the visitor to past benches as well as military hide-outs and trenches.

The Municipality is developing a project in cooperation with ANEL and the Forest Department to transform it into an urban park that will eventually become central to the wellbeing of city residents. So far, no investment has been secured, but it has been included in the Local Strategic Sustainable Development Plan (OXA) for funding.

Some of the upgrades that are currently implemented or been proposed through CN framework in the park, are the following:

- Enrich the green in the area **(Ongoing)**
- Frame a solid understanding of the priorities for Recreation in this location
- *Proposed upgrades to the park include:* implementation of walking – cycling paths, outdoor gym, benches, viewpoints, fossiliferous horizons, placement of signs with the name of the plants and fossils that are located in the park and a moving refreshment shop. **(Ongoing)**

The materials that will be used for the construction are environmentally friendly, such as stone and wood.



Figure 27: View of the Green Line (UN Buffer Zone) from Lourka Forest.



Figure 28: Lourka Forest Park



Figure 29: Ostrea edulis and Ballanus tintinabulum fossils lie on the walls and ground of the elevated park

Urban Park of Pallourokampos

The Urban Park of Pallourokampos is another potential park in the Latsia Municipality that is still in its planning phase with uncertain funding and the need for permissions from Central Government. The Municipality wants to develop this park as an investment of development fees into a larger green area, rather than creating small areas that are more expensive to maintain. A fund of around 1 million euros has been earmarked for Pallourokampos. This sum must be invested in the creation of new parks and not in the maintenance or upgrading of existing parks.

In order to advance the project, the Municipality has organised an international landscape competition to create a Masterplan for the park. The competition produced a masterplan for Pallourokamos with the following elements: link to the geological site of Kakkarista via a museum (1000 m² education/information site), 3 playgrounds (basketball, volleyball), paths, a cafeteria (to get revenue), an open-air cinema (to get revenue) and mobility connections (i.e. new road, sidewalks around the area).

A cost-benefit analysis of a new park in Pallouroukamos has been carried out by the Municipality and suggests that there can be revenues from its exploitation (cinema, cafeteria). The central government has proposed to find still more profitable uses (e.g. wedding venue, multipurpose room for art exhibitions, events). In the end, the Ministry of Interior decides about permission regarding this park, and its staff seems to be interested in projects with a higher economic return and not necessarily multiple (economic, social, environmental, cultural) benefits.

Regarding the current status of the project:

- Central Government is opposed to the building of the bigger structures (theatre): they prefer smaller ones. But the permission of the State is necessary to build.
- A more detailed technical study will cost €300,000. This money will only be taken out of the fund if there is a low risk that the total sum will not be found.
- The total investment to implement the masterplan is estimated at 4 million euros (including all technical studies).
- Funding Opportunity: The project has been included in the Local Strategic Sustainable Development Plan for funding earlier this year (2021) and it has been included in the final shortlist – Stage 2.

Step 3: Feed understanding into design, delivery, and stewardship.

Technical Designs

The interventions that will be implemented in each District/ Municipal Park of the Network are presented below.

Athalassa Forest Park

The strategic goals that have been set for the Athalassa Forest Park are the maximization of the Park's operation as a green lung, satisfaction of people's needs for recreational activities, sports, and well-being as well as provision of environmental education and research opportunities.

Upgrades – Extensions:

Some of the upgrades that are currently implemented / or have been recently implemented in the park are the following:

- **Botanical Forest Garden C** is an extension of the first and second one. Its creation began in 2019 and since then it has been configured, upgraded and enriched with new species, up until the present day. 600 plants can be found, which originate mainly from the island's native flora, representing 290 different species and subspecies, belonging to 167 genera and 79 families. Beyond the arboreal and shrub species, subshrubs, herbs, grasses and bulbs are included. **(Ongoing)**

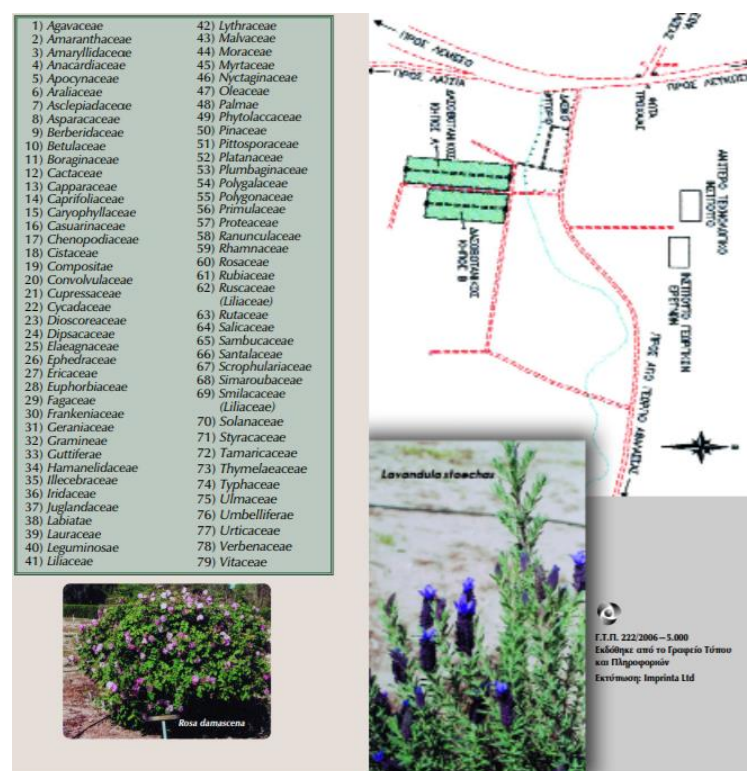


Figure 30: A list of the 79 different species of trees, shrubs and herbaceous plants that are included in the Botanical Garden.

- **Athalassa Environmental Information and Education Centre Botanical Garden:** A botanical garden was also been created at the Athalassa Environmental Information and Education Centre, with the aim to combine aesthetic landscaping with environmental education. The layout was made using the natural environment as a guide, and includes elements of rocky brushwood which dominates the surrounding hills.

Despite its small size, the garden includes 81 different species of trees, shrubs and herbaceous plants. An effort was made to mainly use local drought resistant species, grouped with their ecological requirements as the basic criterion, as opposed to aesthetics. Today it is a unique botanical garden with its own peculiarities that is constantly being enriched and upgraded. **(Completed)**



Figure 31 & Figure 32: Athalassa Environmental Information and Education Centre Botanical Garden

It is worth noting that this botanical garden has been included in the educational programs of the Pedagogical Institute, providing important information in the framework of environmental education for primary and secondary schools, always combined with additional outdoor educational activities.

– **Environmental enrichment (Ongoing)**

Pedieos Linear Park

The strategic goals that have been set for Pedieos Linear Park are the maximization of the Park's operation as a green lung, satisfaction of people's needs for recreational activities, sports, and well-being as well as provision of environmental education and research opportunities.

Upgrades – Extensions:

Some of the upgrades that are currently implemented / or have been recently implemented in the park are the following:

- Enrich the green in the area and protect the place (nature reserve) - **Planting schemes** with local species that could contribute to the improvement of the microclimate of the city. **(Ongoing)**
- **Extention Plans of Pedieos River linear park into Turkish-held Nicosia**
 - The Pedieos River Rehabilitation Project which consist the extension of the Morphou and Famagusta wastewater treatment plants and the establishment of green waste composting facility in Nicosia are among the projects that are ready for implementation. **(Ongoing)**
 - Detailed feasibility study for the rehabilitation of the Pedieos River in 2019. (European Commission) **(Completed)**

Eleftheria Square

In the context of the regeneration of the old city center of Nicosia, a number of strategic goals have been set for Eleftheria square such as the aesthetic and environmental upgrade of the square in order to serve primarily pedestrians, as a place of rest, social gathering and hostage of public events (e.g. cultural etc) as well as the promotion of the historic in parallel Medieval Wall.

Eleftheria Square constitutes a dramatic and historically significant architectural intervention – an aspiration to reconnect the ancient city's massive, fortified Venetian Walls and moat with the modern city beyond – a bold vision of coherence and continuity which can become catalyst to unify the last divided capital of Europe.

Some of the upgrades that are currently implemented / or have been recently implemented park are the following:

Eleftheria Square Timeline – Current Status:

March 2005: tenders invited for square design

December 28, 2005: Iraqi-born British architect Zaha Hadid and her associates Christos Passas and Saffet Bekiroglu win the competition to redesign Eleftheria square

August 29, 2011: final architectural plans unveiled to allow for archaeological finds

December 22, 2011: construction contract awarded

Feb 6, 2012: construction work starts by Miltiades Neophytou contracting firm

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June-July, 2014: Nicosia municipality cancels tenders process as bids received greatly exceeded budget

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April 13, 2016: Mayor Constantinos Yiorkadjis announces "end-of-year" completion and €32m cost (excluding construction of the two-storey parking space)

March 31, 2017: official deadline for completion of bridge and square

September 1, 2017: deadline for opening the bridge to the public missed

January, 2018: Part of the upper section opened to public

July, 2018: deadline missed for delivering the square

December, 2018: Another section of bridge opened to public

January, 2021: Underground parking and large section of moat reopened to public

The project as a whole opened to the public the first semester of 2021 following years of delays.
(Completed)



Figure 33 & Figure 34: Render designs of the Square, Zaha Hadid Architects

Akadimias Park

The strategic goals that have been set for the Akadimias Forest Park are the maximization of the Park's operation as a green lung, satisfaction of people's needs for recreational activities, sports, and well-being as well as provision of environmental education and research opportunities.

Upgrades – Extensions:

Some of the upgrades that are currently implemented / or have been recently implemented, through CN framework, in the park are the following:

- Maintain and enrich the green in the area **(Ongoing)**
- Recreation
- Aesthetic improvement of the area (walking- cycling paths, replace / maintain outdoor furniture, solar panels for outdoor park lights etc). **(Ongoing)**



Figure 35: Improvements on the walking and cycling paths, solar panels installation (lighting)

Acropolis Park

Acropolis Park strategic goals are the maximization of the Park's operation as a green infrastructure, satisfaction of people's needs for recreational activities, sports, and well-being.

Some of the upgrades that are currently implemented / or have been recently implemented or proposed, through CN framework, in the park are the following:

- Maintain and enrich the green in the area **(Ongoing)**
- Frame a solid understanding of the priorities for Recreation in this location **(Ongoing)**
- *Proposed upgrades to the park include:* basketball court improvements, playground improvements, new trees, picnic tables, benches, walking- cycling paths improvements (& bridge), replace / maintain outdoor furniture etc. **(Ongoing)**



Figure 36: Playground improvements



Figure 37: Cycling – Walking Bridge Improvements

Apalos – Kakkaristra Natural Park

The proposed Natural Park of Apalos – Kakkaristra could be seen as a project of National importance, due to the area's strategic site and its unique geological features. The project aims to enhance environmental protection of the site through the operation of the Natural Park, the proposed activities and interventions and to promote the natural and ecological value of the site so that it can be embraced by the general public.

The interventions proposed for Apalos – Kakkaristra Natural Park include the: **(Planning Phase)**

- establishment of an Ecology and Geology Center with building facilities and outdoor configurations;
- configuration of themed paths/ walking routes (regarding Cypriot flora), cultivations of endemic plants and relevant explanatory signage;
- configuration of themed paths/ walking routes (regarding the geological features of the area). Visitors with the help of relative explanatory signage will be informed about the geology and the environment of the area;
- creation of hiking trails;
- creation/ establishment of a star observatory;

- operation of a library, a reading room and a computer room offering databases and information mainly about ecology, environment and geology;
- creation of bicycle paths connecting different areas of the park but also connecting the Apalos – Kakkaristra Park with the Park of Pallourokampos and Athalassa.

Additionally, there are plenty of ideas regarding the activities that could take place at the Natural Park such as exhibitions, guided tours, educational programs, screenings, workshops and others.

Lourka Forest Park

The Lourka Forest is a V-shaped space of around 5 ha situated on a former military site at the outskirts of the Yeri Municipality. It is currently managed by the State Forest Department and features mature stands of planted trees and a loose network of unpaved paths around a central plain covered in concrete. The northern rim of the Lourka site features an abrupt downward slope of ca 50m. While this makes access from this direction very difficult, the steep slope also provides for stunning views on the Athalassa Forest, which is located a few kilometers to the North. Lourka is representative of other green spaces around Nicosia in that it is underused due to sparse access and poor infrastructure.

Plans for the projected upgrade of the park include better access to the park from the surrounding neighbourhoods in Yeri, but also easier access by bike, public transport, or car from other Municipalities. The existing vegetation should be conserved and physical interventions into the nature of the site be kept minimal. Yet better access and landscaping alone are not sufficient to boost the use of the site. Potential users need to know about the park and the activities it can host. Like other parks in Nicosia, Lourka needs to develop a clearer identity or “brand” that attracts visitors if it is to function like a regional rather than a neighbourhood park.

Fortunately, there are already first ideas that could be sharpened into a clearer positioning of Lourka within the Nicosian park network. For instance, the natural features of the site are very interesting for a cycling trial track or fitness trails. Moreover, the park has recently staged a “Forest Fest”, an initiative supported by the mayor of Yeri that showcased the potential of the site for outdoor events. Other ideas for the upgrade of Lourka include belvederes that take advantage of the views towards the North and a kiosk as a point of meeting, relaxation, and sustenance.

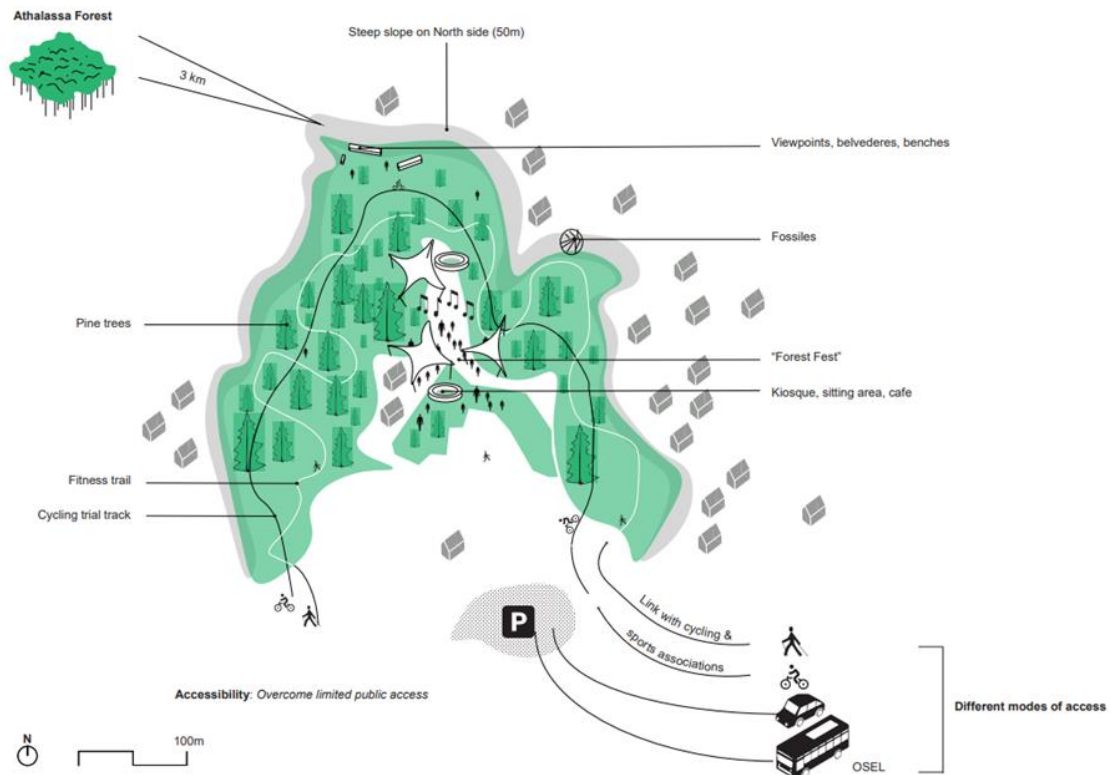


Figure 38 - Lourka technical design proposal (a)

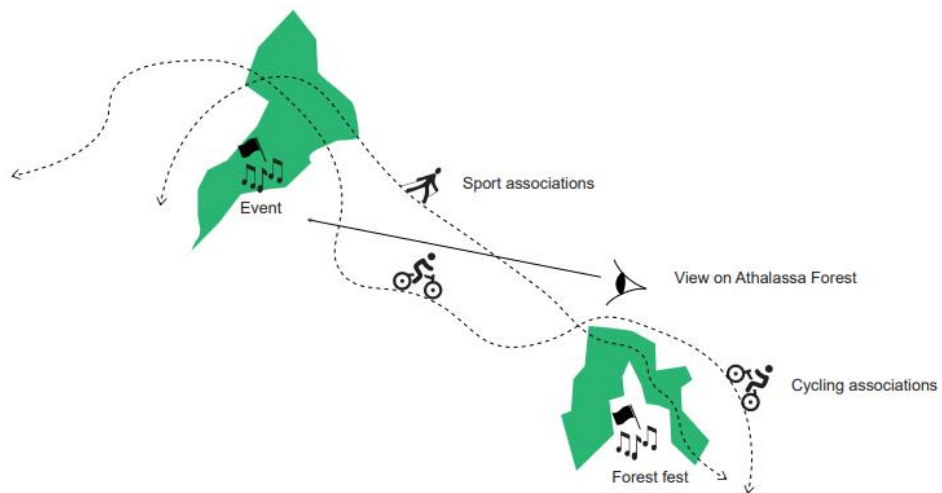


Figure 39 - Lourka technical design proposal (b)

Ayios Dimitrios Park

This site in the Strovolos Municipality represents a contrasting set of challenges compared to Lourka Park. The Ayios Dimitrios Park is extensively used by the surrounding neighbourhoods and institutions, so much so that its infrastructure has been subject to extreme wear and tear and now in need of renovation. And whereas Lourka could be a regional attraction for a specific type of activity in an eccentric location (for example bicycle trial tracks), Ayios Dimitrios has the potential to become the network's flagship of a well-groomed and multifunctional urban park in a central spot of Strovolos.

Ayios Dimitrios Park is the focal point of a mixed neighbourhood featuring public schools, a children's hospital and a municipal athletic centre. To the West it borders the campus of a prestigious private school and, a bit further, the presidential residence. The great potential - and planning challenge - of the site is to weave this web of spaces, functions and owners into a coherent whole that users can navigate and experience as one grand urban park. The necessary interventions to reach this objective concern improvements in the green spaces themselves and improvements in the mobility infrastructure. As for the former, the Municipality commissioned a preliminary landscaping study that identified a series of opportunities to improve the quality of the area owned by the Municipality; these ideas need to be complemented with interventions on the adjacent private campus and around the athletic centre. Regarding mobility, the main challenges include the trespassing between the private and public sections of the park, but also establishing the missing link between Ayios Dimitrios Park and the Pediaos Linear Park. The latter runs along the Western side of the private school campus but is separated from it by a busy highway.

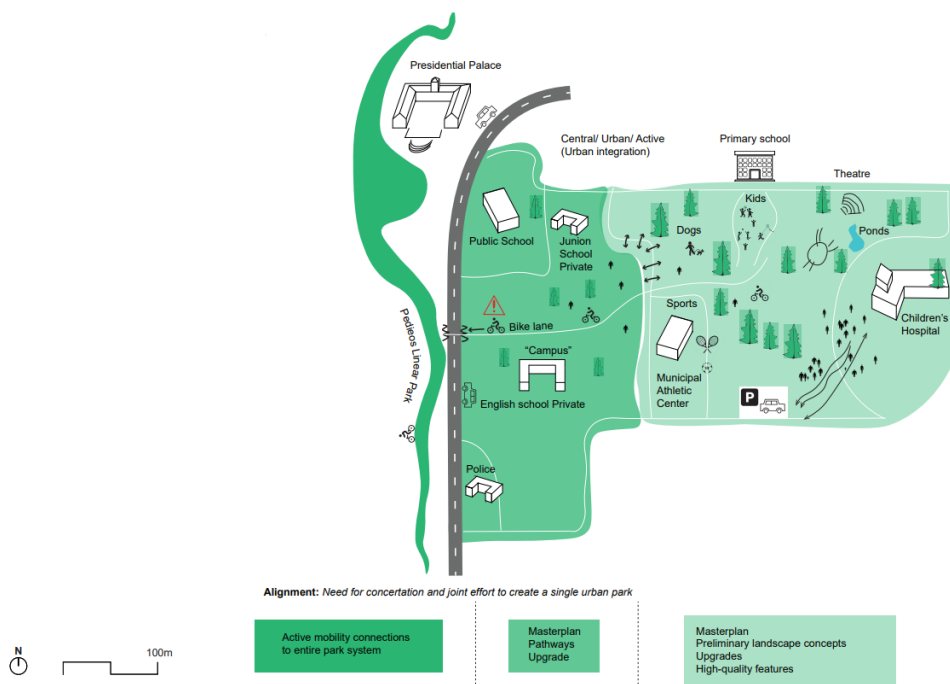


Figure 40 - Ayios Dimitrios park technical design proposal

Urban Park of Pallourokampos

The proposed Urban Park of Pallourokampos is located in the southwestern part of the Municipality of Latsia and covers an area of 4.2 ha. The proposed interventions aim at the connection of the Urban Park with the city, as well as at the transformation of the park to a pole of attraction and a reference point for the wider area. The Park is envisioned as a 'linear observatory' or as a 'balcony to the city', providing easy access and beautiful views. The various and important entrances of the park provide access to it from all over the city.

The proposed project aims to transform the site into a new urban public space, an attraction for residents and visitors, which will culturally and environmentally upgrade Latsia. The Park is designed to become a green lung for the area; while also combine other related functions such as outdoor recreation, aesthetics, physical sports and more. The proposed interventions have taken under serious consideration the specific characteristics of the area, the large slopes and the existing flora. The Park is designed with absolute respect to the natural environment and in a way so that it remains vibrant throughout the day and the year.

The Park will consist of the following uses:

- A modern Conference and Exhibition Multipurpose Centre (Total Area: 514 m²)
- A Botanical Garden (Total Area: 514 m²)

- An amphitheater (1800 m2)
- Café-Restaurant
- Observatory
- Outdoor Cinema (Total Area: 44 m2)
- Playground
- Sports Centre (Tennis, Basketball and Volleyball: Total Area: 38 m2)
- Park and walking routes
- Sanitary facilities
- Vehicle/ Bus Parking (150 vehicles)
- Connections with a wider area
- Security, Fencing, Lighting

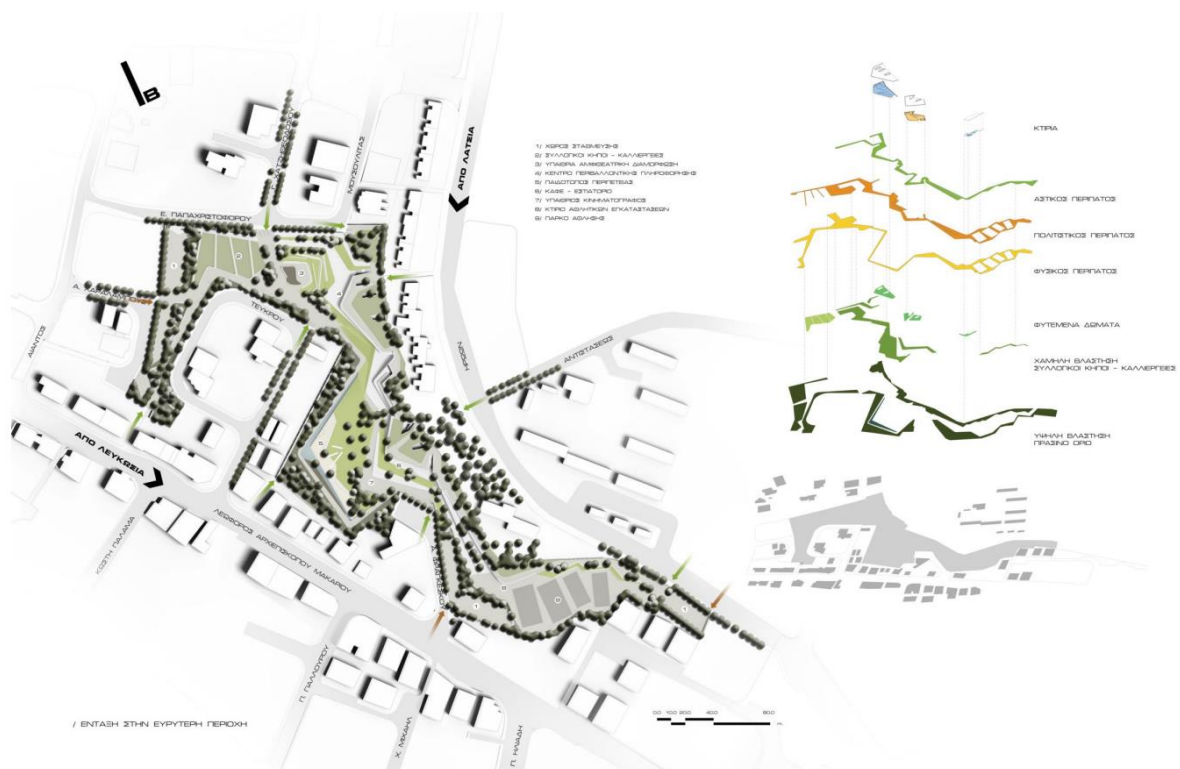


Figure 41: Pallourokamos Masterplan



Figure 42, Figure 43 & Figure 44: Pallourokampos Masterplan

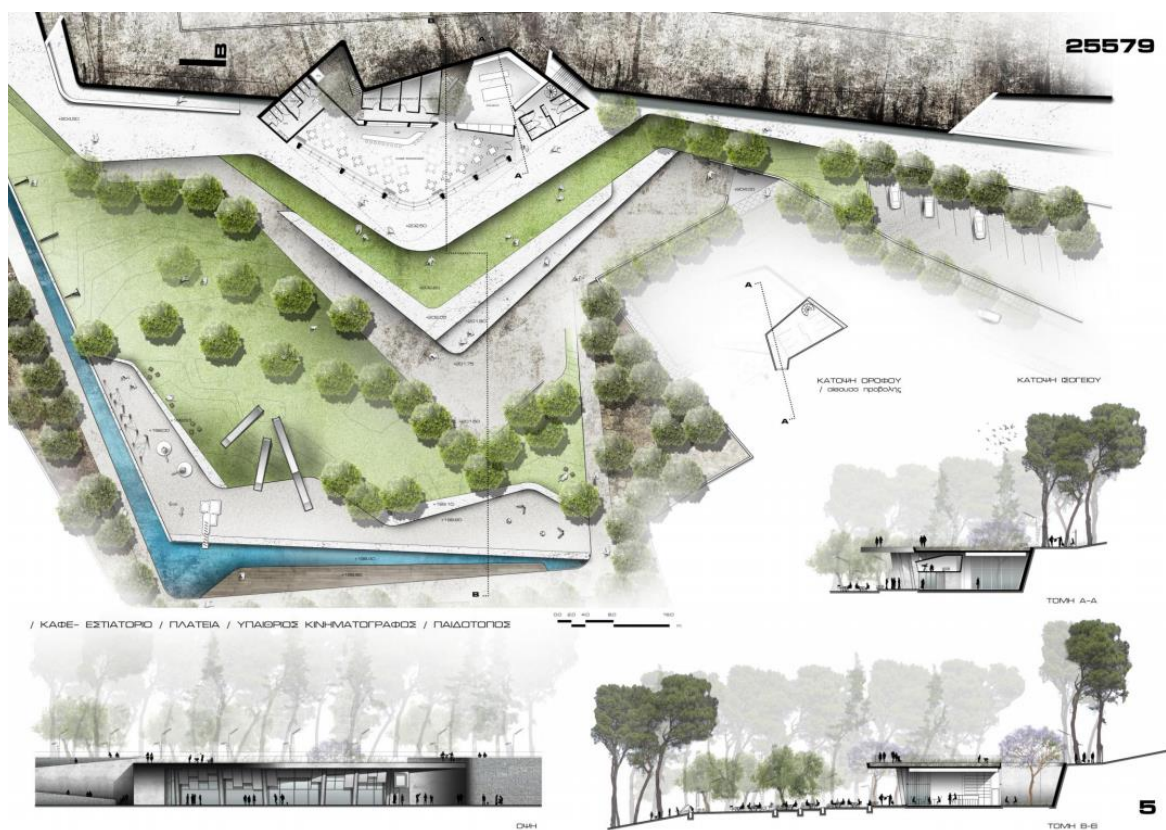
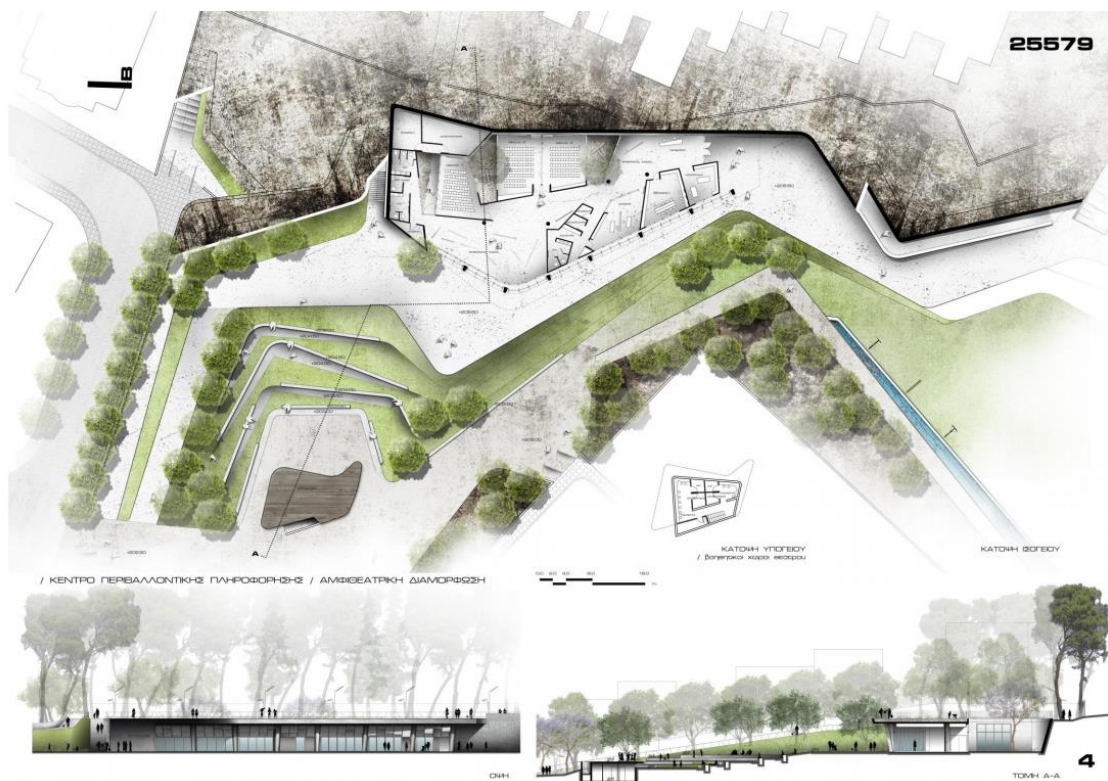




Figure 45, Figure 46 & Figure 47: Design Details of the Park

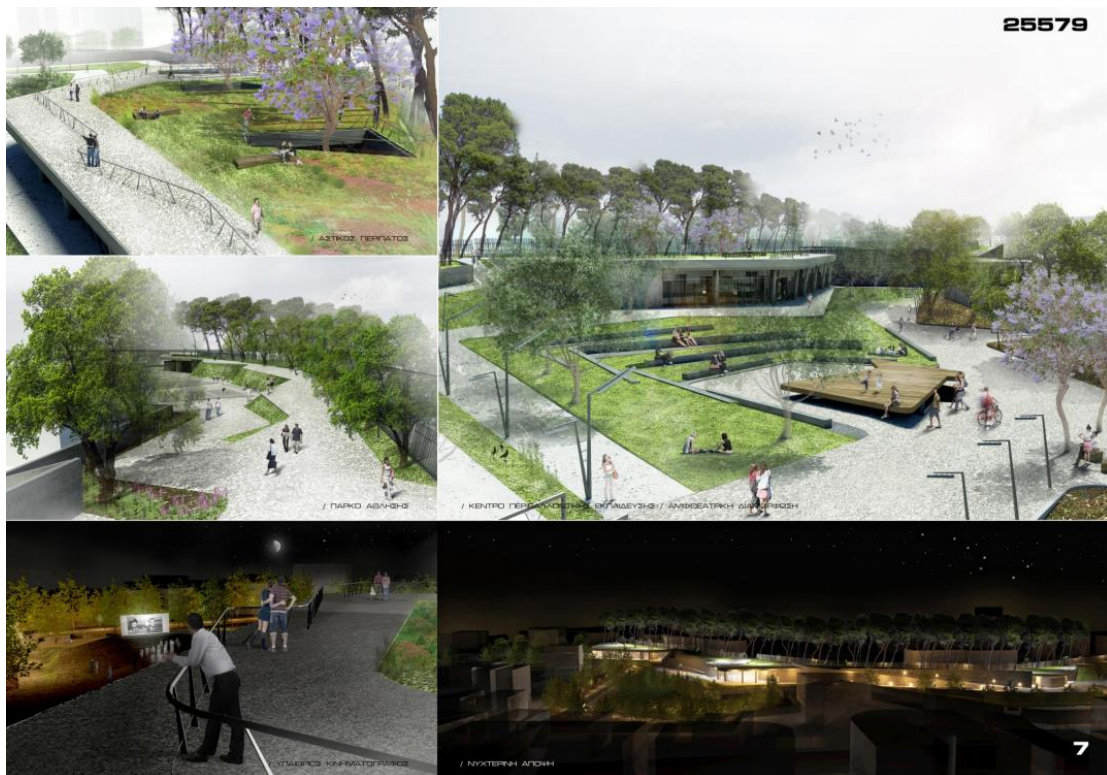


Figure 48: Pallourokampos park render images of the proposal

Step 4: Iterative monitoring and evaluation

The proposed NBS are not one-off projects undertaken at a moment in time. Once the solutions have been implemented, they must be managed and maintained.

Stewardship and Maintenance for District/ Municipal Parks

The stewardship and maintenance plan for each District/ Municipal Park will be different, since different stakeholders are involved, responsible and authorised for the design/ management/ maintenance of each park. Below there is a brief presentation of the main stakeholder who will be responsible for the Management of each Park.

Stewardship and Maintenance for Neighbourhood/ Pocket Parks

Stewardship and maintenance for the Neighbourhood/ Pocket Parks will be very different from stewardship and maintenance for the District/ Municipal Parks. As mentioned earlier, the involvement of the Private Sector is going to be significant. Specifically, there are two different roles for the businesses that will be involved.

Larger Businesses

The larger size businesses which are located in the area of intervention can participate as investors to the scheme, as part of their Corporate Social Responsibility Strategies. The Corporate Responsibility Reports of the companies in Cyprus are designed on the guidelines of the Global Reporting Initiative (GRI), ISO 26000, UN Global Compact as well as the NFIR Directive and Cy legislations. Through their annual reports, organisations aim to integrate social, environmental and economic concerns into their values, culture, decision making processes, strategy and operations in a transparent and accountable manner. Therefore, developing a well thought-out, credible and effective Corporate Social Responsibility (CSR) strategy that would effectively address both the company's sustainability agenda as well as demonstrating an honest and responsible leadership is very important.

Smaller Businesses

The smaller size businesses including Nature Based Enterprises (NBEs) such as landscape engineers, gardeners, plant specialists, agronomists, foresters, that can be involved in the planning, implementation and maintenance phase of the individual projects.

The Connecting Nature Enterprise Platform can be a useful tool throughout this process especially for the larger businesses that will choose to participate in the Scheme, as a mean to involve the citizens and NBEs at the co-design, delivery, maintenance and impact monitoring of their NBS. The platform can act as a useful tool to bring these two sides of the market together.

The team of Nicosia Development Agency is developing the guidelines that need to be followed by the applicants for the Scheme, with the help of the Forest Department and Municipal officers (Head of the Environmental Development Departments). The call for the first 200 small green spaces to be adopted in the district of Nicosia, is planned to be announced in early 2021. Each of the selected businesses, that will adopt a green space, needs to put together a plan that will meet the guidelines set. The Business adopter will sign a contract with the Municipality and Nicosia Development Agency. The responsibilities of the business adopter are to plan, plant and maintain the selected green space and commit to its ongoing care for a 5-years period. The Municipality along with the Nicosia Development Agency will set a team to monitor all the phases of the process.

Besides the stakeholders who will be responsible for stewardship and maintenance of each District/ Municipal Park/ Neighbourhood Park, it is also proposed the establishment of a new Organisation, the Nicosia NBS Agency who will be responsible to secure the sustainability of all the NBS in Nicosia. A more detailed presentation of the Nicosia NBS Agency can be found in the Chapter of Governance.

Step 5: Iterative learning for city-wide scaling of Nature-Based Solutions

Implementation of NBS in Nicosia has not been an easy task, and there have been various barriers hindering the process. Some of the most important barriers regard governance structures, the planning process itself, as well as community participation. Despite these barriers, Nicosia's Exemplar could be seen as a best practice, replicated in other cities or countries, after being tailored to the local needs.

Governance

Step 1: Aligning NBS with the wider goals of Nicosia

Cyprus, and Nicosia in particular, has a series of strategic development plans and spatial frameworks that highlight specific development goals and priorities which have been determined following an analysis of the area, and taking into account the challenges, opportunities and obstacles. Nicosia's Exemplar within the Connecting Europe project has set a series of goals which cater to the delivery of the project's mission. Additionally, these goals contribute and support the broader developmental and spatial framework of the area, further contributing to their realisation. Below are briefly highlighted the goals and priorities of several spatial and development plans.

On a national scale, Cyprus is in the process of developing a Regeneration and Resilience Plan (Democracy of Cyprus, 2021). The plan's strategic goal is to "enhance the economy's resilience and the country's dynamism for economically, socially and environmentally sustainable, long-term development and prosperity". Through specific actions and measures, the plan aims to enable Cyprus to become:

- A country with increased resilience, productivity and competitiveness, through a sustainable and long-term development model, enabled by a restructured and efficient public administration, a more effective judiciary system and a modernised tax framework.
- A country where the educational system and human capital are aligned with the skills which will be needed in the future.
- A country that is a front-runner in the Green and Digital transition.
- A country with a resilient health care system that implements best practices.

The Integrated Development Spatial Strategy (OXA) for South Nicosia 2021-2027 has the General Objective to "Develop a common development framework based on the synthesis of advantages and opportunities that arise in the intervention area". The strategic goals for the South Nicosia, as outlined in the strategy, are the following:

1. Become an attractive area with high living standards for new residents.
2. Enhance local entrepreneurship through infrastructure developments that increase the area's attractiveness to visitors, by using the cultural and environmental characteristics of the area.
3. Maintain the rich environmental resources and the agricultural landscape of the area.

Nicosia's Local Development Plan (2016) aims at defining and implementing the necessary framework for the long-term urban policy that will allow the sustainable development of Nicosia by 2021.

The objectives/goals of the Local Development Plan are the following:

1. Secure the effective organisation of the main urban functions and the distribution of land uses, in order to ensure the most efficient economic and functional organisation of the wider urban system, and promote an organised and integrated urban development pathway.
2. Efficient use of natural resources and the protection of the natural environment in the designated area.
3. Ensure the mixed and balanced distribution of compatible land use.
4. Improve living standards and service delivery in the urban environment.
5. Organisation of residential areas to ensure the equal and fair distribution of urban populations, in connection with employment and other opportunities.
6. Implement a modern multidimensional mobility policy.
7. Implement policy measures that contribute to the protection and improvement of the significant role of the urban center as a functional node for the entire urban area and broader region, as well as the equal and fair distribution of land uses in the urban region.
8. Protect elements and areas of special, historical, cultural and architectural importance, and adopt a programme for the protection, rejuvenation and regeneration of historical centers.

Moreover, the key objectives of the General Adaptation Strategy are:

1. Achieve sustainable development, focused on organized and compact development, as well as the protection and management of natural resources.
2. Improve the citizens' quality of life through an integrated approach for the re-evaluation of the plan's spatial and other policies.
3. Adoption of flexible policies for the promotion and encouragement of alternative development models from the private sector, and the more active participation of the public sector through regulatory measures.

Similarly, the Local Plan of the center of Nicosia (2016) aims at the development of a well-organised and functional Center, capable of being the driving force that will lead to the development of the entire city, since it is the center of the capital that represents Cyprus in international contexts. The plan's strategic goal is to "Redefine the development form of the urban center of Nicosia and transform it into a multi-functional service and activity center, catering to multiple developmental goals in one area". These goals include:

- Administrative center of the capital city, as well as the entire country
- Node offering public and private services
- Competitive center for economic activities
- A transregional cultural center and hub for artistic activities
- Selective residential area
- A pole for social interaction and creative employment

- An attractive destination for leisure, entertainment and recreation

The Local Plan for Central Nicosia is based on three equally important Strategic Pillars:

1. Revitalisation Strategy: indicates the general development direction of the Central Region to regain its vitality. This is based on the proposal of New Vision study for a Revitalisation Strategy through the Exploitation of the Cultural Heritage.
2. Spatial Policy: aims to strengthen the specific role and functions assigned to each of the areas that make up the Centre.
3. Infrastructural Strategy: proposes a clear differentiation from the current car dependency approach. A different mobility strategy is being promoted that will transform the road network and mobility patterns, so that the Central area can function more efficiently. More specifically, the proposed strategy is based on offering a wide range of options and focuses on public transport of high-speed and high-quality service, with buses and bicycle lanes, pedestrianisations, increased accessibility and a new policy on parking.

Lastly, the goals indicated in Nicosia's Exemplar within the Connecting Nature programme are in line with the Sustainable Development Goals (SDGs). The table below draws a connection between the 17 SDGs and this project's goals.

Table 1: Connection between Nicosia's Exemplar's goals and the SDGs																		
		Sustainable Development Goals																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
City Strategic Goals	Increase green spaces			X								X						
	Increase the physical activity of citizens			X														
	Co-production in urban interventions			X														X
	Increase Accessibility to open and green spaces			X								X				X		
	Improving quality of citizens life																	
	Improve social cohesion			X							X							

As mentioned earlier, Nicosia's Exemplar involves the creation of an urban network of linked open and green spaces with strong mobility linkages. The project's idea was based on the need of

several Municipalities to create new open and green spaces, which will enable their citizens to improve their quality of life and increase the available options in their area allowing physical activity, recreation, leisure etc. The proposed plan is included to the Local Strategic Sustainable Development Plan that has been submitted for funding at the Directorate General for European Programmes, Coordination and Development. Several meetings have been held and are planned, with a variety of stakeholders (Municipalities – municipal officers, Government departments such as Department of Forest, Department of Planning and Development, Department of Environment etc, politicians, universities, experts and citizens). Moreover, several public participatory processes took place, to ensure that the needs of different stakeholders are included and considered in the Exemplar. The objectives of this NBS intervention are to:

- Improve citizens quality of life,
- Increase Accessibility to open and green spaces,
- Provide shady areas (Cyprus weather demands this kind of solutions);
- Create a space for physical activity/sports;
- Create bench and picnic areas;
- Facilitate co-design with citizens, attract SMEs.

The second - and complementary to the city-wide park network - Exemplar is the 'adopt a park' scheme. This will be realised by creating and strengthening partnerships between city government (public sector) and businesses/enterprises (private sector). Currently, 200 such spaces have been identified and the adoption scheme for these parks is being developed. The idea for this Exemplar was a response to the limited opportunities available to involve the private sector (businesses) in the project, since the large parks in the region are funded by city/government. The objectives of these interventions are:

- Provide shady areas in summer,
- Facilitate co-design with citizens,
- Involve actively the private sector,
- Increase the sense of ownership.

Step 2: Current status of the location

The stewardship and maintenance for each District/ Municipal Park varies, considering that different stakeholders are involved, are responsible and authorized for the design/ management/maintenance of each park. The table below provides an overview of the main stakeholder(s) responsible for the management of each park.

Table 2: Current status of the NBS		
Name of Park	Management	Design
Athalassa Park	Forest Department (Central Government)	Forest Department, Department of Environment, Department of Planning and Housing
Pedieos Linear Park	Municipality of Lakatamia, Municipality of Strovolos, Municipality of Nicosia	Department of Planning and Housing
Ayios Dimitrios Park	Municipality of Strovolos, Ministry of Health (Makarios Hospital), English School, Private Sector	English School (external contractor) _ - Strovolos Municipality
Eleftheria Square	Municipality of Nicosia	Municipality, External contractor (Zaha Hadid)
Akadimias Park	Forest Department (Central Government)	Forest Department, Department of Environment, Department of Planning and Housing
Acropolis Park	Municipality of Strovolos	Municipality of Strovolos
Apalos –Kakkaristra Natural Park	Department of Environment (Ministry of Agriculture – Central Government), Latsia Municipality	Municipality, ANEL Department of Environment (Ministry of Agriculture), State Department of Forests
Lourka Forest Park	Forest Department (Central Government), Yeri Municipality	Municipality, ANEL and Forest Department
Urban Park of Pallourokampos	Latsia Municipality	Municipality, external contractor
Neighbourhood/ Pocket Parks	Private sector (businesses/enterprises) – 5 years	Businesses/enterprises (external contractor) - with the approval of the Planning Committee.

Step 3: Required partners

The NBS will not result in a change of ownership of the parks. However, several stakeholders have and will be involved for the design, implementation, and maintenance of the NBS proposed in this project. In some cases, the stakeholders/organisations responsible for the governance and maintenance of a park are willing to transfer part of the responsibility to other organisations/initiatives, but their approval/permission is still required. As a result, different stakeholders are responsible in/ for different phases of the project. However, it should be noted that not all the stakeholders are involved in all NBS interventions. These vary based on the location of the park, the municipal authority, the surroundings as well as the infrastructure, uses and functions in close proximity to the park. Additionally, some of the stakeholders are and will be actively involved in the process, whereas others will have a more supportive/ consulting/ complementary role.

In the context of this project, a first step was to identify all relevant and involved actors (a detailed list of all relevant stakeholders and beneficiaries has been presented in Chapter One of this document). Several of these stakeholders were brought together to develop the contours of the Open Innovation Team that would be instrumental for the project. In order to engage with the various stakeholders, emphasis was placed on what each organisation could obtain from the project (e.g. how the implementation could cater its interest and objectives). Additionally, the roles, responsibilities and potential contributions to the implementation process were identified. The initiatives and role/contributions of these stakeholders are presented in the table below.

Table 3: Engaged stakeholders		
Stakeholder	Initiative	Role/ Contribution
ANEL	Supporting municipalities in their development, Achieve goals of CN & Operational Plan	Planning, Facilitation/ Negotiation
Municipalities	Overcome planning /implementation obstacles, Fund raising, Networking/ synergies, Territorial attractiveness	Access to local population/ key stakeholders, Knowledge of local conditions (Data/ Contact), Internal planning (some municipalities)
Central Government	Response to civic demand for greener city (quality, connectivity), Climate change adaptation, Fight against desertification European directives (Mobility/ CO ₂)	Framework for evaluations, Permissions, Agreements, Data for mapping, Co-financing (municipal/ Eu funding)
Land users with large vested interest	Quality of local environments	Cooperation/ Co-financing

Good communication between the involved actors was thought to be the key to success; therefore, a mediator was appointed, responsible to coordinate the discussion and the communication between the different stakeholders involved in each phase of the project.

Cooperation with the Department of Forests and with the Municipalities, which are responsible for some of the targeted areas, was very important. Due to the difficulties that derived from their internal procedures and bureaucracy, informal discussions were arranged both internally and externally.

Additionally, meetings with Mayors or with the heads of the relevant Municipal Departments took place in order to identify the right contact person in each case. Keeping key actors well-informed was considered significant, so relevant newsletters were sent and short face-to-face meetings were arranged.

Moreover, depending on the audience, roundtable discussions, workshops or presentations have taken place with clusters of stakeholders (e.g. mayors, engineers, etc.). Decision making meetings with experts, frequent meetings/ calls with key personnel (e.g. from the Forest Department or the Department of the Environment) have been organised to ask for input, insights, suggestions and updates.

Meetings with the private sector and specifically with officers responsible for the company's Corporate Social Responsibility Policy were also organized and planned in order to inform them about the project, engage with them and try to build a win-win situation, by giving them incentives to invest in the project.

Step 4: Collaborative governance framework

Decision-making on large urban projects is currently very centralised in Cyprus. The central government usually finances major infrastructure projects undertaken by the Municipalities, but this is dependent on each individual project. However, it is crucial to mention that the Government of Cyprus is working on the reformation of the governance model in the Municipalities, so that they can do their job with sufficient results and less dependence on the central government.

As aforementioned, due to the nature of Nicosia's Exemplar, each park has different relevant and/or involved stakeholders. Therefore, there is not one governance model that characterises all parks in Nicosia.

In the context of this project, what is proposed is the establishment of a semi-governmental body/ organization incorporated by law, where the members of the Board of Directors will be appointed by the Minister of Interior (which is responsible for the development of the local authorities) every 3-4 years. The Board of Directors will be made up of representatives from each of the key players/stakeholders, of the city of Nicosia, that are related with NBS projects.

This body will be responsible for planning, implementing and coordinating the involved actors/stakeholders, as well as monitoring and reporting of the NBS and other development projects in the District of Nicosia. Figure 49 illustrates the proposed structure and organisation of the governance model of the NBS in Nicosia's Exemplar, in the context of this project.

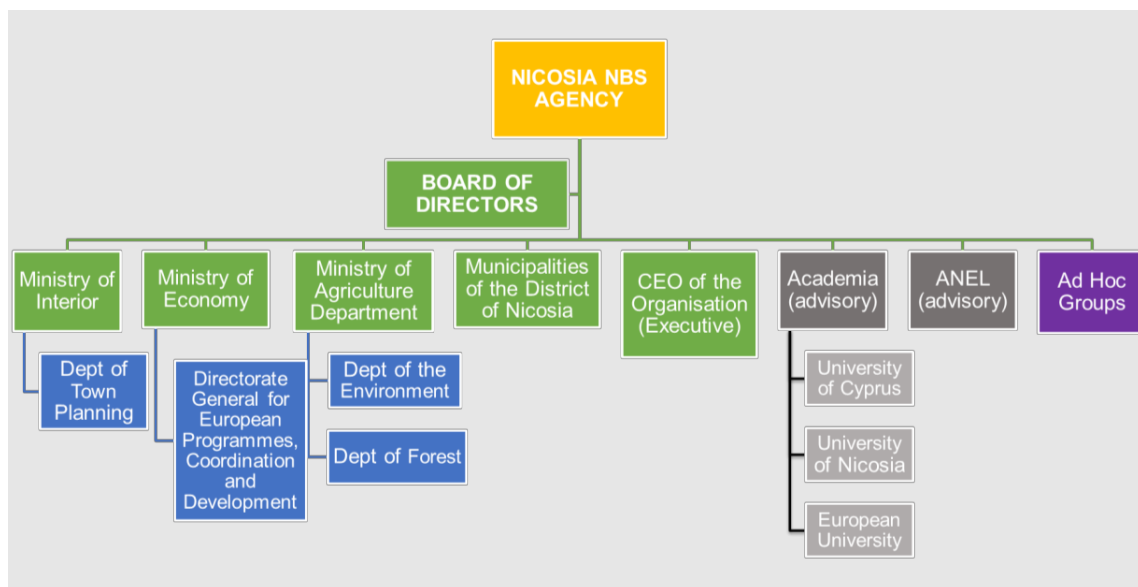


Figure 49 - Proposed Governance Model of NBS

Finance – Business Models

Step 1: Lessons learned from how Nature-Based Solutions have been financed in Nicosia to date

The ways that NBS have been financed in Nicosia to date vary, depending very much on each project. The funding sources that have been used in the different cases are: National Resources, Municipal Funds, European Funds and Private Funds. Below are briefly presented NBS included in Nicosia's Exemplar and the ways they have been financed until now.

Table 4: Current status of the NBS	
Name of Park	Financing
Athalassa Park	Development: funded through Government & EU funds Maintenance: Forest Department (Ministry of agriculture rural development and environment) - Government funds Challenge: Considered a priority for new investments - Underfunded
Pedieos Linear Park	Development: funded through Government & EU funds Maintenance: funded through Municipal funds Challenge: most expensive green space (in terms of maintenance costs) Opportunity: Plans are underway to extend the Pedieos River linear park into Turkish-occupied Nicosia. A bi-communal project aims to bring the Cypriot communities together through recreational activities- A detailed feasibility study has already been completed (extension of approximate 5 km length of the Pedieos River)
Ayios Dimitrios Park	Development: funded through Government & EU funds Maintenance: funded through Municipal funds Opportunity: English School (private entity) prepared a proposal (masterplan) to Strovolos municipality related to the redevelopment of the park that also involves Makarios children hospital.
Eleftheria Square	Development: funded through Government & EU funds Maintenance: funded through Municipal funds Challenge: Maintenance Cost (0.5M / Year)
Akadimias Park	Development: funded through Government & EU funds Maintenance: Forest Department (Ministry of agriculture rural development and environment) - Government funds Challenge: Limited Funding (Maintenance) Opportunity: The project has been included in the Local Strategic Sustainable Development Plan for further funding.
Acropolis Park	Development: funded through Municipal funds Maintenance: funded through Municipal funds

	<p>Opportunity: The project has been included in the Local Strategic Sustainable Development Plan to be funded for the proposed upgrades.</p>
Apalos –Kakkaristra Natural Park	<p>Development: private donation of €2000 by a private contractor</p> <p>Challenge: no budget has been secured for its development</p> <p>Opportunity: a proposal for EU funding (Greece-Cyprus cooperation) to finance technical assistance has been submitted.</p> <p>It has also been included in the Local Strategic Sustainable Development Plan for funding.</p>
Lourka Forest Park	<p>Challenge: no investment has been secured yet</p> <p>Opportunity: it has been included in the Local Strategic Sustainable Development Plan for funding.</p>
Urban Park of Pallourokampos	<p>Challenge: still in its planning phase, uncertain funding & need for permissions from Central Government.</p> <p>Opportunity: a fund of around 1 million euros has been earmarked for Pallourokampos</p> <p>Opportunity: a cost-benefit analysis of a new park in Palloroukampos suggests that there can be revenues from its exploitation. The project has been included in the Local Strategic Sustainable Development Plan for funding.</p>

Step 2: Explore opportunities for innovation in financing, governance and business models.

The proposed NBS could be financed through National Resources, Municipal Funds, European Funds or Private Funds. It is worth mentioning that each NBS in Nicosia is seen as a single project which will seek different funding sources. Opportunities and examples of different funding streams are presented below.

European Funds

The most accessible source of funding for urban projects in the Municipalities of Greater Nicosia is and will be EU funding. According to Charis Sotiriou, who is responsible for EU funding at the financial administration of Central Government, priorities for EU funding in Cyprus will continue to include Environment and Climate-Change Adaptation. Additionally, a horizontal priority will include the sectors of the Smart Specialization Strategy of Cyprus. EU investments in Cyprus in these areas include Research & Innovation/ Research & Development, but also Business Development. The upcoming action plan has a budget of €100 million.

The timeframe of the Connecting Nature Project fits well with the timing of EU funding, as it could help proposing new actions, also for residual funds related to pilot projects. The new ERDF period starts in 2021 and will feature thematic focus on Business Development and SMEs (45%) as well as on the Environment (30%).

Technical studies can also be financed by the EU but only for selected projects. The most relevant EU funds for projects conceived in the framework of Connecting Nature seem to be funds for Research & Development, pilot project based on the priorities of the Development Strategy of Cyprus and the LIFE+ Programme.

Municipal Budgets

Municipalities in Cyprus are funded from a variety of sources. The main sources of revenue are taxes, fees and duties (professional tax, immovable property tax, hotel accommodation tax, fees from issuing permits and licences, fees for refuse collection, fines etc).

Additionally, the revenue of each Municipal Council is subsidised annually by a grant of the Republic proposed by the Council of Ministers and approved by the House of Representatives. Although the amount of the grant paid annually to Municipalities is not prescribed in the Municipalities Law, the Government has committed itself to a stable level of funding now fixed at 1% of the total of Government revenues. The Union of Cyprus Municipalities has requested that the 1% commitment should be endorsed by statute.

The distribution of the total amount of grant between Municipalities has become, as a practical matter, a task undertaken by the Union of Cyprus Municipalities which proposes the rules for

distribution between its members. These are based largely on population figures. A third of the aggregate grant is divided equally between all Municipalities, thus providing an important equalising effect. The division of the remaining two thirds is (pro rata) according to the total number of inhabitants.

The Government also contributes towards the cost of urban development projects (usually road construction projects) which fulfil certain criteria and are approved by the Ministry of the Interior. In order a Municipality to be qualified for this government contribution, such projects must be significant in terms of the main road network or in terms of traffic management. Usually, the Government covers two thirds of the cost (by means of a variety of funding mechanisms) and the Municipality covers the remaining one third. From the point of view of the Municipalities, such shared funding of infrastructural projects is often seen not as a government grant to them, but as municipal contributions to central projects.

Another important feature of the financial regime of Municipalities is the obligation to prepare an annual estimate of revenue and expenditure. The Municipalities Law requires each Municipality to submit its estimate for the approval of the Council of Ministers. The estimate must be submitted to the Minister of the Interior in duplicate by way of the District Officer and the Minister is then required to submit the estimates together with any suggestions and observations of his own to the Council of Ministers for approval. Further provision is made for the revision of estimates and to ensure compliance by Municipalities with the estimates, subject to permitted degrees of variation. On the face of it, these sections of the Municipalities Law impose a severe form of central control (and one not confined merely to questions of legality) over the budgeting procedures of Municipalities. However, the Government regards compliance with the statutory rules as a mere formality since the Council of Ministers has not refused approval of any Municipality's estimates (nor of a transfer between accounts) in recent years. On the other hand, there is a shared understanding that the rules are usefully retained as a protection against possible abuse at a future date. Negotiations are held between the officials of the Ministry of the Interior and the concerned Municipality before the draft budget is submitted to the Council of Ministers for approval.

A potentially important source of funding for parks and gardens are the funds constituted by development fees that are earmarked for new parks.

Examples

In Latsia, the fund contains 2 million euros from development that have been collected since 1989. Only a small amount of the money was spent to plant new trees, while the rest still awaits a specific purpose. The money was not spent because there was no policy for developing new parks.

In Lakatamia, the fund contains 1 million euros. In this Municipality, all subdivisions must devote at least 15% to green space, but the owners can pay into the fund for the creation of green space elsewhere, hence the money in the fund.

Step 3: Planning the financing and business model of Connecting Nature NBS Exemplars

This chapter presents a brief description of the Business Model Canvas that was developed for the Nicosia Exemplar. The Business Model Canvas was completed as part of a co-production process at the initial stages of the project. A detailed presentation of the process can be found in the Chapter of Co-production.

The Business Model Canvas was completed with internal and external stakeholders, as part of an internal and external co-creative process, going beyond engagement between the city and citizens, and involving all quintuple helix actors, including academic, business and investments communities.

Regarding the Business Canvas Model and its content, the main areas explored were the: *key activities, key resources, value proposition, key partners, key beneficiaries, cost structure, cost reduction, capturing value, capital expenditure costs and sources of capital investment* of the proposed NBS. A more detailed reference to most of these topics has been made in other chapters of this document; however, in this section the content of the Business Model Canvas is presented in detail below, as well as in bullet points in Figure 50.

Firstly, all involved actors were identified, which will have a role and/or significance in Nicosia's exemplar. The key actors/stakeholders were divided in two groups: (i) key partners, and (ii) key beneficiaries, which were then categorized under three pillars: (a) environment, (b) economic, and (c) social. A key partner under the *environmental* pillar is the Commission of Environment, key partners under the *economic* pillar were identified as Chrysallis Leap, Municipalities, DGEPC, the Forest Department, the Ministry of Employment, the Ministry of Interior, and ANEL, whereas under the *social* pillar are the Commission of Volunteering, NGOs, Schools, Hospitals, the Health Department and youth boards, and the University. Furthermore, key beneficiaries under the *economic* pillar are businesses in the surroundings of parks, whereas under the *social* pillar are student unions, sports clubs, citizens, and the University. A local stakeholder group meeting was organised, during which it was realised that good communication between the involved actor would be the key to success. For this reason, a mediator has been appointed, who will be responsible for coordinating the discussion and the communication between the different stakeholders involved in each phase of the project.

Moreover, through the Business Canvas Model was defined the way Nicosia's exemplar will create environmental, economic and social value (value proposition).

More specifically, looking at the project through an environmental lens, the proposed green network, new bicycle and pedestrian lanes will contribute to the improvement of air quality in Nicosia. The plantation of trees will create shading, such as in and around the parks, and along the bicycle and pedestrian lanes, which will provide cooling and increase the thermal comfort of

urban dwellers. The importance of selecting the right trees for shade was highlighted, in terms of size, shape, and density, as well as selecting the right location to plant to plant them. The careful selection of trees and their proper placement will ensure better results. Furthermore, the bicycle and pedestrian paths in the park will be natural and will be linked with the turmac lanes found outside the parks. A strategic and well-planned connection/network of parks will result in a park system that can provide healthful recreation and transportation options for Nicosia's citizens. Interconnected trails, greenways, and parks support and encourage activities such as cycling, running, walking, skating, skiing, and even wheelchair travel, which will allow some users to reach and cover distances from their place of residence to their work location. In addition, such a network will contribute to the improvement of quality of life, by providing citizens more options for recreation, additional amenities and outdoor facilities. Lastly, this network will protect and increase local biodiversity, which will enhance the provision of ecosystem services on a local scale.

When it comes to the economic aspect of Nicosia's Exemplar value proposition, the proposed network will increase land, property, and investment values. Moreover, it will contribute to the attraction of startups and incubators, and the creation of sustainable jobs and employment opportunities, for example, for the maintenance and management of the parks, as well as spin off jobs, for the functioning and running of Kiosks, the provision of the necessary furniture equipment, Bicycle rental shops, and more. Furthermore, the network will increase the number of Cypriot enterprises engaged in Corporate Social Responsibility (CSR) and raise awareness on the fact that CSR does not only concern large enterprises, but also smaller ones. At the same time, the park network will promote Green CSR. Finally, it will stimulate increased economic activity in businesses surrounding the parks and interventions.

Lastly, Nicosia's Exemplar will also create social value. For instance, the parks will increase's people's ability to come in contact and interact with nature, which is known to confer several health benefits and enhance the well-being of citizens. This is of increased importance in the built environment, where access, quality, and quantity of nature is limited compared to rural areas. Moreover, the parks will increase physical activity opportunities, which in turn will increase fitness and reduce illnesses such as obesity and cardiovascular diseases. Parks are important resources that can mitigate climate, air, and water pollution, which have severe impacts on public health, and pose additional strains on the national healthcare system. Therefore, investing in such solutions improve health outcomes. Furthermore, the parks will increase social cohesion in the area, as they offer additional places where people can meet, connect, and interact in, which will reduce isolation and foster a sense of equality and belonging. Lastly, the proposed interventions will contribute to the overall improvement of Nicosia's image as a city which offers a great place to work and live in.

In addition, through the Business Canvas Model were defined the most important services or activities which need to happen in order to deliver the environmental, social and economic value (value creation).

For the creation of environmental value, it is crucial to plan and implement bicycle and pedestrian paths to increase mobility and accessibility in Nicosia, updating and enriching the existing local mobility plan. To proceed with the plantation of trees for increased shading, while considering and ensuring a careful selection of the right trees, and their correct placement. The Implementation Plan for the network of proposed and existing parks, will be prepared by ANEL, in collaboration with the Department of Environment. Moreover, it is important to make use of the available Employment and Training programs, contributing to Capacity Building, and grow and strengthen the team with people that have strong environmental backgrounds, expertise, and skills. Lastly, it is important to define and set indicators that will assess/monitor the identification process, air quality and local temperature levels.

To ensure the economic value creation, it is important to create a Management Plan for the Parks. This document will be prepared jointly by Nicosia Development Agency, Municipalities of Nicosia and Ministry of Agriculture, Rural Development and Environment. Moreover, CSR Cyprus will be contacted, to provide access to all large companies in the areas of intervention. As aforementioned, it is key to make use of the available Employment and Training programs, and Capacity Building, which will increase the skills of the workforce, and improve their employability. The Adopt a Park/Tree Scheme will be implemented as a key part of this project, which will increase its feasibility, and ensure the management and maintenance of the parks by the local community and other relevant stakeholders. Furthermore, it is crucial to increase PR and events, to build a Communication Strategy for the project, and to create a brand name for Nicosia's Exemplar, such as "Connecting Nicosia". Lastly, access to start-ups needs to be strengthened, as well as the provision of business incentives, through schemes, funds, and grants, for new businesses that will be situated in and around the parks.

Finally, to ensure the social value of the project is secured, it is important to update and enrich Nicosia's mobility plan, to set health indicators in order to measure health outcomes and facilitate increased social connections.

When it comes to capturing value, some key elements have been identified regarding (a) the cost structure and the major ongoing costs associated with delivering key activities, (b) the opportunities to reduce costs, and (c) capturing value and how success will be measured.

Regarding cost structure, one of the operation costs will be of the agency, for personnel, office rent and other associated costs for communication and branding, Capacity building, as well as monitoring and reporting of the agency and the project's impacts. Additional costs will be associated with the maintenance of the parks, as well as other replacement costs (trees plants, furniture). Finally, the different events organized in the will also contribute to increased costs.

Moreover, through the Business Canvas Model, several ways to reduce costs were identified. These include, Subsidy Employment Schemes, the work of volunteers, sponsorships – donations, CSR

Schemes, the use of technology (best practices and improvements), as well as research funds for the application of technology.

For capturing value, a set of indicators will be needed, which will assess and value the direct revenue generating from (i) operations in the parks, through concerts, markets, open air cinema and more. (ii) the number of new jobs created, either from the agency, or new enterprises established in the parks, (iii) Increased property prices in the areas, increased business activity (Increased footfall) around the parks and along the mobility corridors, (iv) increase in property taxes / income tax receipts from local businesses along and around the parks, (v) Jobs sustained – public and private sector, and (vi) the leasing of kiosks, coffee shops, and other services provided in and around the park interventions.

Finally, the agency will be responsible for capital expenditure costs, as well as identifying sources of capital investments.

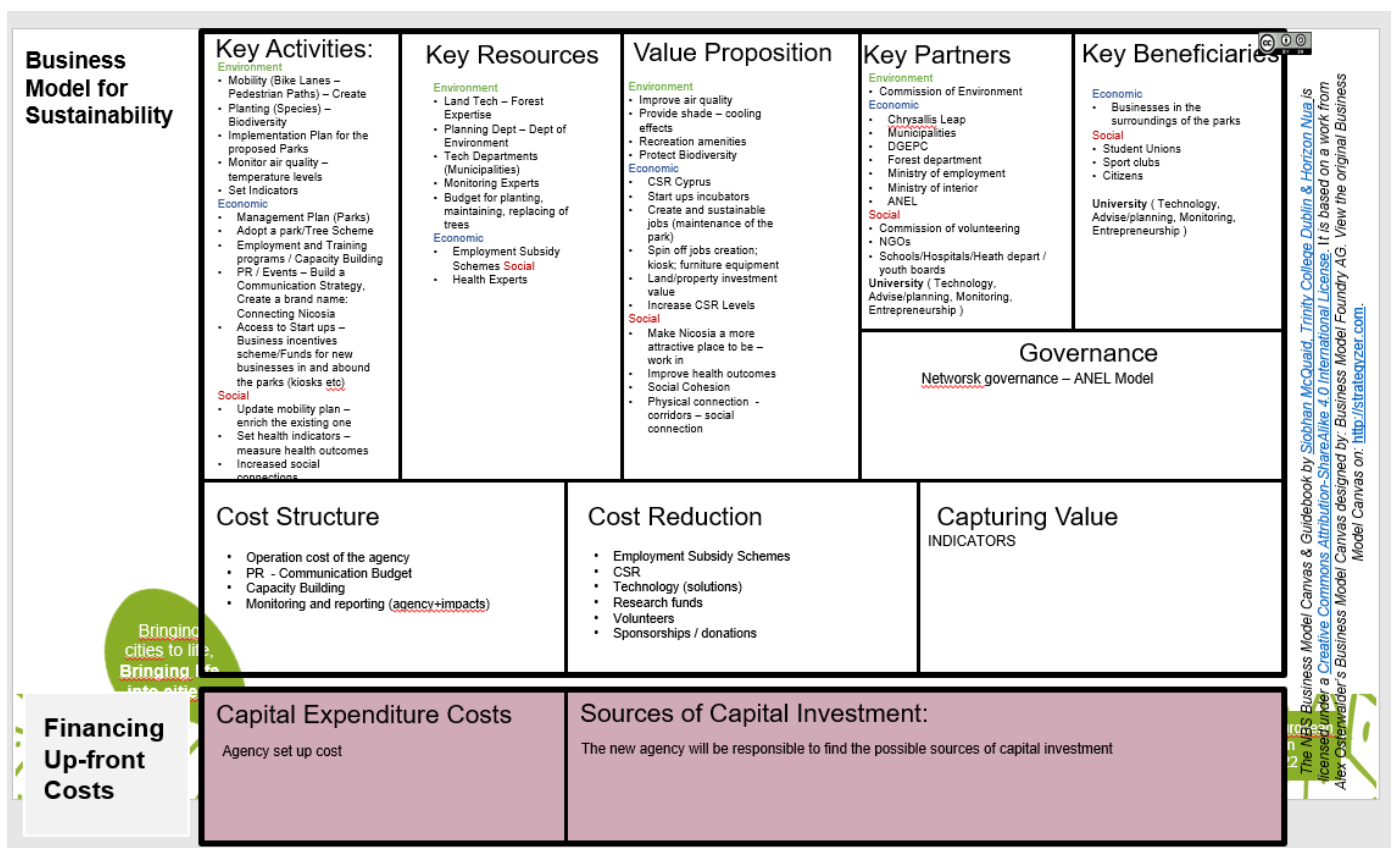


Figure 50 - Business Model Canvas

Step 4: Implementation of financing and business model plans for NBS Exemplar

The table below presents the Financing & Business Model Implementation Plan.

Table 5: Financing & Business Model Implementation Plan

City	Nicosia (Green Network)	Nicosia (Pocket Parks)
Capital financing required for NBS exemplar	€17 M approx	€10-15k per park (200 parks) 50 parks to be targeted in Round 1
Capital financing applications submitted/secured	Urban Park of Pallourokampos : €4.000.000 Saint George Linear Park: €500.000 Lourka Forest Park: €1.500.000 Linear Park of Yialias: €2.250.000 Kakkarista Park: €250.000 €8.5m funding secured for 5 of the 8 parks The funds for the remaining 3 parks are included in the Municipal Budgets but are still awaiting approval (Jan 22 update)	Issuing a call for local businesses for Corporate Social Responsibility (CSR) investment to fund the capital developments. Each municipality has initiated its own call for proposals (end 21) and the first park has been adopted in the Strovolos Municipality by FML Ship Management Ltd
Unsuccessful capital financing	Not applicable	Not applicable
City	Nicosia Green Network	Nicosia (Pocket Parks)
Sources of capital investment 1.City budget (public) 2.Regional / national/ EU /other public sources 3.Private/third sector 4.Financial Institutions	ERDF co-financing and the Governmental contribution. However the exact percentage of each co-financing side has not yet been decided. Awaiting the relevant decision from the Council of Ministers. (Jan 2022)	3 & 4 are the target
New financing partnerships: <ul style="list-style-type: none"> Capital Stewardship 	Capital: A new Public/private collaboration between a private school,Strovolos Municipality and the Ministry of Health for the redevelopment of Ayios	Capital: Privately led financing Stewardship: Private firms and municipalities will collaboratively

	<p>Dimitris Park - one of the 8 parks in the network. COVID delaying progress</p> <p>Stewardship: Talks still underway re ongoing PPP co- operations with regards to Ayios Dimitris Park</p>	oversee the maintenance of the pocket parks.
Key innovations	<p>PPP collaboration is a first for funding and stewardship of public parks in Nicosia and could lead to a new model of cooperation in the future</p>	Using CSR to mobilize and fund NBS

Nature-based entrepreneurship

Step 1: Awareness and strategic alignment

Demand for NBS has increased in recent years, as the concept is being encouraged by organisations from the European Commission (EC) to the United Nations. However, NBS are complex, and most organisations do not have the skills or resources in-house to design, deliver and manage such solutions. Nature-based enterprises (NBEs) can help meet this challenge.

In the case of Nicosia, NBEs do exist but are not aware of this term in order to promote themselves as such. A number of local enterprises use nature directly or indirectly as a core element of their product service offering however, they experience several barriers in growing their businesses; deepen their knowledge on the field in order to advance their own expertise; adaptation of new tools and techniques as well as in identifying and absorbing funding opportunities available (that will be analysed below) to help them excel and sustainably grow.

In this regard, more attention to NBS and therefore to NBEs is necessary, as it has multiple benefits: economic development, environmental protection, social cohesion, health benefits etc. Also, more attention shall be focused on raising knowledge how to support NBEs, especially in public institutions and policy makers (all levels).

NBEs and organizations that exist in Cyprus are generally active in the following sectors:

Direct or indirect use of nature	
Sector	Sub-sector
Ecosystem creation, restoration and management	Ecological & landscape restorations Ecosystem conservation and management Biodiversity conservation Reforestation Marine and freshwater ecosystem restoration Marine and freshwater ecosystem conservation and management
NBS for green buildings	Living green roofs and facades Living green wall indoors & outdoors
NBS for public and urban spaces	Green areas, parks and facades Green infrastructure Green space management Urban forestry Urban regeneration projects
NBS for water management and treatment	Natural flood & surface water management Urban green and blue infrastructure

	Urban water management Urban regeneration projects
Sustainable agriculture & food production	Agroforestry Plant and soil improvement Regenerative farming
Sustainable forestry and biomaterials	Sustainable forestry Biomaterials for construction Biomaterials for food preservation
Sustainable tourism and health & wellbeing	NBS for health & well-being Agritourism Eco-tourism and nature-based tourism Forestry tourism
Indirect use of nature	
Advisory services	Biodiversity and ecosystems Urban greening design & planning Landscape architecture Water management Community engagement for NBS
Education, research & innovation activities	Ecological research Environmental awareness education Research & innovation projects
Financial services	Investment for biodiversity and conservation Natural capital accounting
Smart technology, monitoring and assessment of NBS	Smart technology solutions for NBS Environmental monitoring Spatial tools for environment
(ConnectingNature, 2020)	

Contribution of NBS to the city economic development priorities

As already analysed in more details in the previous sections, the main aim of Nicosia Development Agency (NDA) was to include NbS as policy theme in national and local strategies, using Connecting Nature Framework as a tool, which in turn would prepare and facilitate projects on the ground. Nicosia Development Agency (NDA) decided to work further on the implementation of a very ambitious large-scale project: Network of open and green spaces that will cover the district of Nicosia, which will promote the health and wellbeing of people, improve their quality of life, support the local economy and enhance the environmental quality of the area of

intervention (air quality management actions to reduce air pollution and its associated health impacts).

Nicosia Development Agency has worked closely with the Directorate General for European Programmes, Coordination and Development of the Ministry of Economy as well as with its member municipalities to find the best possible way to achieve that. After several discussions, brainstorming sessions and meetings with several key people (policymakers), Nicosia Development Agency has managed to include the majority of the projects (parks) developed in the context of the Connecting Nature Framework, in the Integrated Spatial Development Strategy (OXA) plan for Nicosia. The OXA plan was submitted in February 2021 and was approved for funding in September 2021.

Contribution of NBEs to the planning, delivery, maintenance and sustainability of the exemplar

Nicosia Development Agency (NDA) explored ways of involving NBEs in all phases of the exemplar, from planning to maintenance. As discussed in previous sections, an innovative way of involving the NBEs was the “Adopt a Park” Scheme. This Scheme is being developed to promote long term partnerships between Local Businesses/Enterprises (including NBEs) and Local Government, in order to maintain and beautify the neighborhood (small/ medium size) parks of the area of intervention. The idea was born due to the main challenge that Nicosia faces to involve the private sector in this kind of NBS initiatives. As mentioned earlier, the larger parks in Cyprus are all financed and operated by the Government (Ministry of Agriculture, Rural Development, and Environment – Department of Forest and Department of Environment). The identified opportunity was the existence of lots of small green spaces, most of them underused or abandoned, in the neighborhoods, which had the potential for pocket parks. These spaces are owned and supposed to be designed and maintained by Local Authorities (Municipalities) that don't have the capacity to do so, but are more open in exploring the idea to involve the private sector to invest and develop these smaller green spaces.

Challenges and enablers in involving NBEs in the implementation of NBS

One of the main challenges was first; ways to involve NBEs in all phases of the exemplar and second; to help them identify and overcome certain barriers or limitations they seem to face such as growing their businesses; deepen their knowledge on the field in order to advance their own expertise; adapt new tools and techniques; identify and absorbing funding opportunities available that will help them excel and sustainably grow.

An opportunity (enabler) identified was the existence of lots of small green spaces, most of them underused or abandoned, in the neighborhoods, which had the potential for pocket parks. These spaces were owned by Local Authorities. As mentioned in previous sections, the municipalities

were more open in exploring the idea to involve the private sector (including the NBEs) to invest and develop these smaller green spaces.

Another enabler can be considered the very active start-up ecosystem of Cyprus that could be used as a boost for the NBEs to develop, present and test solutions to the parks involved in the Adopt a Park scheme.

Building alliances

As mentioned above, most of the identified NBEs in Cyprus are not aware of this term in order to promote themselves as such. In addition, the majority of them experience several barriers or limitations such as growing their businesses; deepen their knowledge on the field in order to advance their own expertise; adaptation of new tools and techniques as well as in identifying and absorbing funding opportunities available that will help them excel and sustainably grow. However, it was noticed that the innovation and technology-oriented ones, are more aware of the funding opportunities available in the country compared to the more traditional ones.

The implementation of NBS in Nicosia has not been an easy task, and there have been various barriers hindering the process. Some of the most important barriers were to first understand what NBEs are and therefore, build an NBEs community in order to promote and support further their development, which in turn, will increase the uptake and scale up of NBS in Nicosia.

One of the first things done was the mapping of NBEs in Nicosia in order to examine ways to engage them. The NBE platform that has been launched through Connecting Nature project, was a good occasion to contact them, explore the services or/and products they offer in order to assure they meet the characteristics of a NBE and discuss further this very new terminology for them. The main goal was to attract NBEs' interest, understand their level of knowledge and skills in order to find ways to support them and inform them about available opportunities which can help them grow (in knowledge, expertise and size). In addition, they were encouraged to explore the available opportunities arise on the NBE platform, which is needed to be seen as an important tool, that can help the local NBEs to find the necessary boost, to exchange experiences with other European and international NBEs, extend their knowledge and fill the identified gaps; and explore new available tools and techniques that can be adopted in local level.

Main actors in the innovation ecosystem of Nicosia

In the context of the Connecting Nature project, and Nicosia's Exemplar in particular, it is worth identifying and briefly present the different actors, mechanisms, organisations and institutions that can promote and support further the development of NBEs, which in turn, will increase the uptake and scale up of NBS in Nicosia.

National Research and Innovation System

The system of governance of R&I in Cyprus has recently been revised through a Decision of the Council of Ministers dated 9/10/2018 (Research & Innovation in Cyprus, n.d.). The new system is as follows:

STRATEGY LEVEL

(a) Minister of Finance as Head of Political Affairs for Research & Innovation (R&I).

Research & Innovation (R&I) is part of the Finance Minister's portfolio. In this context, the Minister of Finance is the responsible political head at both national and European level (Research & Innovation in Cyprus, n.d.).

(b) National Research & Innovation Council (NRIC)

The new National Research & Innovation Council (NRIC) is the Government's main advisory body for defining a strategy. The Council is responsible for the promotion and implementation of the Research, Innovation and Entrepreneurship Strategy, submits proposals and recommendations on strategic issues and monitors the implementation of policy-related issues. In addition, it has a supervisory and guiding role in the implementation of the new proposed national R&I framework and has the option of planning corrective and evolutionary actions regarding the functioning of the system and the implementation of the national strategy and individual policy measures. Members of the NRIC are appointed high-profile individuals with expertise in research, innovation and entrepreneurship (Research & Innovation in Cyprus, n.d.).

POLICY LEVEL

(c) Chief Scientist

The Chief Scientist plays a coordinating and guiding role at the policy level of the national framework. In particular, the Chief Scientist has a coordinating and supervisory role in the formulation of R&I Policy and the functioning of the national R&I governance system, including departments and bodies involved at both the policy and technocratic levels. In addition, the Chief Scientist supports the work of the Council to formulate R&I Strategy recommendations, as well as suggestions on the structure and functioning of the governance system (Research & Innovation in Cyprus, n.d.).

(d) Directorate for Research & Innovation

The Directorate-General for European Programmes, Coordination and Development is an independent government agency which is administratively under the responsibility of the Minister of Finance (Research & Innovation in Cyprus, n.d.).

The R&I Directorate has the following responsibilities:

- coordination, support and monitoring of the implementation of the National Research & Innovation Strategy (R&I);
- planning and coordination of R&I policy issues;
- tasks of the NRIC Secretariat
- administrative support from the Chief Scientist, in addition to the support of the Research and Innovation Foundation (RIF).

The coordination of the National R&I Strategy and the management of policy issues is carried out under the guidance of the Chief Scientist and the Minister responsible (Research & Innovation in Cyprus, n.d.).

In addition, the R&I Directorate is responsible for representing the Republic of Cyprus in the relevant European institutions, bodies and working groups, including bodies strategically involved in the implementation of Horizon 2020 and for the preparation of bilateral and multilateral transnational agreements to promote cooperation in the field of R&I. In particular, it provides funding to the main Research Funding Bodies in Cyprus, the Research and Innovation Foundation (RIF), as well as institutional funding to Research Organisations such as the Cyprus Institute of Neurology and Genetics, the Cyprus Institute, the Centre of Excellence for Research & Innovation "KOIOS" and the Research Centre of Excellence "Research Centre on Interactive Media Smart Systems and Emerging Technologies – RISE" (Research & Innovation in Cyprus, n.d.).

EXECUTIVE LEVEL

(e) Research and Innovation Foundation

The Research and Innovation Foundation (RIF) is the executive arm of the Government for R&I. It is an autonomous Private Law Foundation. Since 1996, the RIF has been the main body responsible for coordinating, supporting and financing research activities in Cyprus and organizing Cyprus' participation in the most important European Research Programmes (Research & Innovation in Cyprus, n.d.).

The significant role of scientific research in modern socio-economic development, as well as the vital need to enhance research activities and infrastructures in Cyprus, were determining factors for the founding of the RIF. Following a relevant decision by the Council of Ministers in 2007, the Foundation expanded its range of activities to also support and advance Innovation in Cyprus (Research & Innovation Foundation, n.d.).

RIF's mission is the establishment of all the necessary conditions and requirements that will support the development of Research, Technology, and Innovation in Cyprus. Through innovative actions and programmes, RIF reinforces the domestic R&I ecosystem, contributes to strengthening the competitiveness of the Cypriot economy and develops cooperation and

networking with the international research and entrepreneurial communities (Research & Innovation Foundation, n.d.).

Some other relevant organisations within the national R&I system include (European Commission, n.d.):

- Ministry of Energy, Commerce, Industry and Trade,
- Research Promotion Foundation,
- The Cyprus Institute,
- Department of Fisheries and Marine Research,
- Agricultural Research Institute,
- University of Cyprus,
- Cyprus University of Technology, and
- The Cyprus Institute of Neurology and Genetics.

Innovation Plans & Frameworks

In order to promote R&I activities, actions and investments in Cyprus, a series of development and plans and frameworks have been drafted, which have R&I at the core of their strategy. Some of these documents are presented below.

Research, Technology, Development and Innovation (RTDI)

Cyprus Research and Innovation Strategy Framework 2019-2023 – Innovate Cyprus

Innovate Cyprus is the national strategy framework for research and innovation for the period 2019-2023. The vision of the strategy is to make Cyprus *"a dynamic and competitive economy driven by research, scientific excellence, innovation, technological development and entrepreneurship and to become a regional hub in these fundamental areas"* (Research & Innovation Foundation, n.d.). The Strategic Framework revolves around nine strategic pillars and enablers:

1. Governance,
2. National Strategy for Research and Innovation,
3. Research Excellence,
4. Knowledge Transfer and Commercial Exploitation,
5. Innovative Entrepreneurship,
6. Cultural Change,
7. International Dimension,
8. Communication, and
9. Digital Transformation.

Innovate Cyprus was prepared by the National Board for R&I, after an extensive consultation with private and public sector stakeholders (research and academic institutes, universities, Ministries,

other organisations, etc.) and was presented to the President of the Republic of Cyprus in May 2019 (Research & Innovation Foundation, n.d.).

Smart Specialisation Strategy

The Smart Specialisation Strategy (S3Cy) is a comprehensive economic transformation agenda, tailored to the specific needs of each region or country, aiming to contribute towards economic development (Research & Innovation Foundation, n.d.).

The preparation and approval of the Smart Specialisation Strategy by the EU Member States was a key precondition set by the European Commission for the utilisation of European Structural and Investment Funds (ERDF) for R&I during the Programming Period 2014-2020 (Research & Innovation Foundation, n.d.).

The Smart Specialisation Strategy for Cyprus was prepared under the coordination of RIF, with the support of a research team by the Cyprus Technology University and was approved by the Council of Ministers in March 2015 (Research & Innovation Foundation, n.d.).

Its main goal is to ensure the rational and efficient use of ERDF funds by identifying niche areas of competitive strength for development and growth (Research & Innovation Foundation, n.d.). The priority areas highlighted through the Smart Specialisation Strategy for Cyprus are:

- Energy,
- Tourism,
- Structured Environment/Construction,
- Transport/Shipping,
- Agriculture/Food, and
- Information and Communication Technologies and Environment as horizontal sectors.

Specific focus areas were also identified within each priority area. The priority areas and focus areas selected can make a significant contribution to the development of the economy via investment in R&I (Research & Innovation Foundation, n.d.).

The main implementation tool of the Smart Specialization Strategy is the Strategy Action Plan, which includes measures and actions for the RIF RESTART 2016-2020 Programmes (Research & Innovation Foundation, n.d.).

RIF RESTART 2021-2027

RESTART 2021-2027 is a multiannual development framework of Programmes to support Research, Technological Development and Innovation in Cyprus, which is co-financed from national and European resources and implemented in conjunction with other national initiatives and programmes.

The vision of the RESTART 2021-2027 Programmes is to highlight R&D as a key factor in Cyprus' economic growth, contributing to addressing the key economic and social challenges, and developing the conditions for achieving sustainable development, in line with the principles highlighted by the Europe 2020 strategic framework for smart, sustainable and inclusive growth.

The design of the RESTART 2021-2027 Programmes focuses on the individual objectives, as well as the Priority Areas identified through the Smart Specialisation Strategy for Cyprus (S3Cy).

Operational Programme (OP) "Competitiveness and Sustainable Development" (Will be replaced to THALIA 2021 -2027)

The Operational Programme (OP) "Competitiveness and Sustainable Development" is co-financed by the European Regional Development Fund (ERDF) and the Cohesion Fund and is one of the two Programmes prepared for the effective utilisation of the resources of the Cohesion Policy in the period 2014-2020 (Structural Funds of the European Union in Cyprus, 2014).

The OP "Competitiveness and Sustainable Development" constitutes a programming document that includes specific priorities and indicative categories of interventions which will be implemented during the period 2014-2020, contributing towards the strategic objective of the Partnership Agreement for the restructuring of the economy, the preservation and creation of new jobs and the safeguarding of social cohesion (Structural Funds of the European Union in Cyprus, 2014).

Within the framework of the OP "Competitiveness and Sustainable Development", interventions planned will contribute to the enhancement of economy's competitiveness through investment in the sectors of R&I, ICT and SMEs support. Interventions are also planned in the sectors of Environment, Energy and Transport, as well as for promoting integrated sustainable urban development in deprived areas. The interventions will include investments of the broader public sector, as well as grant schemes/incentives addressed to the private sector (Structural Funds of the European Union in Cyprus, 2014).

RIF Strategic Plan

RIF's Strategic Plan is the organisation's major planning document and serves as a roadmap and implementation mechanism for all its activities and actions, in order to fulfil its mission and achieve its vision (Research & Innovation Foundation, n.d.).

The document describes the Vision and values of the Organisation and revolves around RIF's main Strategic Goals, for a time period of five (5) years. An integral part of the Strategic Plan are the Action Plans (one per Strategic Goal), which describe the implementation activities in detail, including the timeframe, the required resources, the monitoring mechanism and the relevant indicators (Research & Innovation Foundation, n.d.).

The Strategic Plan will define appropriate fields of action to support the achievement of RIF's objectives and goals, hence strengthening the efficiency and effectiveness of the Organisation (Research & Innovation Foundation, n.d.).

Grant/Sponsorship Plan for Increasing Business / Entrepreneurship Innovation

The Plan aims to support and strengthen existing start-ups and other enterprises investing in R&I for the development of competitive innovative products and services that they plan to release to the market, as well as innovative processes for the production of their products.

Additionally, the plan aims to support start-ups who intend to develop innovative products, services, and processes and to promote cooperation between enterprises. The result of the Plan will be to combine private investments in research, development and innovation as a contribution to the development of innovative products/services and processes as investment capitals.

This objective is intended to be achieved by making use of incentives in the form of financial aid for the development of innovative products and services. It can also be achieved through the development of innovative processes and production processes that will offer a competitive advantage to enterprises.

Accelerators and Incubators in Cyprus

Cyprus is rapidly growing as a centre for Information and Communication Technology (ICT) and Research and Development (R&D), and it provides a great environment for start-ups, including start-up incubators, networks of start-up entrepreneurs, R&D centres, and start-up angel investors. Furthermore, Cyprus has introduced a Start-up Visa scheme for third country nationals who wish to reside and invest in innovative businesses in Cyprus.

IDEA Innovation Center

IDEA Innovation Center is a non-profit Incubator – Accelerator and comprehensive innovation centre for entrepreneurs, startups and SMEs in Cyprus, giving great emphasis on the entire spectrum and peripheral activities that build entrepreneurial skills & mindset to people with vision, and emphasizes on commercialization activities (IDEA Innovation Center, 2021).

It hosts start-up companies, offering them high quality of training and services, to turn their innovative ideas into viable businesses with a global outlook. Start-ups that use nature directly or indirectly as a core element of their product service offering, can apply to one of the regular calls of IDEA in order to find the support they need to grow.

Chrysalis Leap

Chrysalis LEAP helps entrepreneurs bring their cleantech ideas to market. Chrysalis Leap is a partner of EIT Climate-KIC, one of the three EIT Climate-KIC Cyprus Hub partners and the official

organiser of EIT ClimateLaunchpad for Cyprus. They undertake various initiatives to promote cleantech entrepreneurship and innovation. This Nicosia-based private company that was developed with the RIS programme Climate KIC with the purpose of a business accelerator was established in 2013 (ChrysalisLeap, 2019).

Its focus lies on training, identifying gaps, needs in different areas and sectors related with "clean tech". The goal of Chrysalis LEAP is to help people turn their ideas into projects. The teams that enter the accelerator programme are mostly from Cyprus, but also from other places, such as Lithuania, Turkey, Switzerland or Greece (ANEL, n.d.).

Diogenes

Diogenes Business Incubator University of Cyprus, owned by the University of Cyprus, Cyprus' largest public University, is a high technology business incubator aiming to commercialize R&DI results by creating business value. Diogenes is geared to pioneering the transformation of Cyprus into an important center in the Eastern Mediterranean, in the area of commercializing high technology research and innovative ideas and is committed to developing entrepreneurship in the country as an important component of the process (Diogenes Business Incubator, 2011).

Gravity Ventures

Gravity is a cutting edge, venture building incubator based in Nicosia, that fosters and propels innovation. Their approach focuses on building start-ups from early stage to mature ventures, by assisting them in all the necessary steps and guiding them throughout their journey (Gravity Ventures, 2020).

ARIS

ARIS is a start-up accelerator, founded by Deloitte and the Bank of Cyprus, with the purpose of offering entrepreneurs with the structure, mentorship and network needed to launch successful business ventures. The acceleration programme has been designed and is being curated by Deloitte's Innovation and Entrepreneurship Centre. The accelerator targets start-ups that want to speed up the execution time of their projects and accelerate their go-to market speed (ARIS, 2021).

ARIS' objective is to spark innovation and facilitate the creation and development of ideas, products and services that will be solving real problems through the utilization of technological means. ARIS' vision is to create impactful start-up businesses that grow with their assistance, matching their residents with potential clients and investors (ARIS, 2021).

Kinisis Ventures

Kinisis Ventures is a business acceleration firm partnering primarily with Cypriot ventures that demonstrate differentiated value propositions that can scale in the USA market. Kinisis Ventures

leverage years of multidiscipline USA business expertise and networks to add strategic and tactical value to their portfolio companies.

European University Cyprus (EUC) – Performance Enterprise Accelerator & Knowledge (PEAK) Innovation Center.

The research center EUC-PEAK aims to research, support and accelerate efforts of Entrepreneurship, Business Innovation and Knowledge Transfer. The primary mission is to formulate a research community that creates research on the aforementioned topics. Research in such topics will focus on, but is not limited to, the impact of Entrepreneurship, Business Innovation and knowledge transfer in Cyprus and the near region (EUC-Peak, n.d.).

EUC-PEAK Innovation Center targets to become the hub for research, applications and education for the Cypriot start-up companies, SMEs, industrial and manufacturing community, social entrepreneurship and green entrepreneurship, stakeholders and public authorities and to become a major player in the wider area of Southeast Europe (EUC-Peak, n.d.).

Step 3: Planning, implementing and monitoring a customized support programme

In order to translate our strategy into an actionable implementation plan, the following actions will be carried out:

- **Adopt a Park Scheme** (Implementation phase):
 - Objective:** involvement of private sector; promote long term partnerships between Local Businesses/Enterprises (including NBEs) and Local Government
 - Challenges addressed:** Ensure the implementation of the agreed designs; maintenance and sustainability of the parks; Job Creation; Lack of awareness.
 - Description:** The Scheme is being developed to promote long term partnerships between Local Businesses/Enterprises (including NBEs) and Local Government, in order to maintain and beautify the neighborhood (small/ medium size) parks of the area of intervention. Each member municipality of ANEL opened a call (with similar guidelines prepared by ANEL, University of Cyprus, Municipal Technical Departments, aligned with recommendations of the Department of Planning & Housing – Ministry of Interior and ETEK)
- **Incubator Programme** (planning stage)
 - Objective:** involvement of private sector; jobs creation; promote green entrepreneurship promote; awareness raising
 - Challenges addressed:** Lack of NBEs

Description: The idea is still in very early stages. The plan is to develop a programme in collaboration with the The Research and Innovation Foundation (RIF) and active incubators such as the IDEA or Chrysallis Leap. The programme will include funding, training, mentoring / advising on how to develop and grow nature-based enterprises. It is still under consideration which will be the focus stage (Ideas or established startups)

NBE Strategy Summary Table

<i>NBS</i>	<i>NBS Phase</i>	<i>Type of NBE Involved</i>	<i>Challenge</i>	<i>Goal of NBE Programme</i>	<i>How will this be achieved?</i>	<i>Partner</i>	<i>What does success look like and how will you measure it?</i>
Adopt a Park	Planning	Landscape architects	Mapping NBE's to do the work - availability once call is issued	To use NBE's to work with Private sector on design, implementation and stewardship of pocket parks	Catalogue of companies to be supplemented once call is issued	Companies	50 companies and NGO's for Round 1 NBE-s - to be determined
	Delivery	Landscape companies	Ensure the implementation of the agreed designs.	Application of the most suitable in each case NBS.	Monitoring of the process.	Companies	The implementation of the designs as agreed on time. Number of visitors (Company events, social events etc)
	Stewardship	Landscape companies	To ensure the maintenance and sustainability of the parks.	Maintenance and sustainability of the pocket parks.	Monitoring of the process.	Companies	Indicators
		Smart tech in the park - monitoring					
Incubator Programme (Jan 22)	All phases	startups that will provide solutions	focus stage, Ideas? Start up's established?	NBS from new start ups or NBEs	Call of proposals	IDEA Incubator Chrysallis Leap	5 new startups related

	for the parks (Stewardsh ip stage)		related to the parks		(still nothing has been agreed formally)	
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Coproduction

Step 1: Define the goals of the co-production process

The development of NBS in Nicosia was based on a co-production method, that fostered collaboration and partnerships and stimulated learning among diverse actors. The initial goal of the co-production process was to achieve a better understanding about the nature and scope of the envisaged project and provide answers to some basic questions regarding the design and implementation process.

The main goals for the co-production process are summarised below:

- Diagnosis & Preliminary Work/ Mapping,
- Definition of scope of interventions,
- Draft programme for each site,
- Planning permissions - Implementation

Step 2: Use the design principles to flesh out the coproduction goals and structure

The six design principles suggested by the Connecting Nature Framework and presented below, guided the entire approach that was followed in Nicosia.

- **Inclusivity:** Inclusivity for bringing together diverse actors and multiple types of knowledge at equal level.
- **Openness:** Openness to adopt, integrate and share knowledge throughout.
- **Legitimacy:** Legitimacy to ensure that the process includes legitimate and credible knowledge and is trusted by participants and wider urban actors.
- **Actionable Knowledge:** Actionable knowledge for policy and planning ensures that the co-produced knowledge is immediately relevant and translated into policy and planning.
- **Usable Knowledge:** Usable knowledge and empowerment ensures that the co-produced knowledge outputs are valuable to and taken up by many actors.
- **Extending Institutions:** Extending institutions for N-Synergies ensures that the co-produced knowledge connects to multiple goals, strategies and agendas within the city. This helps to create synergies across sectors.

The Table below demonstrates the ways that these six principles were taken into consideration both at the design and implementation stage of the project in Nicosia, as well as the challenges that were presented in each case.

Table 6: Connecting Nature Framework principles

Principles	What for?	How?	Challenges
Inclusivity	<ul style="list-style-type: none"> – To bring in knowledge of universities and to know what citizens need and want. – To assign distinct roles in distinct stages for the different stakeholders. 	<ul style="list-style-type: none"> – Identify who to involve from the very beginning, and for which stage. 	<ul style="list-style-type: none"> – Citizens: no culture of engagement, hard to have them actively involved and make them more sensitive to keep parks clean. – Universities: could have a more active role in order to improve their contribution to local and regional sustainable growth [e.g. by helping the local authorities to acquire knowledge more effectively and develop solutions to more practical issues they face (e.g. maintenance)]. – Companies: difficult to be engaged due to their profit-orientation.
Openness	<ul style="list-style-type: none"> – Share and communicate the plans, to get feedback and input. – Important throughout the entire process. 	<ul style="list-style-type: none"> – Combination of events/ information dissemination activities. 	<ul style="list-style-type: none"> – Engage more people, NGOs, local companies etc.
Legitimacy	<ul style="list-style-type: none"> – Ensure that the process is trusted and that it keeps in line with goals. 	<ul style="list-style-type: none"> – Employ facilitator to coordinate discussions: The facilitator should be knowledgeable (context knowledge), trusted, open, objective and should understand different 	<ul style="list-style-type: none"> – Flexible, effective, and efficient coordination. – Build a common language.

		<p>languages (e.g. citizens)</p> <ul style="list-style-type: none"> – Form small group of actors to coordinate the process and be responsible for protecting it and ensuring it keeps in line with goals. – Ensure everyone speaks the same language and stays focused. 	
Actionable knowledge	<ul style="list-style-type: none"> – In the process of implementing the plan, new knowledge is generated through new and relevant things. 	<ul style="list-style-type: none"> – Ensure learning and uptake of knowledge that is generated in implementation. 	<ul style="list-style-type: none"> – Involve universities more, in order to share knowledge. – Time, research funding as well as making a project part of what universities are already doing are challenging processes.
Usable knowledge	<ul style="list-style-type: none"> – Learn from knowledge of citizens and academics (also to learn from actionable knowledge). – Involve citizens, e.g. in maintenance of the green areas (parks in Nicosia), which accounts for 20% of the 	<ul style="list-style-type: none"> – Identify and reach out to active and interested citizens. 	<ul style="list-style-type: none"> – Challenging to reach out to citizens and entrepreneurs.

	development plan.		
Extending institutions	<ul style="list-style-type: none"> – Create synergies from linking different goals and align action across Municipalities and departments. – Examples: <ul style="list-style-type: none"> -Quality of air is a key issue in Nicosia which can be linked with NBS. -The Network of open & green spaces is linked to pedestrian and bike network (existing mobility plan), which came out of the discussions. -Some Municipalities have other ideas on where to create parks and after presenting them our plan have been persuaded to adopt our proposals. 	<ul style="list-style-type: none"> – Development Agency connects with different departments in Municipalities. – Connect green space network with different goals, e.g. mobility (pedestrian, bikes) and air quality. – Knowing and using existing strategies, speaking the same language. 	

	(boost synergies).		
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Step 3: Plan the co-production activities.

In order to achieve the co-production goals that were set in the case of Nicosia, co-production steps/ activities or workstreams were identified. These varied in order, they were iterative, and they are presented below:

- Joint communication channels
- Monitoring and evaluation
- Mapping of network (Identity of each space, Relationships between parks)
- Facilitate negotiation between stakeholders
- Create an organisational structure
- Synergies in fundraising and management
- Distribution of resources within the network of the parks
- Planning and implementation of the physical interventions
- Operation plan for the network

In the Gantt chart below, the co-production steps/ activities or workstreams were listed providing an estimated timeline for their implementation. Key milestones that were identified are the creation of a comprehensive map of the entire park network that would include specific details about the identity and function of each place, as well as the relationships between the different places. A second milestone is the adoption of an Operational Plan for the park network, a document that would specify the budget, governance model, a catalogue of interventions for all parks and mobility infrastructures (including a plan for maintenance) and an implementation timeline.

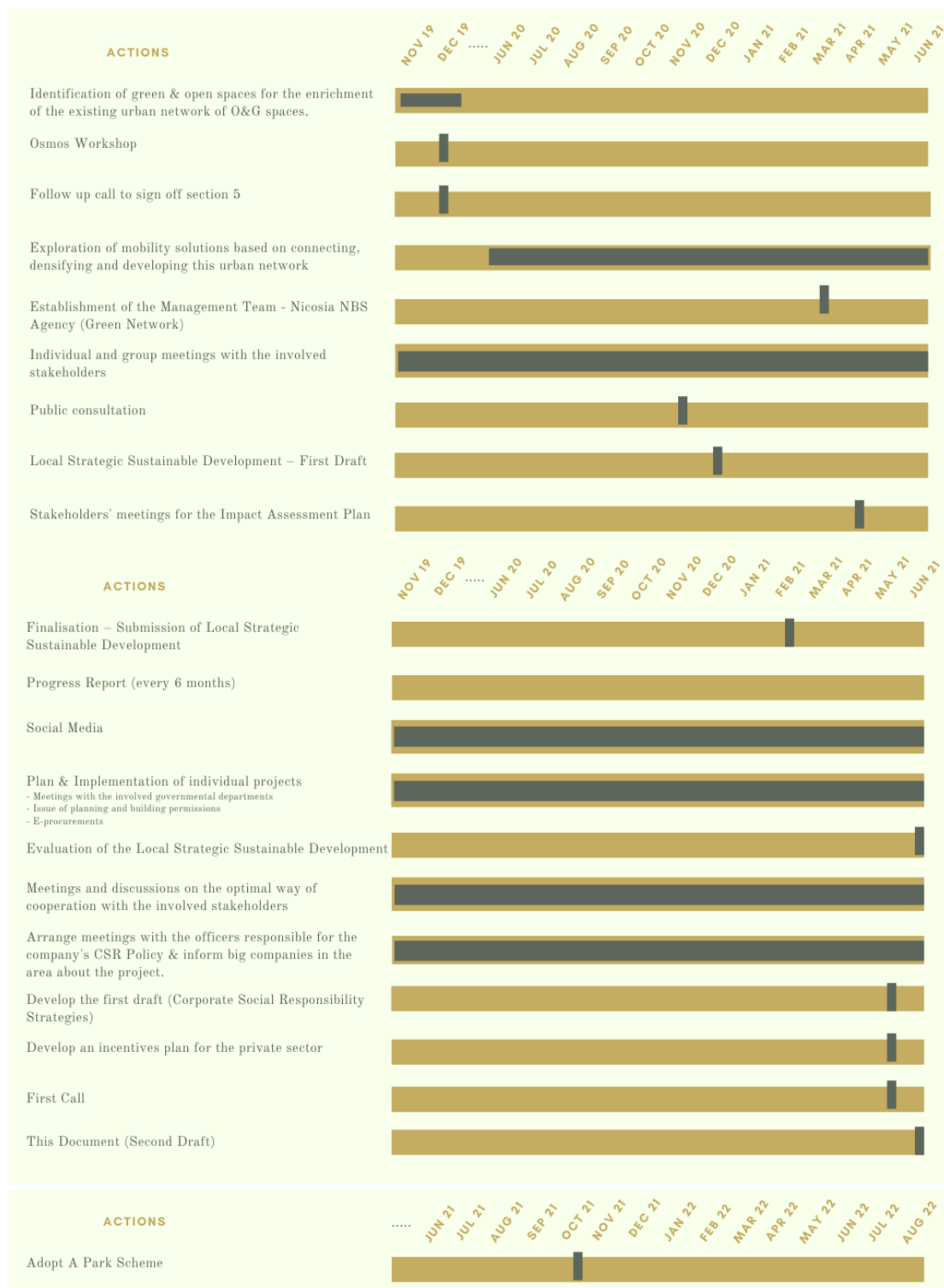


Figure 51 – Connecting Nicosia Project Timeline

Step 4: Select the co-production tools.

In order to implement some of the aforementioned co-production activities, different tools, methods and processes were used.

Business Model Canvas, Financing and Entrepreneurship Workshop

One of the fundamental workshops that was organised at the initial stages of the project in Nicosia was the "Business Model Canvas, Financing and Entrepreneurship Workshop". The workshop was held in 18th and 19th of October 2019 at Latsia Municipality. Even though the workshop's main focus was the organisational and funding aspects of the project, it provided a significant opportunity for all the participants and stakeholders to accomplish a comprehensive and deep understanding of the entire project.

During the first day of the workshop, the Connecting Nature Framework and the criteria for selecting Nicosia's Exemplar were introduced to the participants. Financing, governance and business models for NBS were discussed and the Business Model Canvas Practical Workshop took place with participants identifying value proposition, value creation and delivery of Nicosia's Exemplar as well as value capture and financing of the up-front costs. During the second day of the workshop, an introduction to the NBE Strategy took place and discussions mainly focused on NBE Entrepreneurship and on ways to stimulate and further support it.

Developing Nature-Based Solutions in Nicosia Workshop

The "Developing NBS in Nicosia Workshop" was an event held in 6th December 2019, at the Environmental Information Centre Athalassa national Forest Park, in the context of the Connecting Nature project. Similar workshops happened in other cities across Europe. The workshop also benefited from insights from other cities that are part of the Connecting Nature project and was accompanied by work on organisational and funding aspects that were carried out in parallel. The objective of the workshop was to make progress towards developing NBS in Nicosia.

The workshop brought together the key people involved in NBS in the city in order to facilitate a common understanding about the envisaged project. Basic questions like the following were asked: Where are the NBS happening? What kind of interventions are envisaged? What is the scope, complexity, timeframe of the interventions? What additional infrastructure is needed? How will it be maintained?

The output of the workshop was presented in the form of sketches, diagrams or charts summarising the ideas and possibilities that came out of the group discussions. These would be seen as a first iteration allowing the local partners to move forward in their process towards implementing specific NBS.

Sarajevo Process

In the 2nd, 3rd and 4th of September 2020, the Sarajevo Process - a three-day course - was organised aiming to engage participants with the NBS in Nicosia. The Sarajevo Process is an arts-based approach of co-creation and storytelling. Following a successful pilot in Sarajevo, the process was brought to Nicosia.

The process skeleton came in the form of a proposed agenda that encompassed the key methods and theories that would be used to engage participants with NBS. The proposed methods were Memory work, Immersion-in-nature and Embodied reflection, Eco-therapy, Body mapping and Art Map. The initial agenda was expanded to include a new activity and fit the co-creative ideas of the core team and the Nicosia Development Agency.

DAY 1: 0.5 Day (afternoon or morning session; 3hrs)					
Time	Item	Methods Used/Materials	Output	Outcome	Mapping on to CN Frameowrk
10:00-10:15	Welcome/Introductions				
10:15-11:00	Nicosia to present on their proposed exemplar (within the context of Cn Framework)				
11:00-11:30	Presentation of theory/methodology of each component of the exercise & discussion				
Component 1: What has brought you here?					
11:30-13:00	Memory-work exercise: a) Each participant will bring a meaningful photo to write a short piece (in 3 rd person) that describes a previous experience with nature (20-25mins) b) Participants will present back to the group (2-3 mins)	Method: Memory Work Materials: Participants to bring a photograph that has a meaningful connection to and with nature to work	Component 1 of exercise tested with group; Impressions and reflections are used to refine the exercise.	Individual (photo) → collective experience (word cloud)	How does this map on to the CN Framework

	c) Reflections captured to identify key themes, values, and guiding principles	with during this exercise.	Word Cloud 1 produced.		
DAY 2: Full Day (3/9)					
Time	Item	Method	Output	Outcome	
9:00-10:30	City Walk (Kakkaristra Gorge, Lourka Forest Park, Athalassa Forest Park)– Tell, Show, Share your city with us				
10:30	Arrive at selected nature space. (Athalassa Forest Park)				
Component 2: Where is here? / What does it mean?					
10:30-11:00	<p>Mindfulness Exercise – Immersion in Nature</p> <p>a) Participants will be guided through a short immersion-in-nature (mindfulness) exercise. This will root them in the present moment (10 mins).</p> <p>b) Participants will then spend 20 mins in silence, engaging with nature– touching, smelling, listening etc). (20 mins)</p> <p>c)During full 30 min exercise, they will be asked to record and collect their experience (thoughts, feelings, etc).</p>	Immersion-in-Nature/ Ecotherapy via guided mindfulness	Component 2a of exercise tested with group (outdoor element). Participants will record, in whatever way they want, their experience of being in nature (including taking photos, collecting plants, making notes).	Individual experience	How does this map on to CN Framework?
11:00-13:00/ Souvla & coffee					

13:00-16:00pm (include break for lunch.	<p>Creating Body maps</p> <p>a) Participants will transfer the experience in a nature, including what has been captured on the template onto body-maps (45 mins)</p> <p>b) Presentation of body maps back to group: presentations will be captured in 'real time' rapportage to produce a second word cloud. (45 mins)</p>	<p>Methods: Body-mapping</p> <p>Materials: art supplies (coloured pencils, markers, glue, photographs, paint);</p> <p>Body-map (small version to be completed)</p>	<p>Body maps are produced.</p> <p>Notes taken drawing out key themes, values.</p>	<p>Individual (Body maps) → collective</p>	<p>How does this map on to the CN Framework?</p>
DAY 3: Half day					
Component 3: 'where are you going/how do you get there'? Day 3 (4/9)					
10:00 – 13:00	<p>Reflecting on the whole day; facilitated discussion on how two components help to build story of nature/outputs feeding into CONNECTING NATURE Framework (i.e. an initial mapping exercise).</p> <p>Impressions of Nicosia captured on the exercise; potential links to NBS exemplar and CN Framework?</p> <p>Map Art</p>				

Figure 52: The Agenda of the three-day Workshop

The participants were the close group of 6 colleagues from the Nicosia Development Agency, a facilitator, an illustrator and a filmmaker, responsible to record the process. Over the course of the three days, the participants were guided through a tour of the city as well as a tour through the past, present and future.

The past, the present and the future provided the frame/ lens through which the participants could explore better their relationship with nature.

Various levels of art were generated through the process, as the illustrator and the filmmaker worked alongside the group, recording the creative process. Therefore, there is a set of sketches and a video as both records of the process but also as artistic outputs themselves. These have

been particularly important as dissemination material for the Nicosia Development Agency and the project, but also as data for analysis.

Day 1 – Stage 1

The first day of the process took place in the office. Everyone was asked to bring along pictures of themselves in nature. Most opted for their far past, memories of camping in the mountains, summer holidays, playing as children. One participant brought a picture of her children in the Athalassa park- automatically linking the exemplar to the exercise, as she and her children had only discovered the park through working on it.

Following brief introductions, the group followed the agenda with an introduction to CN and the Nicosia exemplar. During pre-production it has been decided to separate the three main elements into three days, clearly linking each to either the past, present or future. This was clear to the group who said they had no point of reference to really understand the process but were looking forward to it. The discussions took place on the first day were aiming to address the connection between humans and nature through art in its different forms.





Figure 53, Figure 54 & Figure 55: Photos from the first day of the workshop. (Memory Work)

Day 2- Stage 2

The second day of the workshop started with a city tour. It has been decided to visit three out of the 8 parks of the proposed network: Kakkaristra Gorge, Lourka Forest and end up at Athalassa Forest Park for the second part of the day which included Immersion in nature and Eco-therapy and Body Mapping.

City walk:

1st stop - Kakkaristra Gorge:

When the group arrived at the first location, some preferred to stay at the top of the gorge as the trek and the dust was not a welcome addition to the heat for them, although it was still (intentionally) early in the day and its heat. The rest of the team walked in the gorge and enjoyed the art of the nature. The gorge walls and floors are covered in various species of fossilised shells stacked one on top of each other. The participants seemed to have various emotions about this, some were extremely excited to take pictures and touch the shells pondering their unlikely existence, others looked down from the top, not really sharing the enthusiasm.



Figure 56: Photos from Kakkaristra Gorge visit

2nd stop – Lourka Forest:

The next stop was Lourka forest in Geri, which is another part of Nicosia's exemplar for Connecting Nature.

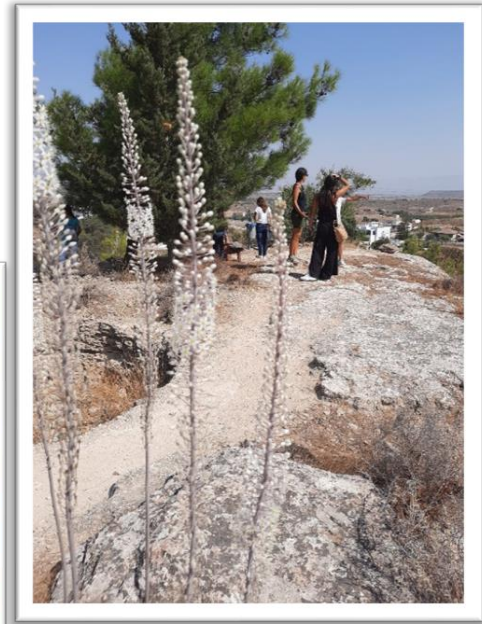
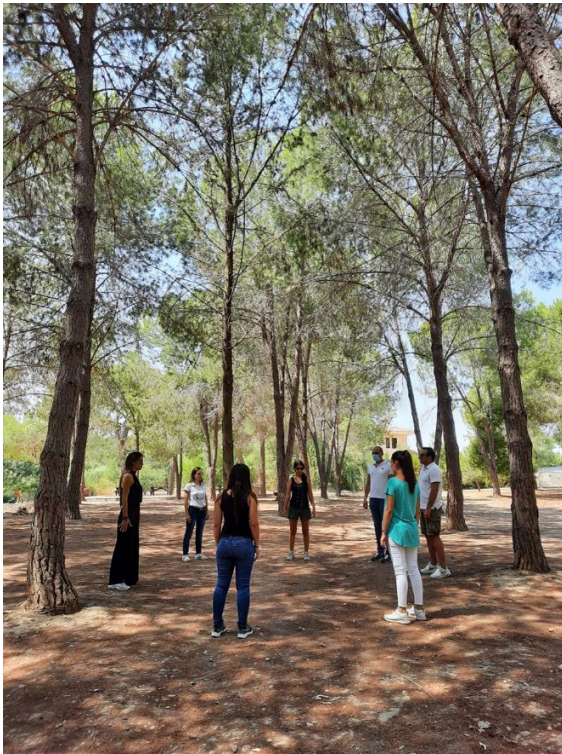


Figure 57: Photos from Lourka Forest visit

3rd stop – Athalassa Forest Park:



The last stop was Athalassa Forest Park. We had a short discussion on the exemplar and on the exercises we were about to implement. First, we proceeded with the meditation and eco therapy practice. Everyone stood up still forming a large circle and took deep breaths under Paulina's instructions. The idea was the participants to think of their surroundings and use their senses to absorb every feeling and clean their heads. Following the meditation, participants went ahead and walked about in silence, used their bodies to interact with nature more consciously and collected materials for their artwork.

Figure 58: Meditation – Eco Therapy practice

After the lunch break, everyone sat on the picnic tables and started to play around with the art supplies and natural materials. The bodymaps were laid out for each individual to select from the pile of male, female and gender neutral bodies.

The art supplies were spread out on the table and included glue, coloured pencils and markers, watercolour paints and brushes, as well as craft making materials of different colours. Natural materials collected from the participants such as feathers, leaves and pine needles, pinecones, tree bark and a salvaged marble. At the beginning there was some joking between the team and teasing but as time passed everyone became more and more absorbed. It was a moment of creativity and bonding, the team truly enjoyed the process and were surprised of how they did.



Figure 59: Body Mapping exercise

When everyone finished a string was hanged across the trees and everyone hang their artwork in line. Then, everyone was invited to say a few words about their artwork.



Figure 60: Body Maps were hanged across the trees on a string.

Day 3- Stage 3

Map art

The last day of the workshop held back at the office. The group started with a discussion of the previous days experiences. Everyone had the chance to digest the 'different stages of the process, the journey from past to present, and felt more ready to share their views and express their feelings.

The last task before closing this 3 day's session was to bring everything from the two previous days (considering the past and present) and applying onto one single piece of collective art about the future. The Canvas was a A1 size land use map of the area of Intervention, Nicosia District.

At that stage, the illustrator Eleana felt there was much to be said about using art as a tool to unlock feelings and emotions. She took a leading role and started talking about the concept of art as more than simply an aesthetic creation, she explained that art was also a record of everyone's experience and how this Map would be transformed in a common art piece, inspired by the team and the experience the group had as individuals and as a team. She helped everyone to unlock their artist creativity without guiding to something specific but felt more like challenging, encouraging and boosting the team to give their best for this final task they had and contribute the maximum they could.





Figure 61 & Figure 62: Map Art Work



Figure 63: Map Art and Body Maps

At the end of the day everyone was invited to take a step back from the map and look at what has been co-created and started discussing on different parts of the artwork and how each one of us reflected on the experience.

ANEL team decided to repeat the process in Autumn 2021 with a different group of people, probably with municipal and governmental officers and experts (such as architects) who are involved in the exemplar in order to see what extra value can be added to the project and to their view for our project. If they will manage to see the exemplar with different eyes as it happened in the case of ANEL group. Most of these professionals are often lost in the paperwork, screens and are spending so much time in the offices that rarely take the time to actually connect with nature and truly understand the importance of this kind of Projects.

Concluding, various levels of art were generated through the process, as the illustrator and the filmmaker worked alongside the group, recording the creative process. Therefore, there is a set of sketches and a video as both records of the process but also as artistic outputs themselves. These have been particularly important as dissemination material for the Nicosia Development Agency and the project, but also as data for analysis.



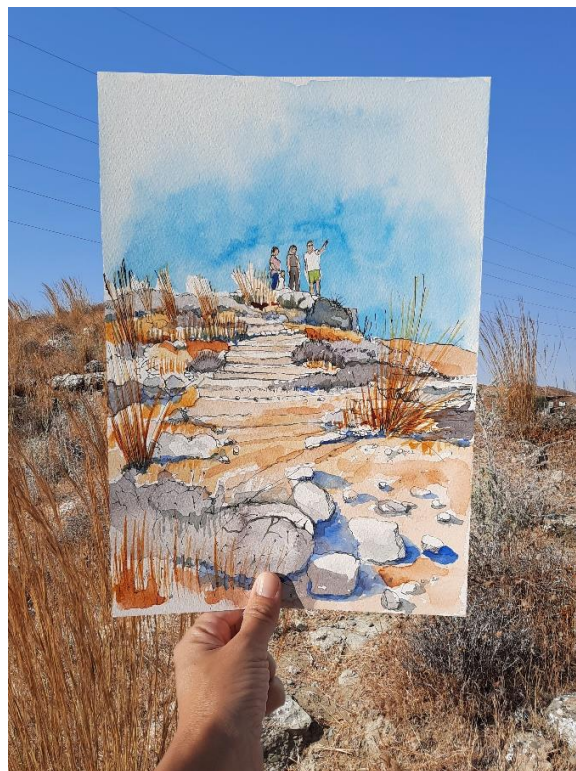




Figure 64, Figure 65, Figure 66 & Figure 67: Some of the designs of the Illustrator, Eleana Chrysanthou

Step 5: Reflect on the co-production process and results.

The co-production methods (Business Model Canvas and Sarajevo Process) applied in Nicosia was agreed to be surprisingly useful and helpful processes for the Nicosia Development Agency and the core team of the project. They were both seen as very innovative techniques which helped Nicosia's team to move one step forward, to broaden up its knowledge and to develop further its skills. Both processes supported in a very comprehensive and holistic way the project's implementation and added significant value to the project itself.

Specifically, the Business Model Canvas was seen as a very useful tool which helped the team to understand and structure better the Exemplar, to prioritize immediate actions and resources, to identify the involved actors in each phase, to set priorities regarding implementation and the tasks to be delivered. Additionally, it helped to build a common understanding as well as a common language among all, in order to communicate more efficiently as a team but also with the involved stakeholders and actors in each phase of the project.

The Sarajevo process was a very different experience. Even though at the beginning of the process, Nicosia's team did not fully understand the reasons and the scope behind this exercise; during the process' development the team started realizing the significant benefits that could arise in two dimensions. The first concerned the implementation of the Exemplar, as the team had the opportunity to spend quality time to the parks included in Nicosia's Exemplar and to the sites that are at the core of the project. The second was related to the ways that Nicosia's team members worked together. Through the Sarajevo process, the participants had the opportunity to work in a very different manner. Art and nature helped the team to unlock a new perspective, utilize personal experiences and memories, approach the project and express in a very fruitful way, thus contributing to the overall team's tasks. After the three days session, Nicosia's team saw Nicosia's Exemplar in a very different perspective.

The Sarajevo Process could be used to engage other groups of people as well. The process could be very beneficial for professionals working on nature (e.g. people working for the Forest Department or the Department of Environment) who are often lost in the paperwork, screens and offices and rarely have the opportunity to connect with nature through their work.

Concluding, the experience of using both co-production methods has significantly impacted the way Nicosia's team works and thus the team is planning to apply the methods for some other projects.

Nicosia's Impact Assessment Plan

Choice of appropriate indicators

Fast Follower Cities (FFC) had the opportunity to participate in a series of (5) webinars (training program) organized and lead by the project partner UDC.

The main objective of this training program is for each FFC to design an impact assessment plan adapted to its NBS. For this it was necessary to fill and send back to UDC all the necessary templates (more information below)

In the case of Nicosia's Exemplar, we proceeded on the selection of the most appropriate indicators, in order to measure the expected results, based on the instructions and guidance we had from UDC. The indicators were grouped in 6 categories: Use, Environmental, Health and Wellbeing, Social Cohesion, Economic, Participatory Planning and Governance.

The table below presents the selection of indicators based on the NBS expected results for both, the **Network of Open & Green Spaces** and the **Adopt a Park Scheme**.

CODE	NAME	NBS expected result
PI4	Perceived quality of space	Improved perceived quality of green space in the district of Nicosia
ENV29	Supporting/increasing biodiversity conservation	Increased biodiversity of the area
ENV35	Species diversity	Increased biodiversity of the area
ENV38	Mapping ecosystem services and spatial-temporal biodiversity legacies	Increase of urban green space in the district of Nicosia
ENV41	Accessibility of greenspaces	Improve accessibility of greenspaces (parks)
ENV43	Ratio of open spaces to built form	Improve accessibility of greenspaces (parks)
Env88	Tree shade for local heat change	Increase tree shade
HW12	Enhanced physical activity	Improved physical activity
SC1	Bonding social capital	Improved social capital
SC6	Place attachment	Increase the feeling of place attachment (citizens)
SC10	Environmental education opportunities	Increase the feeling of place attachment (citizens)
ECO1	New Businesses 'attracted' or started and additional rates received	New jobs in the area
PPG3	Transparency of co-production	Transparency in the implementation process
PPG4	Policies adopted to promote NBS	Improve / increase the PP Collaborations
PPG5	Activation of public-private collaboration	Improve / increase the PP Collaborations

Developing a data plan for impact evaluation

During the training process we have completed 5 templates (building blocks) that helped us structure all the necessary information that needs to be taken under consideration throughout the development and implementation of an Impact Assessment Plan. The information gathered is presented below.

BUILDING BLOCK 1. ENGAGE IN STRUCTURED REFLECTION ON NBS IMPACTS, PATHWAYS AND TRADE-OFFS

City's strategic goals and links with the United Nations Sustainable Development Goals (SDGs)

1. No poverty	7. Affordable and Clean Energy	13. Climate Action
2. Zero hunger	8. Decent Work and Economic Growth	14. Life Below Water
3. Good health and wellbeing	9. Industry, Innovation and Infrastructure	15. Life on Land
4. Quality education	10. Reduced Inequality	16. Peace and Justice Strong Institutions
5. Gender equality	11. Sustainable Cities and Communities	17. Partnerships to achieve the Goal
6. Clean water and sanitation	12. Responsible Consumption and Production	

City's strategic goals	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Increase green spaces			•								•						
Increase the physical activity of citizens			•														
Co-production in urban interventions			•														•
Increase Accessibility to open and green spaces			•								•				•		
Improving quality of citizens life																	
Improve social cohesion			•							•							

NBS DESCRIPTION 1

Type

Urban network of Linked Open and Green spaces

Scale

District level

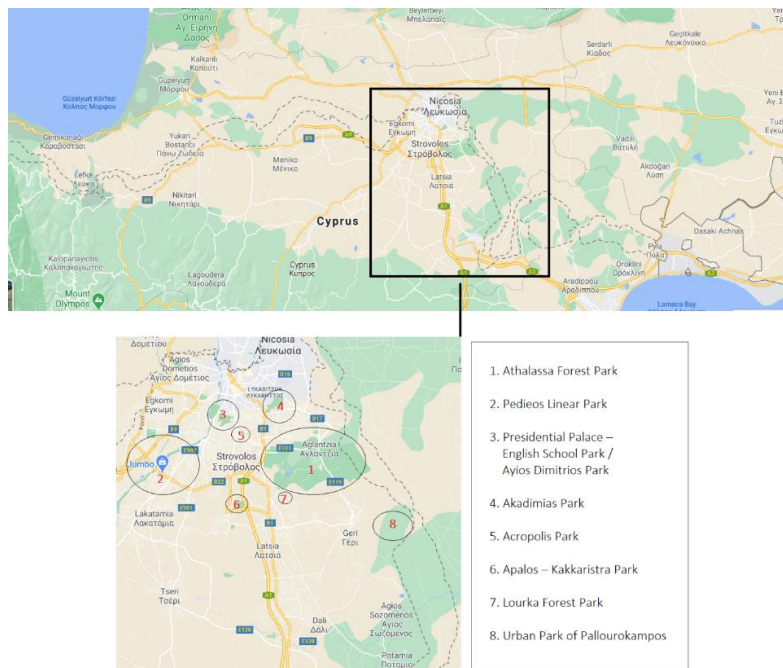
Context description

Creation of a network of Open and Green spaces with strong mobility linkages.

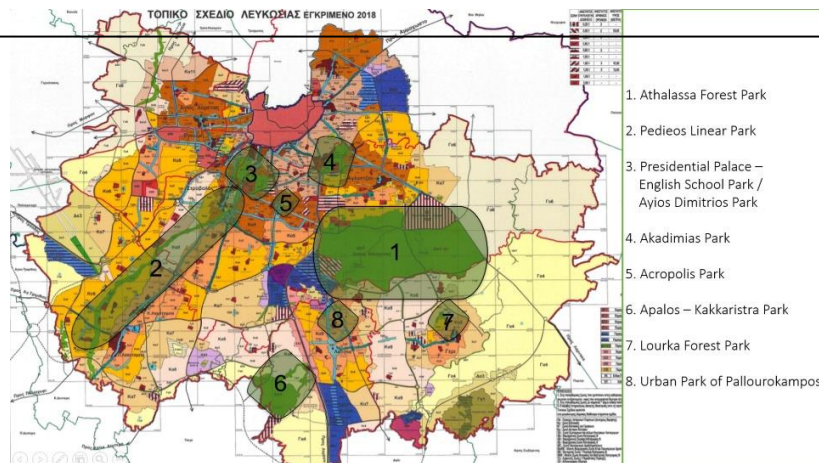
Process of design and implementation

The idea was based on the need expressed by all our member municipalities to create new open and green spaces for their citizens in order to improve their quality of life and the available options provided in their area for physical activity, fun etc. The proposed plan is included to the Local Strategic Sustainable Development Plan that will be submitted for funding at the Directorate General for European Programmes, Coordination and Development.

A number of meetings were held and still planned to be held with different stakeholders (Municipalities – municipal officers, Government departments such as Department of Forest, Department of Planning and Development, Department of Environment etc, politicians, universities, experts and citizens). A public participatory process has been already done in December.



NBS



DESCRIPTION 2

Type

Adopt a Park Scheme

Scale

The scale of the park is small / medium

Context description

Partnerships between city government and businesses and enterprises. There were limited opportunities to involve business (the large parks are funded by city/government) so we found these smaller parks/smaller green spaces. The smaller parks are owned by the municipality – more flexible in cooperating with the private sector. At the moment we have identified 200 spaces. A call will be announced of these 200 spaces to be adopted in early 2021. The plan is being developed – and the business adopter will need to meet the guidelines set in order to adopt the park. (Part of the CSR strategies)

Process of design and implementation

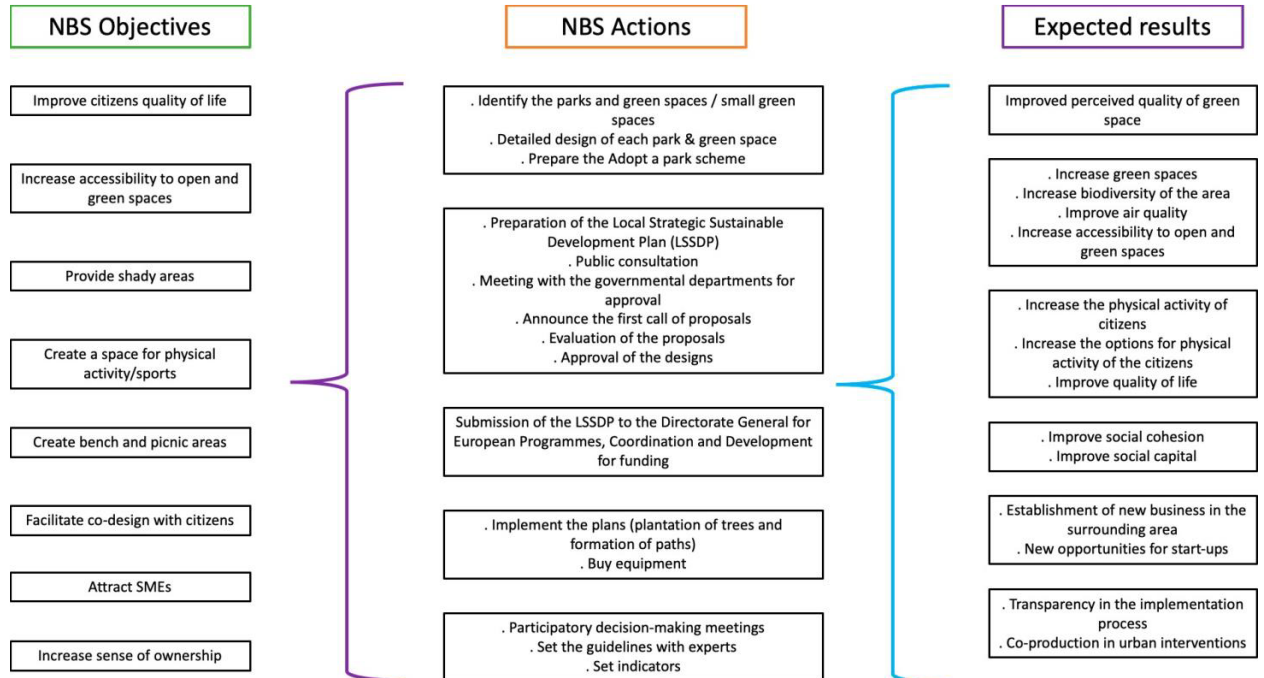
The idea was based on the need identified: limited opportunities to involve business (the large parks are funded by city/government).

A number of meetings with businesses and member municipalities were held in order to find the optimal way of cooperation.

The team is trying to build a win-win situation. Give to the businesses/enterprises incentives to invest in our project. (Corporate Social Responsibility Strategies)

The scheme has been prepared and the first call for adoption (the first 200 spaces) will be announced in early 2022.

Nicosia's Theory of Change

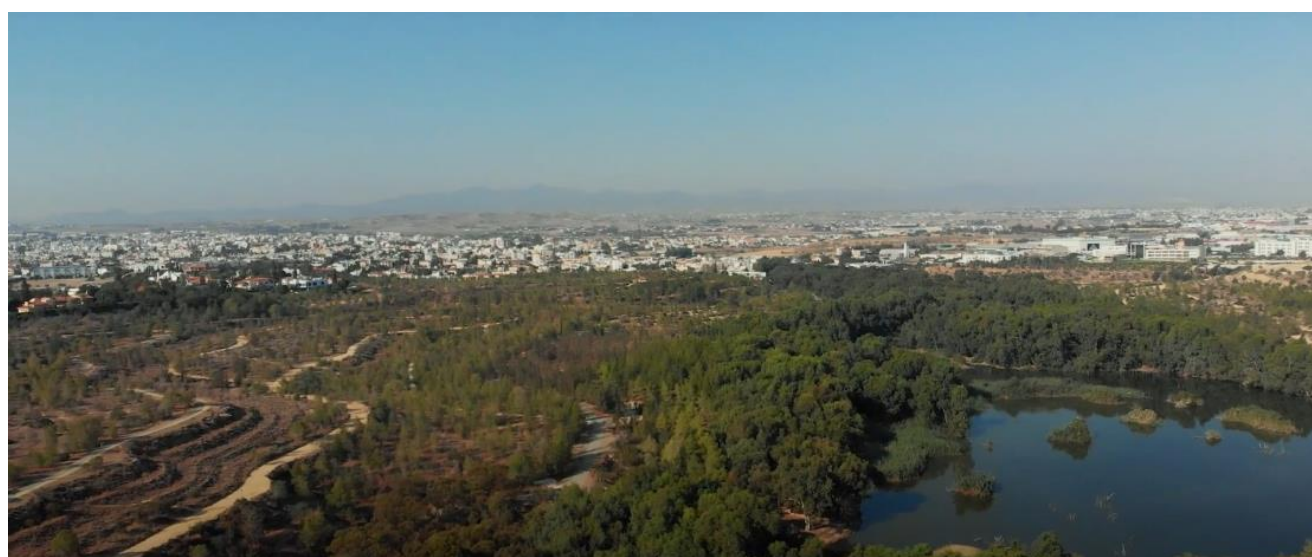


Assumptions, synergies, and trade-offs

NBS Actions	Expected results	Assumptions	Synergies	Trade-offs
Identify the parks and green spaces	Find the most appropriate spaces all over the area of intervention in order to create the most functional network for the use of citizens.	The identification and selection of the right spaces and design of the proper linkages, will help to the success of the proposed network.	More people will use the parks for family gatherings, fan/socialise in general, physical activity, relaxation etc.	Garbage can increase.
Preparation of the Local Strategic Sustainable Development Plan	The plan will include the proposed network and that will help the municipalities to find the funding for implementation.	With the approval of the Plan municipalities along with Nicosia Development Agency will be able to implement faster the proposed activities.	This will help the municipalities to save some of the annual budget for other crucial activities and plans they have.	None
Public Consultation	Transparency in the implementation process	If the design is participatory, access to information will be simpler and more complete	Transparency in implementation will favour perceived quality	None
Submission of the Local Strategic Sustainable Development Plan to the Directorate General for European Programmes, Coordination and Development for funding.	Source of finance.	Quicker implementation.	The involvement of the Directorate General for European Programmes, Coordination and Development will help to the promotion of the network.	None
Detailed design of each of the park & green space	Collaboration of experts.	The detailed design will help to be more accurate when preparing the budgets / expected costs.		None
Set of indicators	Be able to adopt quickly possible changes.		Good management of the plans.	None
Meetings with the Governmental departments for approval	Transparency in the implementation process – More expertise	Secure all the necessary permissions from the government (Planning and building permissions, Environmental permissions etc)	Transparency in implementation will favour perceived quality.	None
Implement the plans – Proceed with the Plantation of trees and formation of paths	Increased biodiversity of the area	Dense vegetation will allow the survival of a greater number of species	Increasing biodiversity will favour a greater perception of quality.	Depending on the species it can increase allergies
Buy Equipment	New jobs in the surrounding area	If more people spend time to the parks this may generate business for the sale either of food and drink, bike rentals, sports equipment, etc	New businesses near the park will favour its perceived quality	If there are no recycling facilities, garbage can increase.
Participatory decision-making meetings	Improved social capital	Being a participatory process, citizens will interact socially with others	Using the park to interact socially will favour its perceived quality	None

BUILDING BLOCK 2. CHOOSING APPROPRIATE INDICATORS

CODE	NAME	NBS expected result	Selection reasoning
PI4	Perceived quality of space	Improved perceived quality of green space in the district of Nicosia	Know the perceived quality of the new park
ENV29	Supporting/increasing biodiversity conservation	Increased biodiversity of the area	Find out if there are more efforts to improve biodiversity
ENV35	Species diversity	Increased biodiversity of the area	Know the number of species currently in the parks – measure the change after the enrichment
ENV38	Mapping ecosystem services and spatial-temporal biodiversity legacies	Increase of urban green space in the district of Nicosia	Nicosia is a grey city and the increase of green spaces is a very important indicator for the selected NBS
ENV41	Accessibility of greenspaces	Improve accessibility of greenspaces (parks)	Ensure the accessibility of all social
ENV43	Ratio of open spaces to built form	Improve accessibility of greenspaces (parks)	Ensure the accessibility of all social
Env88	Tree shade for local heat change	Increase tree shade	The climate in Cyprus requests this kind of interventions. Find out how the implementation of the NBS helped in numbers the improvement of the current situation
HW12	Enhanced physical activity	Improved physical activity	Establish the amount of physical activity that the citizens of Nicosia near the parks do.
SC1	Bonding social capital	Improved social capital	Know how are the social relations between the same social groups
SC6	Place attachment	Increase the feeling of place attachment (citizens)	Establish and empower the feeling of place attachment of the citizens with the parks in their area.
SC10	Environmental education opportunities	Increase the feeling of place attachment (citizens)	Establish and empower the feeling of place attachment of the citizens with the parks in their area.
ECO1	New Businesses 'attracted' or started and additional rates received	New jobs in the area	Establish if there are new businesses since the implementation of the green network and the adopt a park scheme
PPG3	Transparency of co-production	Transparency in the implementation process	Know the public perception of whether the green network implementation process was transparent
PPG4	Policies adopted to promote NBS	Improve / increase the PP Collaborations	Adopt a Park Scheme
PPG5	Activation of public-private collaboration	Improve / increase the PP Collaborations	Adopt a Park Scheme



BUILDING BLOCK 3. DEVELOPING A DATA PLAN FOR IMPACT EVALUATION

Available baseline in the city of Nicosia

CODE	NAME	Baseline data	Source (year)	Granularity	Periodicity
PI4	Perceived quality of space	●	Study from a local university (2019)	Entire city	Specific study
ENV29	Supporting/increasing biodiversity conservation	●	Study from a local university (2019) Forest Department Sensors (24 hours census) (2018) Birdlife Cyprus	Entire city	Every year
ENV35	Species diversity	●	Landstat (2018-2021) Forest Department (2016-2021)	Entire city	Every 5 yrs
ENV38	Mapping ecosystem services and spatial-temporal biodiversity legacies	●	Municipal Technical Departments	Entire city	Every year
ENV41	Accessibility of greenspaces	●	Municipal Technical Departments	Entire city	Every year
ENV43	Ratio of open spaces to built form	●	Municipal Technical Departments	Entire city	
Env88	Tree shade for local heat change	●	Study from the University of Cyprus (Department of Architecture) (2018)	Street	Specific study
HW12	Enhanced physical activity	●	Study from the University of Cyprus (Department of Architecture) & Department of health services - statistics (2018)	Street	Specific study
SC1	Bonding social capital	●	Study from the University of Cyprus (Department of Architecture) (2018)	Entire city	Specific study
SC6	Place attachment	●	Study from the University of Cyprus (Department of Architecture) (2018)	Street	Specific study
SC10	Environmental education opportunities	●	Forest Department (statistics – visitors/month/year of Environmental centres – schools etc) Department of Environment Ministry of Education Study from a local university (2017)	Entire city	Every year
ECO1	New Businesses 'attracted' or started and additional rates received	●	Cyprus Chamber Of Commerce and Industry (2018) Ministry of Finance	ZIP Code	Every year
PPG3	Transparency of co-production	●	Municipalities	Entire city	
PPG4	Policies adopted to promote NBS	●	Ministry of Finance	ZIP Code	Every 5 yrs
PPG5	Activation of public-private collaboration	●	Ministry of Finance Ministry of Interior	Municipal level	Every year



BUILDING BLOCK 4. IMPLEMENTING THE DATA PLAN

New data collection on the exemplar scale from the methods proposed in the Connecting Nature Indicator Reviews

CODE	NAME	Baseline method	Data collection season	Procedure	Data management
PI4	Perceived quality of space	•	Indifferent	Collaboration with the University of Cyprus	Collaboration with the University of Cyprus on the analysis of the results.
ENV29	Supporting/increasing biodiversity conservation	•	Warm season vs Cold	• Data collected from the Forest department sensors - (24-hour census), recording as many species as possible • Observations – Reports of Forest Department	All records analysed by the team of ANEL in collaboration
ENV35	Species diversity	•	Warm season vs Cold	• The Landsat satellite images will be reviewed by registering on the web and accessing the years 2018-2021 • Forest Department Reports and Analysis available from 2016 – 2021	Collaboration with the University of Cyprus on the analysis of the results
ENV38	Mapping ecosystem services and spatial-temporal biodiversity legacies	•	Indifferent	Collaboration with Municipal Technical Departments	Collaboration with the University of Cyprus on the analysis of the results
ENV41	Accessibility of greenspaces	•	Indifferent	Collaboration with Municipal Technical Departments	Collaboration with the University of Cyprus on the analysis of the results
ENV43	Ratio of open spaces to built form	•	Indifferent	Collaboration with Municipal Technical Departments	Collaboration with the University of Cyprus on the analysis of the results
Env88	Tree shade for local heat change	•	Indifferent	Collaboration with the University of Cyprus	The data will be collected and analysed by ANEL
HW12	Enhanced physical activity	•	Warm season vs Cold	Collaboration with the University of Cyprus	Collaboration with the University of Cyprus on the analysis of the results
SC1	Bonding social capital	•	Indifferent	Collect Available data from the University of Cyprus and European University. (2018) Collect data from the Department of health services - statistics	Collaboration with the University of Cyprus on the analysis of the results
SC6	Place attachment	•	Indifferent	Collect Available data from the University of Cyprus	Data Analysis by ANEL
SC10	Environmental education opportunities	•	Indifferent	Available data from the Environmental Centres (managed by the Forest Department) Available data from the Environmental Centres (managed by Department of Environment) Available data from the Ministry of Education	The data will be collected and analysed by ANEL
ECO1	New Businesses 'attracted' or started and additional rates received	•	Indifferent	Cyprus Chamber of Commerce and Industry registers	The data will be collected and analysed by ANEL
PPG3	Transparency of co-production	•	Indifferent	Available data from the Municipalities (In 2019 – 2020 the Union of Municipalities made a research on the topic in collaboration with ANEL and the Centre of Expertise for Local Government Reform of the European Council	Data Analysis by ANEL
PPG4	Policies adopted to promote NBS	•	Indifferent	Analysis of the available policies updates related to NBS	The data will be collected and analysed by ANEL
PPG5	Activation of public-private collaboration	•	Indifferent	Data available from Ministry of Interior (Department of Planning) and Municipalities related to PPC	The data will be collected and analysed by ANEL

Note. All indicators will be measured with the same methods of the baseline

BUILDING BLOCK 5. INTEGRATING EVIDENCE INTO THE POLICY PROCESS

CODE	NAME	Documentary report	Visual charts	Spatial Dashboard	Scientific partners	Economic sector	Higher political levels	Media	Citizens
PI4	Perceived quality of space	•	•		•	•		•	•
ENV29	Supporting/increasing biodiversity conservation	•		•	•		•	•	•
ENV35	Species diversity	•		•	•		•	•	•
ENV38	Mapping ecosystem services and spatial-temporal biodiversity legacies	•		•	•		•	•	•
ENV41	Accessibility of greenspaces	•	•			•	•	•	•
ENV43	Ratio of open spaces to built form	•		•	•		•	•	•
Env88	Tree shade for local heat change	•	•		•		•	•	•
HW12	Enhanced physical activity	•			•		•	•	•
SC1	Bonding social capital	•	•		•				•
SC6	Place attachment	•						•	•
SC10	Environmental education opportunities	•			•		•	•	
ECO1	New Businesses 'attracted' or started and additional rates received	•	•		•	•	•	•	
PPG3	Transparency of co-production	•			•		•	•	
PPG4	Policies adopted to promote NBS	•			•	•	•	•	•
PPG5	Activation of public-private collaboration	•	•		•	•	•	•	

Note. Columns 3, 4 and 5 show how the city wants to disseminate the results obtained. The last 5 columns indicate to whom the city will communicate the impact of its NBS assessment.

Local, regional or national strategies in which the city considers it would be interesting to include the results of the selected indicators

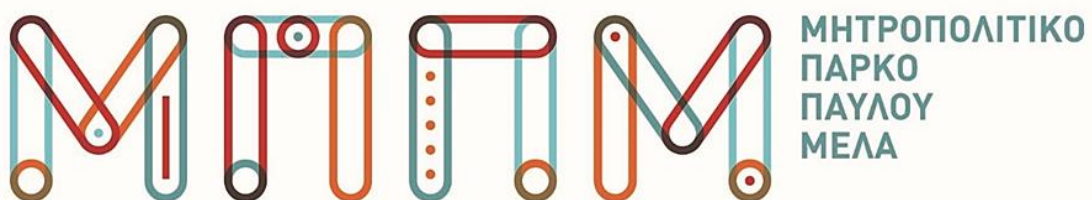
- Local Strategic Sustainable Development Plans (OXA) – (3 OXA in Nicosia District),
- Local Plans (Planning Department and Housing of the Ministry of Interior),
- Republic of Cyprus' Development Strategy,
- Government Programme,
- Municipal Development Plans – Strategy,
- The National Authority for Cohesion Policy,
- Development Strategy Framework,
- Action Plan for Growth (national)

Local, regional or national organizations to which the city considers it would be interesting to provide the results of the selected indicators to improve the decision-making process

- Local Strategic Sustainable Development Plans (OXA) – (3 OXA in Nicosia District),
- Local Plans (Planning Department and Housing of the Ministry of Interior),
- Republic of Cyprus' Development Strategy(national),
- Government Programme (national),
- Municipal Development Plans – Strategy, National Authority for Cohesion Policy(national),
- Development Strategy Framework (national),
- Action Plan for Growth(national),
- Recovery and Resilience Plan (national)



Connecting NATURE FRAMEWORK REPORT



MUNICIPALITY OF PAVLOS MELAS

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**February 2022
Version 3**

Table of contents

0. Summary	4
1. Connecting Nature Framework	6
Step 1 Identify the city context	6
Step 2 Define the goals of your nature-based solution	8
Step 3 Identify your target audience and other relevant actor	9
Step 4 Introduce your nature-based solution exemplar	9
Step 5 Position this report	12
2. TECHNICAL SOLUTIONS	13
Step 1 Define the nature-based solution	13
Step 2 The landscape context and ecosystem services needs	21
Step 3 Embedding multiple functions into the planning, delivery and stewardship of the nature-based solution	25
Step 4	25
Step 5	25
3. GOVERNANCE	26
Step 1 Make the case: aligning nature-based solutions with the wider goals of a city or community	26
Step 2 Current status of the location: identify the current use, ownership and management of where you want to implement your nature-based solution	27
Step 3 Who are the required partners: identify all relevant partners and bring everyone together to co-create a vision and goals for the nature-based solution	28
Step 4 How will you work together? Develop and agree a collaborative governance framework so that the different partners work together effectively, sharing roles and responsibilities	28
Step 5 What will you need to succeed? Identify conditions, skills and reflexive learning capacities to ensure ongoing success	28
4. Financing and Business Models	29
Step 1: Lessons learned from how NBS has been financed in each city to date	29
Step 2: Explore opportunities, in financing, governance and business models	29
Step 3: Planning the financing and business model of Connecting Nature NBS exemplars	30
Step 4: Implementation of financing and business model plans for specific NBS exemplar	38
5. Entrepreneurship	41
Step 1: Awareness and strategic alignment	41
Step 2: Building alliances	41
Step 3: Planning, implementing and monitoring a customized support program	42
6. CO-PRODUCTION	45
Step 1	45
Step 2	45
Step 3	45
Step 4	45
Step 5	45

7. REFLEXIVE MONITORING.....	46
Step 1 Rethink what learning process you need to achieve the goals of the nature-based solution	46
Step 2 Define the roles within the project team	47
Step 3 Recording important events and analyzing critical turning points.....	47
Step 4 Use learning sessions to identify learning outcomes.....	48
Step 5 Share your findings with others	48
Step 6 Reflecting on the method and peer-to-peer sharing.....	48
8. IMPACT ASSESSMENT	50
STEP 1 Engage in structured reflection on NBS impacts, pathways and trade-offs.....	50
STEP 2 Choose appropriate indicators.....	59
STEP 3 Develop a data plan for impact evaluation	62
STEP 4 Implement the data plan	62
STEP 5 Integrate evidence into the policy process.....	66

0. Summary

The municipality of Pavlos Melas is located in the Northern Greece, in the Region of Central Macedonia, in the northwestern part of Thessaloniki. The municipality faces challenges in addressing issues in environmental, economic and social cohesion section. Through nature-based solutions, Pavlos Melas municipality intends to achieve environmental, social and economic benefits.

The flagship nature-based solution of Pavlos Melas municipality is the creation of Pavlos Melas Metropolitan Park on a former military camp (about 33 hectares) located in the dense urban fabric. Due to its metropolitan character and its large scale, the regeneration project has the potential to become a groundbreaking exemplar on the national level of how a wide range of benefits can be found in investing in green (re)development.

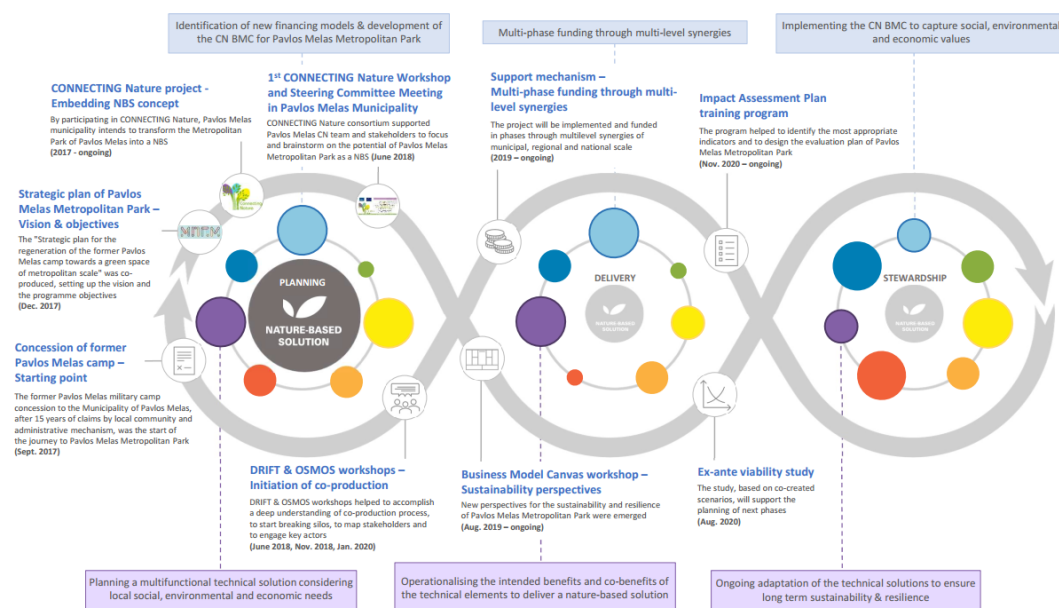
At the same time, Pavlos Melas camp is an important historical place for the community memory and local identity, that nowadays is considered an 'Urban Gap'. In order to reverse the situation, the municipality has focused on a co-created strategic regeneration plan that was co-created with key stakeholders and citizens through an extended public consultation process. The transition will be achieved unleashing its potential as a valuable natural resource, historical site and driving force for economic growth, job creation, social cohesion and environmental sustainability.

The project first phase (A) focuses on the environmental upgrade of the open space and the appropriate infrastructure construction to ensure accessibility and safe public use. It is estimated that phase A will have been finished by 2023. Next phase(s) projects will focus on the renovation of buildings, loading the Metropolitan Park with a diversity of uses & functions. The project will focus on the renovation of the preserved buildings (no new construction is permitted) and further development of outdoor spaces.

The participation of Pavlos Melas municipality in the CONNECTING Nature partnership (June 2017) as a fast-follower city was the most crucial transformation point. The CONNECTING Nature framework has been applied by the municipality as a novel process of strategic planning to transform the former military camp into the flagship nature-based solution of the city. During the Planning phase, Technical Solution and Business Model were the prioritized structural elements of the framework.

The basic target is the creation of a metropolitan park that will be a natural resource in the urban environment and not just a green infrastructure with sports and recreation facilities. Preservation of the physical characteristics of the former camp and the protection - promotion of its historical identity, were the basic design principles. The cultural and historical identity of Pavlos Melas Metropolitan Park is the key element for the place ownership and social inclusion development. However, through peer-to-peer meetings and communication with Genk, as a Front Runner City, other cities and UEL, it was recognized that ongoing adaptation of the technical solution will ensure long term sustainability and resilience.

In the framework of the project, the Business Model Canvas workshop, the Nature Based Enterprises Platform webinars and the ongoing calls with the related partners emerged new perspectives for the sustainability and resilience of Pavlos Melas Metropolitan Park. In addition, Connecting Nature processes (Co-production and Reflexive Monitoring) and knowledge transfer procedure helped Pavlos Melas team to recognize that multi-level synergies are necessary to support this multi phases program of such a big scale. At the same time and taking into account the minor monitoring and evaluation capacity in Pavlos Melas Municipality, the Impact Assessment Plan training program was a great opportunity to identify the most appropriate indicators and to design the evaluation plan of Pavlos Melas Metropolitan Park in order to support nature-based solution impact towards future funding. The CONNECTING Nature framework figure of Pavlos Melas Metropolitan Park presents all the transformation points and trademarks during the transition (from left to right). It summarizes how the city have tailored and fit concepts and processes of Connecting Nature project to the city context in order to design, implement and operate Pavlos Melas Metropolitan Park in order to bring city to life and life to city.



During the timeframe of the Connecting Nature project, Pavlos Melas gained some important experience, understood the importance of peer-to-peer support and the reflexive monitoring process as a significant contributor to the overall understanding and subsequent application of the Framework in the city contexts, incorporated new ways of working, got involved in EU Projects to embed nature-based solutions in exemplar.

1. Connecting Nature Framework

Step 1 Identify the city context

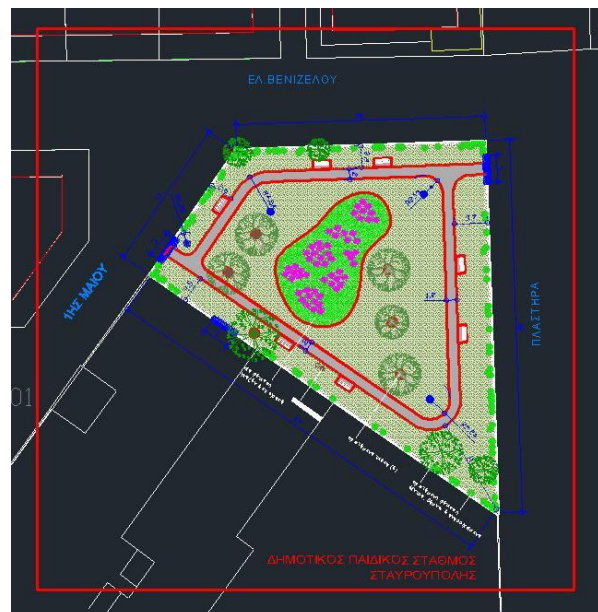
The municipality of Pavlos Melas is situated in the Northern Greece, in the Region of Central Macedonia, in the northwestern part of Thessaloniki - the second biggest city in Greece. Since the first systematic habitation in the years of the refugee settlement in the wider area of the north-western Thessaloniki, the advent of new populations at different time intervals has extended the city's urbanized and inhabited surfaces, creating urban pockets of residency with unique social characteristics where particular urban planning was applied. The 60% of the total area of the municipality today is urban and populated. The immediate proximity with major entry and exit transportation axes of the city has resulted to the existence of industrial and manufacturing units, many of which today are abandoned.



Pavlos Melas municipality, with the 80.50% of its workforce working in the tertiary sector, is among the municipalities with the highest rate of unemployment in Greece. Moreover, the municipality is considered as a deprived area and it faces challenges in addressing issues of continuing poverty, high rates of vulnerable social groups, low percentage of green area per capita ratio (currently being at 3.78 m²/inhabitant), air pollution and lack of opportunities for economic growth. At the same time, the municipality could have great opportunities of development by the incorporation of open innovation in its urban regeneration strategy to address its challenges and achieve environmental, economic and social revival. The integration of the former camps into the life of the city, the development of an urban green network including its peri-urban zone, the promotion of the cultural and historical identity of the city are recorded among these opportunities. The EU Green Deal strengthens the need for innovative processes to meet the city's challenges and take advantage of its opportunities for sustainability and resilience.

Undoubtedly, nature-based solution strategies have a crucial role in sustainable development. Natural capital can provide the much-needed holistic approach to policy making. In this respect, Pavlos Melas Municipality has included in its 5-years strategic plans nature-based or related to nature-based solutions for a sustainable, resilient and resource efficient urban development. In this context, many urban and peri-urban projects of NBS and green infrastructure have been completed or are implemented. The key projects are bioclimatic regeneration of public spaces (squares, school yards, pocket parks), energy saving intervention projects, energy saving lighting projects, a “green core” of 5000 m² in a degraded area, a green roof in a school complex of 6.042 m² project, a peri-urban open air cultural center and water park and the Urban Botanical Garden of Pavlos Melas to support biodiversity (with 5000 m², over 1000 different plants). These NBS or related to NBS projects have been motivated by the need to protect the environment, to promote resource efficiency at urban level, to incorporate nature in the city and to promote sustainable development. NBS projects are entirely governed by the municipality and its departments. The projects management concerns mainly their maintenance.

So far the scale of NBS completed in Pavlos Melas municipality is small. The first big scale NBS in the municipality is the Metropolitan Park of Pavlos Melas. Due to its metropolitan character and its large scale, the regeneration project has the potential to become a groundbreaking exemplar on the national level of how a wide range of benefits (environmental, social, economic, sustainable management...) can be found in investing in green (re)development. However, innovative governance models, financing and entrepreneurship opportunities and effective assessment are the main issues to tackle related to NBS.



Step 2 Define the goals of your nature-based solution

The creation of the Metropolitan Park of Pavlos Melas on the former military camp of Pavlos Melas is the flagship nature-based solution of the city. Pavlos Melas ex-camp is a place of special historical and environmental value for the city. For the last two decades, its concession and public reuse have been strongly claimed by the administrative mechanisms of the Municipality and the local community. The demands are closely linked to the values of the place. The green area of the camp can significantly contribute to the improvement of the quality of life. The promotion of its multifaceted historical value is a critical factor and an important contribution to the historical-cultural identity of the recent transitional years of Thessaloniki. The ultimate **goal** of the project is to highlight these values.

The text of the ex-camp concession from the National Defense Fund to the municipality of Pavlos Melas states that the program development **aims at** the integration of the former camp into the urban fabric and social life of the city, as a supra-local green space, and at the same time, the camp protection and its promotion as a cultural heritage site. Hence, strategic planning aims initially to create a green space that will bring nature to the city and protect the site identity. However, through nature-based solutions, which provide sustainable, cost-effective and flexible alternatives of multiple purposes, Pavlos Melas municipality intends to achieve environmental, social, cultural and economic **benefits** at the same time and to transform the Metropolitan Park of Pavlos Melas into an urban open innovation core. This transition will be achieved unleashing the ex-camp's potential as a valuable natural resource, historical site and driving force for economic growth and job creation, social cohesion and environmental sustainability.

The regeneration of the former military camp will deliver multiple **benefits and co-benefits** both to the local municipality of Pavlos Melas and the wider metropolitan city of Thessaloniki, such:

- More nature into the city
- Increased green space per capita ratio (currently being at 3.78 m²/inhabitant)
- Protection / enhancement of biodiversity and ecosystems
- Reduction of the "heat island" effect
- Reduction of the air pollution
- Decrease of the noise created by the adjacent streets
- Climate change mitigation – acting as CO₂ sink
- Water management and flood control
- Enhancement of human wellbeing
- Improvement of the citizens health
- Contribution to social cohesion
- Promotion of the cultural and historical identity of the region
- Awareness /knowledge on the environment and sustainability issues
- Green economy opportunities
- Enhancement of NBE
- Strengthening of the local economy

Pavlos Melas Metropolitan Park strategy is **legally binding** since, it is connected to existing policy plans and official documents. The project was included in the Operational Program of Pavlos

Melas Municipality 2015 – 2019, in line with its goals to transform the city into a friendly, resilient and sustainable place to live. According to this strategic plan, five sectors were prioritized:

- protection and improvement of natural and urban environment,
- services for social support,
- improvement of educational, cultural and sports services,
- support of local economy, entrepreneurship and reduction of unemployment,
- improvement of public services' delivering, with the empowerment of administrative ability.

The NBS project is also included in the current Operational Program of Pavlos Melas Municipality that is under development.

Based on the ex-camp concession terms and after consultation with the city, the Municipality of Pavlos Melas carried out a guideline and programming document, the "Strategic plan for the regeneration of the former Pavlos Melas camp in a green space of metropolitan scope", that was approved by the City Council. Following the directions of the Metropolitan Park strategic plan, the Special Spatial Plan was prepared for the determination of land uses and in general the urban planning in the area of the former camp. The Special Spatial Plan included in addition to the main urban planning, *Geological Suitability Assessment*, as well as *Environmental Impact Assessment*. After the approval of the strategic and urban planning, the Ex-ante Study of Economic Viability was finalized as an additional step towards the completion and specialization of the relevant decisions and submitted for approval to the municipal council.

Step 3 Identify your target audience and other relevant actor

Step 4 Introduce your nature-based solution exemplar

Pavlos Melas former military camp was established by the Turkish army at the end of the 19th century and it was used as a concentration and execution camp during the Second World War and as a military site up to 2006, when it was abandoned. Nowadays it is an 'Urban Gap' in the city center that contributes at the deprivation of the area. In order to reverse the situation, the municipality has focused on a strategic regeneration planning based on different steps and procedures, with increased dialogue and cooperation of key stakeholders.

The "Strategic plan for the **regeneration** of the former Pavlos Melas camp **in** a green space of metropolitan scale" takes into account a number of guidelines and commitments on the camp reuse issues, the most important of which are:

- the protection status of the historic site of the camp,
- the existing property status and urban planning status,
- the current state of greenery, building stock, infrastructure, temporary and permanent uses in the area,
- the location of the camp in the urban complex and the demographic, social and urban characteristics of its wider area,

- the reuse proposals to date, the current guidelines from the above levels design, but also the general trends of green space regeneration at national and supranational level.

Based on all the above, the strategic plan sets out the objectives, pillars and basic planning principles of the former camp regeneration. It also determines the percentage of built – non built area, proposing the demolition of buildings that had no morphological, historical or functional value or were in a very poor state of preservation. For the remaining buildings, as well as the open space, the strategic plan proposes a land use scenario, provides guidelines for the maintenance and enhancement of greenery and organizes the next steps of the implementation in phases, recognizing that the intervention is a multi-year, costly and complex administrative program that is feasible and imperative to be implemented in phases.

The project first phase (A), for which the budget has already been secured, focuses on the green spaces in Pavlos Melas ex-camp. The object of the project is the environmental upgrade of the open space and the appropriate infrastructure construction to ensure accessibility and safe public use.

The project later phase(s) will install in the metropolitan park a diversity of uses, among which a new Town Hall. Except public uses attributed to preserved buildings, such as administration, museums, environmental awareness & sustainability development center, other uses, that could attract private investment (sport & leisure, social/creative/nature-based economy, hotel, conference center, etc.), could be foreseen for specific locations and for a limited number of buildings. The project later phase(s) will focus on the renovation of the preserved decaying buildings that are already present on the site, as no new construction on the camp site is permitted, and on the further development of the outdoor spaces.



*Figure * Pavlos Melas former military camp current configuration*



*Figure * Metropolitan Park of Pavlos Melas after phase A implementation configuration*

Step 5 Position this report

2. TECHNICAL SOLUTIONS

Step 1 Define the nature-based solution

Pavlos Melas Metropolitan Park is the first big scale nature-based solution of Pavlos Melas municipality that will deliver multiple benefits to local and metropolitan level.

The former military camp is **located** on the northwestern and fully urbanized side of the metropolitan city of Thessaloniki, at the point of contact of three municipalities. The access to it is supported by Lagadas street, the main axis Connecting Thessaloniki with the ring road and the highway. In addition, a metro station in Pavlos Melas Metropolitan Park has been announced in the framework of the subway extension planning towards west Thessaloniki.

The area corresponds to 332.104 m² and comprises 63 buildings of 24.000 m².

The project will be implemented in phases based on its Strategic Plan.

The **phase A** of the project is entitled "Environmental upgrade and delivery of the Metropolitan Park of Pavlos Melas in common use" and includes a set of works that will lead to the environmental upgrade and the construction of infrastructure for accessibility and safe use of the open space area of the former camp by the public.

The start of phase A has been delayed due to operational difficulties during the COVID-19 pandemic crisis. The tendering procedure of phase A is ongoing and it will be completed with the designation of the successful tenderer in the next period According to **the schedule**, the works will be completed within 18 months from the day of their start.



*Figure * Metropolitan Park of Pavlos Melas logo*

Design principles

The basic **design principles** of the intervention are derived from the objectives for the protection of the environment, the upgrading of the space and its return to the public as follows:

- Preservation and enhancement of the physical characteristics of the former camp, ie of the ground, the view, the vegetation, the ventilation and the lighting through the adoption of mild interventions in construction and morphologically in the direction of minimizing the human intervention in the natural data and the preservation of the sense of the "semi-wild" park.
- Conservation, utilization and enhancement of existing vegetation in order to improve biodiversity and the urban ecological role of the city. Adoption of the central idea of the "tree garden" that will reflect the dynamics of cyclical time through the changes of daily and annual cycles and will be a dominant functional unit through the environmental learning activities it can host.
- Connection of the park with the wider urban fabric and the city through new route layouts and new traffic regulations. In order to adapt the space to its new use as a park, the internal movements of pedestrians are rearranged through the new route layouts and the individual sections of spaces that they delimit.
- Adoption of design options to ensure the perimeter boundaries of the park, enhance accessibility by delimiting four parking spaces and block access to vehicles that do not serve operational needs.
- Design differentiation of outdoor spaces in terms of their function (gardens, sports fields, squares, outdoor events, exhibition spaces, etc.) and adaptation of the infrastructure and equipment of the outdoor space to this differentiated plan of functions with elements of various autonomous "episodes" as elements of surprise and play.
- Adoption of principles of bioclimatic design and interventions of renewable energy sources with reduction of the built surfaces, restoration of soils to the water permeable state, use of RES, energy saving methods in lighting, etc.
- Exclusion of internal and separation of the space through the configuration of "special purpose" areas (such as playgrounds or fenced fields).
- Protection of the preserved buildings and the historical character of the place.

Interventions description

The project includes all the basic interventions of the ex-camp conversion into a park, as well as all the necessary infrastructure (water supply, sewerage, electricity) to support the operation both of open space area and buildings. The main categories of works included in the project therefore concern the following:

1. Demolition works-soil rehabilitation

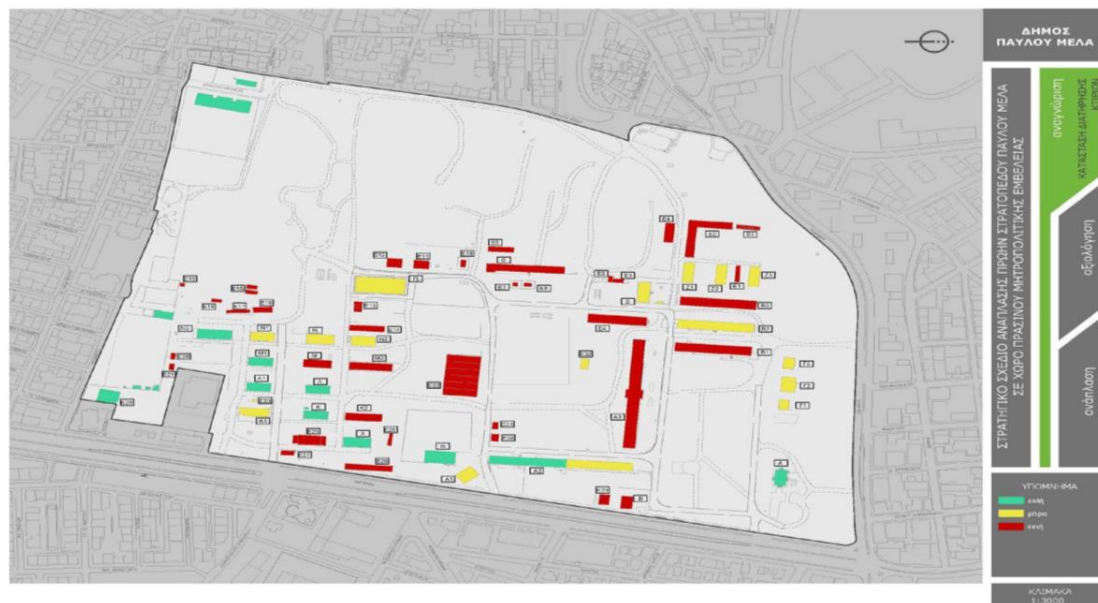


Figure * Building stock: 24.292 m² built surface. Green-16% (4.115 m²) in good condition, Yellow-26% (6.531 m²) in moderate condition and Red-58% (13.646 m²) in bad condition



Figure * Soil types in the intervention area

2. Temporary measures for the protection of preserved buildings



Figure * Protection scaffold of building

3. Infrastructure of irrigation - water supply – sewerage

4. Electromechanical installations

5. Green Configuration



Figure * Existing vegetation mapping

In order to create a metropolitan park that will function as a natural resource in the urban environment and not just as a green infrastructure with sports facilities and recreation areas, emphasis is given to technical planting projects and their maintenance.

The area of the former camp is abandoned but not without vegetation. It is covered by rich vegetation whose reformation requires gentle interventions in order to identify and utilize the natural shapes and lines composed of the existing, native and non-native, plant species. The ecological, functional and aesthetic value of the vegetation exists and should be upgraded with substantial interventions of landscaping and enrichment with a variety of resistant to the soil-climatic conditions native species of high ecological value. The existing vegetation must be maintained and shaped with the appropriate works and the new plantings must be "harmonized" with the existing landscape. The existing plant units that have a considerable variety of vegetation species, high resistance to soil and climatic conditions and low-cost maintenance requirements, are the comparative advantage of the former camp that needs to be exploited.

The network of green spaces that will be formed intends to: a) connect the different land uses in the Metropolitan Park with each other and with the city b) offer opportunities for recreation, environmental education and awareness, promotion of cultural heritage, social activation of open spaces, c) offer the opportunity for walking routes, d) enrich the biodiversity of the city and e) improve the urban microclimate.

The project includes all the works that contribute to the conservation, protection and "harmonization" of the existing vegetation with the new plantings. At the same time, it includes new plantations that will contribute to the expansion of forest ecosystems, the boundaries configuration of the metropolitan park, the connection of plant units with tree paths, as well as the creation of a tree garden for the maintenance and protection of which will require mild cultivation interventions and low energy requirements. Any intervention will not disturb the ecosystem balance, as the main functional goal of the vegetation protection and enhancement is the improvement and conservation of natural resources in the urban area with the ultimate goal of improving the quality of life of residents.

6. Space demarcation- paths - entrance gates - parking lots

The internal paths are drawn taking into account the formed situation, the needs imposed by the redesign of the space, but also the promotion in the best possible way of the historical value of the buildings and the surrounding area. The coating materials (asphalt, cement, etc.) are removed along the paths that are maintained and permeable materials are applied to the new alignments. The final surface is formed with slopes that allow the natural outflow of water and its permeability. In this way, an attempt is made not to disturb the current efficient way of water drainage and the implementation of a nature-based solution.

7. Pergolas - living rooms

Three arrangements of pergolas with living rooms and photovoltaic panels are placed in the open space of the park.

8. Kiosks construction

Three kiosks will be built that will be distinguished from each other by the color of their external surfaces (red, yellow and green). The manufacture of kiosks is considered necessary as they include sanitary facilities to serve the public.

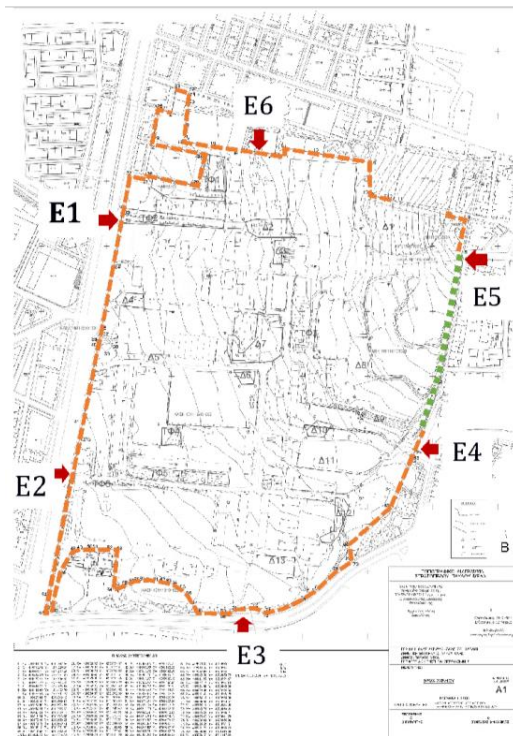


Figure * Location of entrances – exits, Entrance gate E1, Paths configuration



Figure * Pergolas



Figure * Typical kiosk

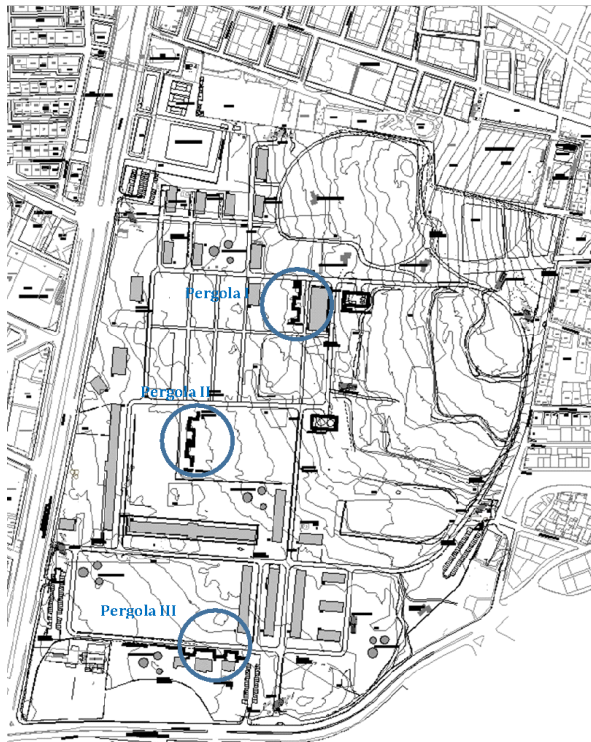


Figure * Location of pergolas

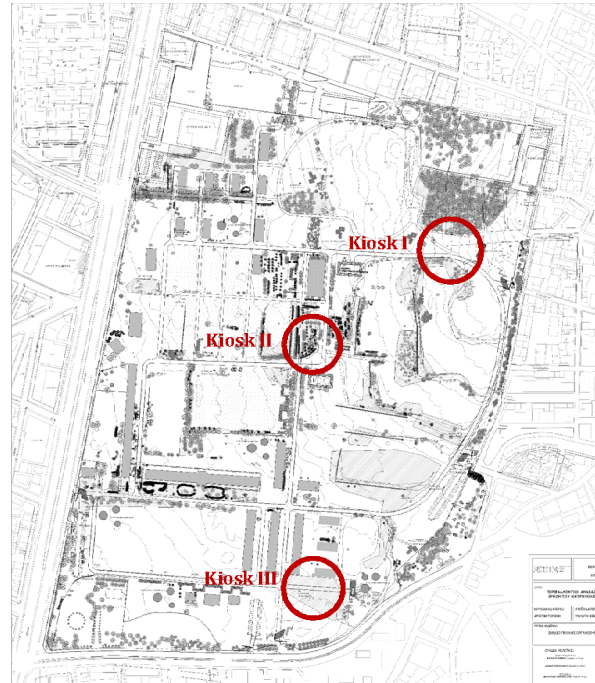


Figure * Kiosk location

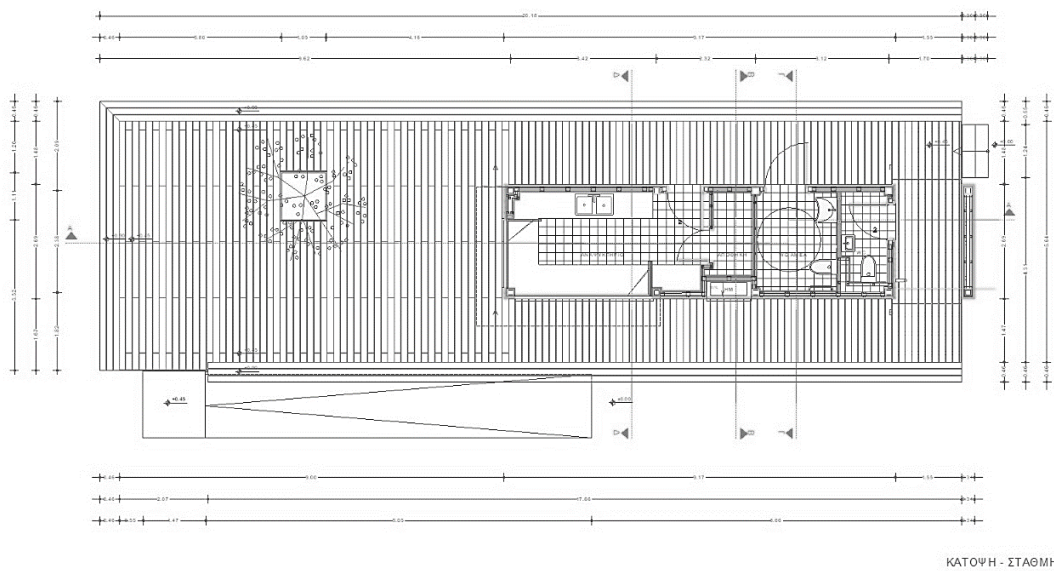


Figure * Typical kiosk floor plan

9. Outdoor equipment

Important elements of the park urban equipment are the wooden platforms.



*Figure * Circular and rectangular platforms*

Info points in six places are foreseen. Finally, in a central position a climbing - swing game will be placed that offers free play to children.



*Figure * Information sign-point and swing toy*

10. Memory cells

"Memory cells" are marble cubes with engraved inscriptions dedicated to the victims of the Nazi period of the camp. "Memory cells" are constructed in a way that can simultaneously function as sitting rooms.



*Figure * Memory cells*

Step 2 The landscape context and ecosystem services needs

The intervention area is part of the Municipality of Pavlos Melas. The extent of the municipality is 23.76 km² and, with a population of 99245 people, it is the 3rd largest municipality of Thessaloniki and the 18th in Greece, according to 2011's census. The intervention area is located in the middle of a very densely populated urban area, at the point of contact of the borders of three municipalities of Thessaloniki. The location of the area at a short distance from the historic center and core of Thessaloniki metropolitan city makes it directly accessible from the center of Thessaloniki and part of both metropolitan and regional planning for the overall development. In addition, it facilitates its connection to networks of local and of supra-local importance. This central location of the intervention area in the western part of Thessaloniki is additionally supported by:

- a. the existing dense road network, but also the planned transport infrastructure around the area,
- b. the adjacent regional centers of urban functions (center of commercial and urban functions of Polichni, ex-camp Strebenioti, linear center of Lagada street, etc.),
- c. the intensively inhabited and high-density neighborhoods around it.

The wider area of influence of the former camp is identified with the western part of Thessaloniki urban complex.

The road infrastructure surrounding the former camp is capable of supporting the potentially supra-local role of the Metropolitan Park. Specifically, the area has direct access to the ring road and the highway Connecting the Region of Central Macedonia with the other urban centers of northern Greece and South Europe. The metro station of the subway extension planning towards west Thessaloniki is located in direct contact with Pavlos Melas Metropolitan Park. This will give easy access to the park area even from the most remote areas of the city.

The immediate area of influence, which corresponds to a distance of about 1km perimeter or about 15 minutes on foot to and from the intervention area, Figure****, includes neighborhoods inhabited at different times and with different ways (based on city plan or spontaneous). This direct zone of influence includes areas that were inhabited during the refugee settlement, which then, as directly adjacent to the historic center of Thessaloniki, became denser in terms of urban planning and population. These areas were built based on urban planning however, particularly high building rates (2.4 and 2.0) were later adopted, which ultimately yielded high housing densities (256 and 187 respectively) and similar shortages of public places and public green spaces. The immediate area of influence also includes urban units that emerged through the formation of arbitrary settlements. In these areas the spatial problems were and continue to be particularly acute despite the renovation projects that were implemented from time to time. These neighborhoods are areas inhabited by working people in the first post-war period and because they are considered places of misery and poverty, they were soon abandoned by the younger generations. Most of the neighborhoods in the immediate vicinity of the ex-camp are now experiencing massive population aging (urban shrinkage), significant degradation of building stock, low land values and concentration of various new vulnerable populations, such as immigrants and refugees.

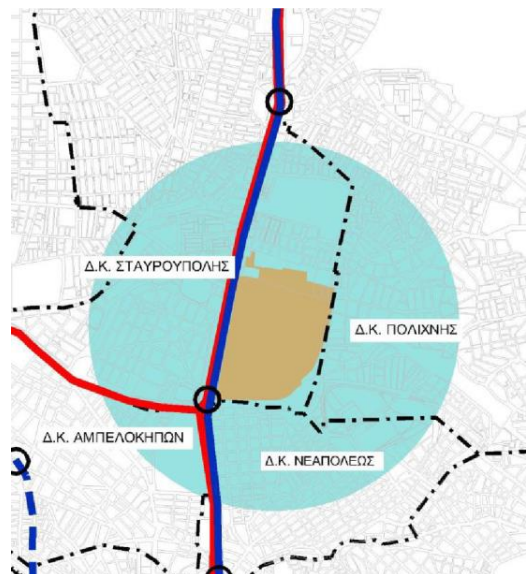


Figure ** The immediate influence area of the intervention



Figure *** The location of the intervention area in the metropolitan area of Thessaloniki

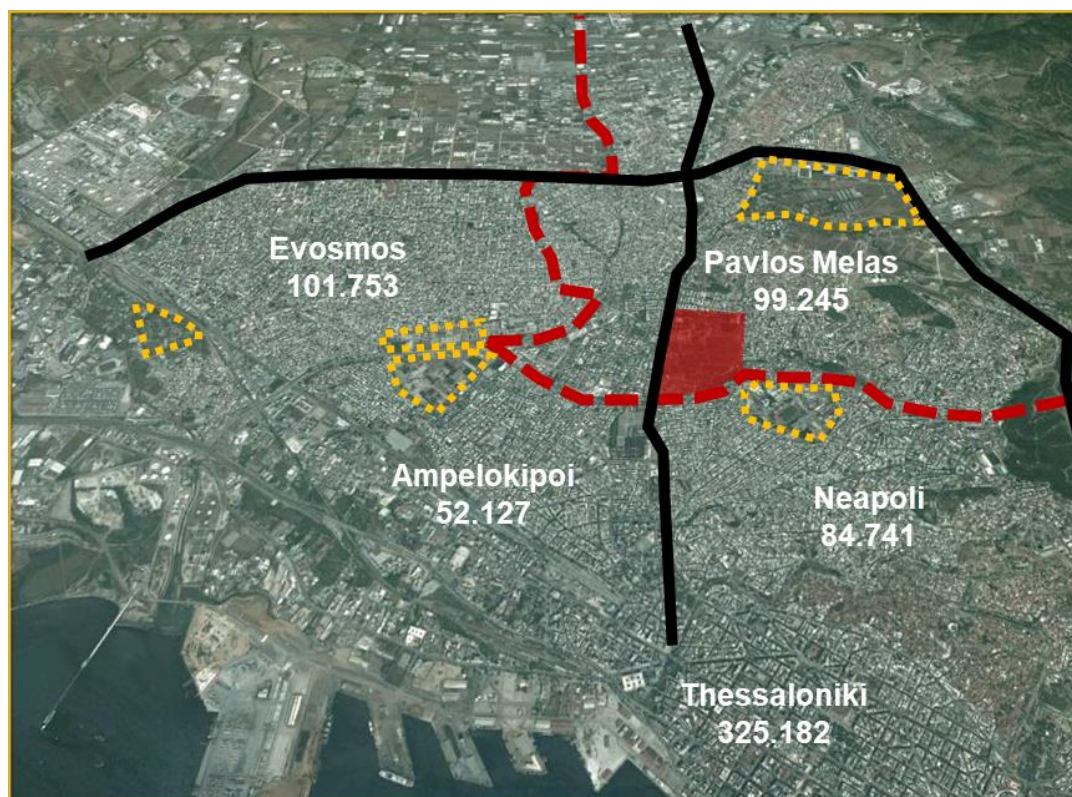


Figure *** Pavlos Melas municipality in the Regional District of Thessaloniki

This population decline is due to a trend that has been observed since the 1980s and has become general in the last decade and concerns the movement of the population from the more central, denser areas with less public spaces, to the peripheral settlements. These newly built areas have a low average age and a larger child population. Therefore, in the wider zone of influence of the camp i.e., in western Thessaloniki, there is a complex phenomenon that includes both urban sprawl and general population growth in peripheral locations where newly built housing is available, but also population decline in older and more central neighborhoods.

A challenge, therefore, that the intervention must face at the demographic level, is to limit the outflow of population in the immediate zone of influence, but also to serve the needs for free space and recreation of the younger population in the wider zone.

In terms of economic activity, the urban units around the former camp were developed as residential areas, resulting in key deficiencies in the infrastructure and functions of the city center. Over the years, various parameters have contributed to the development of local centers, usually with a linear dispersion of uses, as trade, services and leisure, concentrated on main roads, as shown on the map, figure ****.

Cultural, sports and recreational uses are scattered around the former camp through the green zone on its north side and the important poles of the area around the cultural center of Moni Lazariston with leisure shops and a large hotel and the former camp Strempeniotis, an extensive service, sports, education and leisure center with an impact on the wider area of northwestern Thessaloniki. However, the prospects for further development of the centers, connection and creation of their multifunctional character are an economic challenge for the intervention sector.



*Figure ** Scattering of activity poles around the intervention area (yellow - linear local center of trade, services, leisure; red - linear development of culture, leisure; green - large green spaces, public activities)*

Regarding the social challenges, the main feature of the human geography of Thessaloniki is the socio-spatial separation between the central-eastern areas and those on the west side. Although the conditions of the economic crisis have significantly affected the entire population in Greece, however, recent data

confirm the significant consequences for the inhabitants of the study area. According to data from the Region of Central Macedonia, which are included in the text of the Strategy for Social Integration and against Poverty, the western regions have particularly high rates of vulnerable and special population groups, as well as high unemployment rates compared to the rest of Thessaloniki. Unemployment is the main social problem in the area of immediate intervention. Indicatively, it is mentioned that during the 2011 census the percentage of unemployed in the Municipality of Pavlos Melas was 27.5% of the active population, ten percentage points above the national average. Similar percentages were recorded in the other western municipalities of Thessaloniki.

In addition, the research on the conditions of poverty in the individual municipal units of Pavlos Melas municipality, conducted by the National & Kapodistrian University of Athens, estimated that the greatest deprivation is concentrated in the neighborhoods of the old residential core located in the immediate intervention pocket of the ex-camp, Figure ****. The same results were extracted by the spatial representation of the population addressed to the social service of the Municipality for social, labor, medical and welfare support.

An additional challenge facing the proposed NBS is therefore to help address the multifaceted pressures of the population in neighboring residential areas.

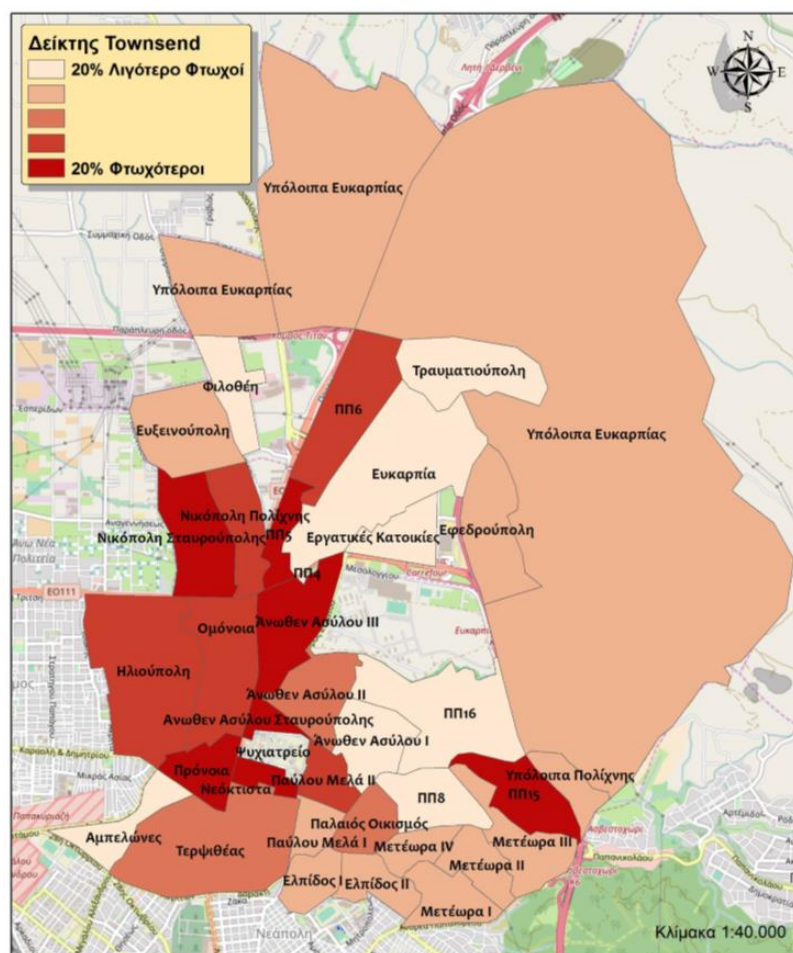


Figure *** Degree of deprivation per municipal unit in the Municipality of Pavlos Melas. Source: Survey on the social profile of Pavlos Melas Municipality and its interconnection with the spatial scale.

Step 3 Embedding multiple functions into the planning, delivery and stewardship of the nature-based solution

The regeneration of the former military camp through flexible multi-purpose systemic interventions that will be co-produced with stakeholder and community engagement, will deliver environmental, social and economic benefits both to the Municipality of Pavlos Melas and the wider metropolitan city of Thessaloniki.

The planting of six thousand new plants (endemic species with low water requirements), the avoidance of soil cover, the (limited) application of environmentally friendly materials, the preservation of coarse natural landscape, etc., are intended to create environmental benefits.

At the same time, the programs and actions development in the Park for social cohesion, integration of vulnerable groups and promotion of the historical and cultural identity of the place, the co-production at all steps of Park's implementation and operation, the creation of a center for sustainable development and environmental awareness will create the social benefit potential of Metropolitan Park.

Moreover, the whole project will be supported by actions to boost economic growth, but also the project itself will create economic benefits.

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Step 4

Step 5

3. GOVERNANCE

Step 1 Make the case: aligning nature-based solutions with the wider goals of a city or community

The program of projects related to the transition of the ex-camp of Pavlos Melas to a Metropolitan Park is managed by the Department of Urban Development and Financing Programs, a department with cross-cutting responsibilities reporting directly to the Mayor. However, the multi-sectoral and multi-level character of the program requires the involvement of executives of many **departments of the Municipality** at different stages during the implementation and stewardship of the program. In the strategic planning of the project supervised by the department of Urban Development and Financial Programs, executives of the Technical Service, the department of Environment and Green, the Urban Planning and the Financial Service have participated. The involvement of the Department of Social Services, Culture, Sports & Education Department, Administrative Services Department, as well as the Municipal Police Department is carried out gradually in the framework of strategic planning and it is a necessary prerequisite for the implementation of the first large-scale NBS in the Municipality of Pavlos Melas.

The Mayor has the general supervision of the progress of Pavlos Melas Metropolitan Park program.

The interest in the development of the city's ex-camps dates back to the mid-1980s and is based on the significant shortages of Thessaloniki, and Greek cities in general, in land for the development of public spaces. In recent years, these initiatives have been reinforced by mass movements and citizens' initiatives demanding the increase of public green spaces through the utilization of the available undeveloped areas of the city.

The same need has been found in **official planning texts**. The current regulatory plans of Athens and Thessaloniki give instructions for the development of recreation poles of supra-local importance. More specifically, it is proposed to create a system of recreational, sports and cultural functions, which will serve the entire city. It is also foreseen the promotion of large-scale interventions, such as the connection of large historical sites, the creation of axes of historical importance, but also the rehabilitation of highly degraded areas, such as the western areas of Thessaloniki. Finally, in the strategic and operational plan of Thessaloniki, it is emphasized that in order to address the serious shortages of the city in green spaces, areas resulting from relocations or land use changes, such as ex-camps, should be characterized as green spaces.

The project therefore responds substantially to the need, in which **"top-down" policies** and **"bottom-up" demands** converge, to increase functional green spaces and large-scale parks in the city.

At the same time, the project and the type of interventions it includes meet and contribute ideally to the goals of **Cohesion Policy 2014-2020**, as they are transformed into the Partnership Agreement. In this context, development is governed by the principles of sustainability, which means that it must be managed in a way that is economically, socially and environmentally sustainable.

To this end, the thematic objective 6 "Preservation and protection of the environment and the promotion of the efficient use of resources" has been included in the **PA (Partnership Agreement for the Development Framework) 2014-2020**, as well as other objectives that jointly promote environmental protection and biodiversity, the mitigation of climate change, social equality and public participation.

The financial mechanism of **Integrated Territorial Investments** also contributes to the complex concept of social, economic and spatial cohesion, which through the simultaneous utilization of various development axes promotes the territorial capital and the comparative advantages of the intervention area.

Step 2 Current status of the location: identify the current use, ownership and management of where you want to implement your nature-based solution

The former camp was given in 2017 to the municipality of Pavlos Melas by the National Defense Fund and since then it is managed by the municipality. Despite the methodical and intensive actions of the municipality for the strategic planning, and the technical and financial promotion of the regeneration of the former camp of Pavlos

Melas in a green area of metropolitan scope, the actions for its regulation and governance have not been completed. As a consequence, the site maintains the characterization of an urban gap.

The term "urban gap" is used for spaces that lack the clarity of a specific use in physical and functional continuity with the structure of a city. At the same time, they are places for spontaneous and informal appropriation by formal and informal practices that give these spaces temporary or permanent identities. The former camp of Pavlos Melas confirms both of these properties of urban gaps, as while it is in organizational abandonment since 2006, however, it has been developed into an emblematic **place of events and festivals** of all kinds. This fact shows the need of the people of the city for free public spaces that host aspects of their collective life and, on the other hand, the public character of the camp as a place that is multifunctional and open to spontaneous appropriation.

In the ex-camp there are installed **"permanent" and scattered uses**, such as activities related to the existing church on the west side and the daily operation of the support services of the municipality in the center and north sector.

However, the area is occasionally used by various associations, organizations or groups, but also the Municipality of Pavlos Melas, who organize actions or events, such as festivals, performances, concerts, protests and open meetings, as well as educational, environmental and sports programs organized by the municipality.

Concerning non-organized occasional uses, the ex-camp is used daily for many uses, such as walking and sports of all ages, recreation for children and pets, a break for professional guides, seclusion for groups of teenagers. All the above uses are diffused in the western zone of the camp which is more safe, due to the permanent uses that are developed in it.

The buildings are temporarily used by refugees, migrants, Roma or the homeless as accommodation or dormitories. This occasional use of the buildings as a residence is estimated to have caused some of the fires occurred in the camp. In addition, various illegal or less

"permissible" behaviors have been reported occasionally within the area, especially at night and mainly on the east side, which is more isolated.

Step 3 Who are the required partners: identify all relevant partners and bring everyone together to co-create a vision and goals for the nature-based solution

Step 4 How will you work together? Develop and agree a collaborative governance framework so that the different partners work together effectively, sharing roles and responsibilities

Step 5 What will you need to succeed? Identify conditions, skills and reflexive learning capacities to ensure ongoing success

4. Financing and Business Models

Step 1: Lessons learned from how NBS has been financed in each city to date

In Pavlos Melas municipality many urban and peri-urban projects of NBS and green infrastructure have been completed or are implemented. The key projects are bioclimatic regeneration of public spaces, energy saving intervention projects in sport centers, energy saving lighting projects, a green roof in a school complex of 6.042 m² project and a peri-urban, open air cultural center and water park. These NBS or related to NBS projects have been motivated by the need to protect the environment and to promote resource efficiency at urban level. In Pavlos Melas Municipality, the capital expenditure costs of green infrastructure projects have been financed mainly from national funds and EU structural funds, while the respective ongoing operational costs are included in the annual budget of the municipality. Concerning the governance structure, NBS projects are entirely managed by the municipality and its departments. Since no actions to create added value have been undertaken and no collaboration with private sector has been developed, the projects management concerns mainly their maintenance. The absence of need, culture or relevant legislative framework led to the operation of the public sector without external collaboration or even synergies with non-public bodies.

Connecting Nature has crucially improved the capacity of the municipality to handle major Nature-Based Solution issues as well as has strengthened the ability to cope with Nature-Based Solution business model and governance. In parallel, the staff of the municipality is highly qualified, knowledgeable about sustainable development transition goals and needs of the city, has expertise in environmental, social and economic policies and strategies and more than 15 years working experience. In accordance, the municipality possesses adequate number of skilled employees, as well as external advisors and collaborators at city, regional and national level, to assist the project, apart from the project team. That is, there is the possibility to use additional personnel when a necessity arises.

Step 2: Explore opportunities , in financing, governance and business models

The potential of opportunities for new sources of financing of capital expenditure and operational costs and for governance models has been investigated in the framework of the Connecting Nature project. The potential of opportunities for new sources of financing of capital expenditure and operational costs and for governance models has been investigated in the framework of the Connecting Nature project. Concerning alternative models of financing, it came out that there has not been used (neither in prior projects in the municipality nor elsewhere in Greece) anything that could be altering the traditional ways such as direct financing from central government or municipal sources, stimulating a paradigm shift for our NBS. We have discussed the contribution of local citizens in the form of tax-increments financing, development charges, value captures or green bonds. We realized that citizens are rather reluctant to contribute since

they are suspicious about the implementation and completion of the project. However, the opportunity of engaging those who will participate in the exploitation of the buildings directed to be rent by the private sector has been assessed. It came out that once the project is completed and the buildings are rent at least 70-80% of the operational costs can be covered from the annual rents eliminating the burden on municipal budget.

Step 3: Planning the financing and business model of Connecting Nature NBS exemplars

Brief Description of exemplar:

The flagship nature-based solution of Pavlos Melas municipality is a project for the transition of a former military camp in the city center into a Metropolitan Park. Pavlos Melas ex-military camp, established by the Turkish army at the end of the 19th century, used as a concentration and execution camp during the Second World War and as a military site up to 2006 when it was abandoned, nowadays is an 'Urban Gap' contributing to the deprivation of the area. In order to reverse the situation, the municipality has focused on a strategic regeneration planning based on different steps and procedures, with increased dialogue and cooperation of key stakeholders. The former military camp is located on the northwestern and fully urbanized side of the metropolitan city of Thessaloniki. Access to it is supported by Lagadas street, the main axis Connecting the city with the ring road and the highway. In addition, a metro station in Pavlos Melas Metropolitan Park has been announced in the framework of the subway extension planning towards west Thessaloniki.

The area corresponds to 332.104 m² and comprises 63 buildings of 24.000 m². According to the strategic plan, any new construction on the camp site is excluded, 315.700 m² of green space will be shared (*project phase A*), 10.000 m² of poorly maintained buildings will be demolished (*project phase A*) and a use plan for the remaining buildings (*project phase B*) will be adopted. According to the latter, public uses (administration, museums, environmental awareness and sustainability development center, etc.) are attributed to preserved buildings, while uses that can attract private investment and contribute to the sustainability of the park (such as gyms, sport and leisure, social/creative/nature-based economy, small scale hotel, conference center, etc.) are foreseen for specific locations and for a limited number of buildings.



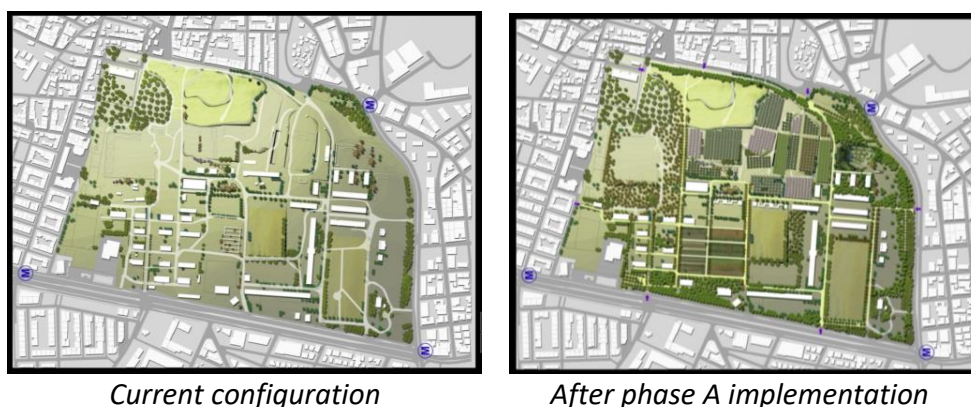


Figure 4 Transition of Pavlos Melas ex-military camp into Pavlos Melas Metropolitan Park

A business model approach is followed to planning for the financing and sustainability of the NBS exemplars to be implemented in the Connecting Nature project. The financing plan identifies the upfront capital costs required and potential sources of financing. In the framework of the business model planning, the costs required to sustain ongoing NBS activities, how those costs can be reduced and how to capture the value of NBS, both in terms of direct revenue generation and in terms of translating the wider value delivered by NBS (environmentally, socially and economically) into sources of ongoing operational revenue, are considered.

Business Model for Sustainability	Key Activities: <ul style="list-style-type: none">• Economic viability study• Co-production action plan• Indicators and monitoring• PMMP Governance model• Marketing strategy• Public security action plan• Strategy of PMMP branding• Technical works for open space regeneration project• Planting programme• Plants & space maintenance• Financial tools and funding• Entrepreneurship Strategy• Sport & recreation actions• Social cohesion actions• Sustainable development and environmental awareness center• Cultural and historical branding strategy	Key Resources <ul style="list-style-type: none">• Human resources• Specialized knowledge and skills• CONNECTING Nature partners• Networking and clusters• Experts: technical consultants, environmental, economic and social sector experts, communications experts and facilitators etc.• Financial resources• Infrastructure & equipment	Value proposition <ul style="list-style-type: none">• Green space/capita increase• Climate change mitigation• Flood alleviation• Reduction of heat island• Reduction of gas pollution• Noise reduction• Biodiversity and ecosystems• Access to nature• Local economy growth• Circular, creative, social economy• Unemployment, poverty reduction• Entrepreneurship & Nature-based entrepreneurship• New skills development• City brand name creation• Property values increase• Quality of life, health & well-being• Social cohesion• Participatory processes• Education & awareness• Historical and cultural identity	Key Partners <ul style="list-style-type: none">• Community• Municipality (staff, council)• Major Development Agency of Thessaloniki S.A.• Designers-Planners-Engineers• Schools• Universities• Local cultural sector• Leisure• Economy (enterprises, Social Cooperatives)• Fund• Health• Media	Key Beneficiaries <ul style="list-style-type: none">• Community• Municipality• Region & central administration• Tourism, leisure, sport, culture• Entrepreneurs, sponsors• Owners of land, real estate agencies• Health sector• Insurance companies• Schools• Universities
	Governance				
	Financing Up-front Costs	Cost Structure <ul style="list-style-type: none">• Governance / Administration• Maintenance of green space and infrastructure• Public space security• Environmental and social actions programmes• Marketing and communication (including community animation and engagement activities)• Monitoring costs• Property/casualty insurance	Cost Reduction <ul style="list-style-type: none">• Smart design and smart solutions to save resources (water & energy)• Tree/park adoption by citizens/schools• Volunteering• Contracts for maintenance services & employment• Revenue generation: kiosks, open spaces, buildings• Sponsorships, donations, charity, corporate social responsibility, increase in municipal taxes	Capturing Value <ul style="list-style-type: none">• Number of visitors• Revenue generation• Indicators for indirect benefits (citizen health and wellbeing, quality of life, social cohesion, vulnerable groups inclusion, historical and cultural identity preservation, climate change mitigation and adaptation, etc.)	
Capital Expenditure Costs		Sources of Capital Investment:			

Figure 4 Business Model Canvas and Financing Plan for NBS exemplar(s) (in August 2020)

Brief explanation of major elements/assumptions:

1. Value proposition: how will your exemplar create environmental, social, economic or any other type of value?

The regeneration of the former military camp will deliver multiple benefits both to the Municipality of Pavlos Melas and the wider metropolitan city of Thessaloniki. The transition of the ex-military camp of Pavlos Melas into an urban nature-based solution will be achieved unleashing its potential as a valuable natural resource, historical site and driving force for economic growth and job creation, social cohesion and environmental sustainability. Strategic planning aims to create a green space within the urban fabric that will bring nature to the city. The planting of six thousand new plants (endemic species with low water requirements), the avoidance of soil cover, the (limited) application of environmentally friendly materials, the preservation of coarse natural landscape, etc., are intended to create environmental value. At the same time, the programs and actions development in the Park for social cohesion, integration of vulnerable groups and promotion of the historical and cultural identity of the place, the co-production at all steps of Park's implementation and operation, the creation of a center for sustainable development and environmental awareness will create the social value of Metropolitan Park.

Moreover, the whole project will be supported by actions to boost economic growth, but also the project itself will create economic value.

Through all these flexible multi-purpose systemic interventions that will be co-produced with stakeholder and community engagement, the transition of the ex-military camp into Pavlos Melas Metropolitan Park will create value propositions, as presented in Table 1.

Environmental	Economic	Social
<ul style="list-style-type: none"> • increase of green space per capita • climate change mitigation • flood alleviation • reduction of heat island • reduction of gas pollution • noise reduction • protection /enhancement of biodiversity and ecosystems sustainability • Access to nature 	<ul style="list-style-type: none"> • growth of local economy and opportunities for circular economy • creative economy • social economy • reduction of unemployment and poverty • entrepreneurship <ul style="list-style-type: none"> • boosting of nature-based entrepreneurship • development of new skills • creation of city brand name • increase of property values 	<ul style="list-style-type: none"> • quality of life, improvement of health and well-being • social cohesion • participatory processes • education and awareness • boosting of the community ownership • preservation of historical and cultural identity

Table 1 Pavlos Melas Metropolitan Park value propositions

2. Value creation:
 - a. Key activities and resources: what are the most important services or activities which need to happen to deliver the environmental, social, economic value?

Activities, required to deliver the value of Pavlos Melas Metropolitan Park and considered in environmental, economic and social terms, are presented in Table 2:

Table 2 Key activities required to deliver Pavlos Melas Metropolitan Park value propositions

Environmental	Economic	Social
<ul style="list-style-type: none"> • On going co-production process • Impact Assessment System • Governance model of PMMP • Communication plan - Metropolitan Park branding • Action plan for public security 		
<ul style="list-style-type: none"> • Technical works for open space regeneration project 	<ul style="list-style-type: none"> ○ Financial tools and funding for next project phase (buildings renovation) ○ Entrepreneurship strategy ○ NBE support programme ○ Metropolitan Park NBE cluster ○ Skills development ○ Incentives for green start-up/job creation 	<ul style="list-style-type: none"> • Sport and recreation actions & programmes • Social cohesion actions (Community workshops, Volunteering, actions for community ownership, etc.) • Sustainable development and environmental awareness center

The co-production action plan is being conducted in order to boost co-creation capacity of the city and to ensure the engagement of experts and stakeholders. The involvement of the quintuple helix actors from the planning phase is determinant for the effective implementation of the project, as well as the project sustainability.

Another activity of immediate priority is the Impact Assessment Plan development to identify and describe the multiple impacts generated by the NBS.

Concerning **resources** required for the identified above key activities, **human resources** consist an immediate priority with key contribution to the implementation and operation of the Nature-Based Solution project. Municipal staff, new personnel, local and extra-local community, stakeholders, etc. need to get involved in the project from the first steps and are required for immediate priority activities.

At present time, the contribution of **specialized knowledge** to the study of economic viability and the involvement of **Connecting Nature partners** (TCD, UEL, DRIFT, La Coruna University, etc.) in support of actions related to the governance model, monitoring indicators, co-production and co-creation processes are immediate priority resources for achieving the nature-based solution.

At the same time and taking into account that the project is the first large scale nature-based solution in the city of Pavlos Melas, **partnership** is a crucial resource for sustainability. Networking and creation of clusters for nature-based solutions in Greece

and south-east Europe would support the project and promote NBS in urban environment.

In addition, the contribution of **experts**, such as technical consultants, environmental, economic and social sector experts, communications experts and facilitators for co-production workshops etc., is a prerequisite for the quality of the project and the achievement of its potential value proposition.

Moreover, **financial resources** required to create infrastructure and equipment and to design and implement support programs and actions are a key resource for achieving the value proposition of Pavlos Melas Metropolitan Park. Other required resources are **new skills and knowledge, infrastructure and equipment, communication**.

Finally, the transition of the former military camp of Pavlos Melas into an inclusive Metropolitan Park of urban innovation should be driven by a **coordinated vision**, to inspire all the engaged actors during its design and implementation and to engage inspired actors during its operation.

Key partners and beneficiaries. Who needs to be involved to deliver the different value propositions. What is your city's 'ideal' governance model for the long-term management of the NBS e.g. city-managed or citizen-managed?

In order to create a sustainable project, the city pursues to connect partners with experience, knowledge and expertise with the municipal departments, the community and entrepreneurs. To deliver the MPPM value propositions through the key activities the following immediate priority **key partners** need to be involved:

Local and Metropolitan city scale **community**

Residents/citizens

Volunteers network of Pavlos Melas municipality

"Adapt a tree" and "Adapt a park" municipal programmes

Municipality

Municipality departments (urban planning, technical implementation, environment, economy, education, culture, etc.)

Municipality staff

Municipal Council

Metropolitan scale administration

Major Development Agency of Thessaloniki S.A.

Designers-Planners-Engineers

TBC

Schools

Network "School Open in the Neighborhood - Active Citizen in the Municipality of Pavlos Melas"

Parent associations

Local **cultural** sector

- Museums MOMus Metropolitan Organisation of Museums of Visual Arts of Thessaloniki-State Museum of Contemporary Art

- The Drama School of the National Theatre of Northern Greece
- Festival of Moni Lazariston

Leisure

Concert Organizers
Open air cinemas
Escape rooms

Economy

Local enterprises

- Lazart Hotel
- Cafes & restaurants
- Fitness center

Local Social Cooperatives

- Social Cooperative of Limited Liability of Western Thessaloniki

Fund

Sponsors
Donators
Banks
Financial institutes
Foundations

In addition, and according to the ongoing implementation of project phase A and the uses to be attributed to buildings in Metropolitan Park during the project phase B, other potential partners, especially metropolitan city level, could be engaged.

Potential partners that could be engaged to the project are:

Economy

Chambers (of commerce & industry, Professional, Economic, Technical Chamber of Greece)
Real Estate Federation of Thessaloniki
Thessaloniki Port Authority S.A.
Thessaloniki International Exhibition Centre
Attico Metro S.A.
Incubators
Creativity platform
Metropolitan city scale enterprises

Tourism

bodies, ministry,
Thessaloniki Hotels Association

Environment

Environmental centres and bodies

- Environmental Education Centre of Eleftherio Kordelio & Vertiskos

NGOs Nature Conservation
Green Services Providers

Sports

sports clubs/associations

Leisure

Theme Parks & Actions Providers
Dream Workers
Leisure & Education Electronic Guide for Children & the Family

Health

Psychiatric Hospital of Thessaloniki
Papageorgiou Hospital of Thessaloniki

Media**Universities and Research institutes**

Aristotle University
Fine Arts AUTH _ School of film (located at the municipality)
University of Macedonia
CERTH

Public Security

Center for Security Studies

The **key beneficiaries** of Pavlos Melas Metropolitan Park value propositions will be both the direct end users of the park and the indirect co-beneficiaries.

The transition of the former military camp into a park will create an asset for the municipality, as well as for the metropolitan city and region of Thessaloniki and respectively, for the residents of the municipality, the city and the wider area. The departments of the municipality, the region and central government ministries will also benefit from this transition through the contribution of Pavlos Melas Metropolitan Park to the various pillars of their strategic planning and the achievement of related Sustainable Development Goals.

All stakeholders, public and private, in the field of tourism, leisure, sport and culture will benefit from the increase of visitors and the ability to provide actions and services (with or without economic profit).

In addition, the potential entrepreneurship and advertising through sponsorships in and around the park will provide financial benefits to the respective public, social or private companies, cooperatives and foundations.

At the same time, the owners of land, the real estate agencies, as well as the municipality through the potential for increased local taxes in the long run, will benefit from the increase in land value.

Moreover, beneficiaries of the citizens health and well-being improvement will directly be the physical and mental health sector (through hospital congestion, reduction in drug consumption, knowledge about the impact of nature on health, etc.) and indirectly, insurance companies (through the medical costs reduction of their insureds). At the same time, the neighboring Psychiatric Hospital of Thessaloniki can use the park as a place of contact with nature in the context of alternative therapies and investigation of its benefits.

Finally, the creation of the Center of Environmental Awareness and Sustainable Development, as well as Pavlos Melas Metropolitan Park as a whole will be a green place

of environmental, social and economic experimentation, with beneficiaries the school, research, university and local community.

The **governance** model of Metropolitan Park of Pavlos Melas has been one of the issues studied in the ex-ante economic viability study. The research has been focused on the existing governance schemes in Greece, the alternatives and the current legislative environment to develop new models of governance.

The city's ideal governance model for the long-term management of Pavlos Melas Metropolitan Park figures as a key challenge for the first big scale Nature-Based Solution in the city and it has to be addressed through co-production in the next steps of the project.

At present, peer to peer contact with the fast follower cities of Ioannina and Nicosia are organized to share experience and examples of alternative governance models tested in each city and to discuss the lessons learnt.

3. Value capture

- a. Cost structure – what are the major ongoing costs associated with delivering key activities?

The most important **ongoing cost categories**, including personnel costs, required to deliver the value propositions of the PMMP, through the identified key activities and resources, are:

- **Maintenance** related to green space and infrastructure of the park.
- **Security** of the public space related to lighting, required applications, technology operation, etc.
- **Programmes** delivery related to environmental and social actions
- **Marketing and communication** (including community animation and engagement activities)
- **Monitoring** costs
- Property/casualty **insurance**

- b. Are there opportunities to reduce costs e.g. through volunteers?

Considering Pavlos Melas Metropolitan Park spatial scale of 33 ha, it is obvious that maintenance costs are the largest category of ongoing costs. Reducing these costs can be achieved by adopting smart solutions to save resources, e.g. water and energy, cost-effective technology solutions, as well as architectural design methods that help reduce operating costs e.g. design that allows visual contact with the space from busy locations leads to a reduction in the need for security measures and lighting. The choice of non-water demanding plants and of targeted planting techniques (e.g. to reduce lighting requirements and security measures), the application of efficient irrigation system for water management (system tested at the municipality of Pavlos Melas in the framework of the Lysis –Interreg programme) and the installation of photovoltaic panels are alternative ways to

reduce costs. Social actions such as adoption of trees by citizens or part of the park adoption by schools can serve the same purpose.

At the same time, contracts for maintenance services and employment of individuals in collaboration with social cooperatives, the neighboring Psychiatric Hospital of Thessaloniki, schools (apprenticeships), university (traineeships, internships) and the volunteer network of the municipality can help reduce personnel costs.

In addition, the ability to generate revenue in the park is a key factor in covering operating costs. The kiosks and their operation, the renting of open spaces for festivals, concerts, sports or leisure activities, the operation of outdoor markets or theme parks can be a significant source of revenue. Also, the use of existing buildings is a potentially important source of revenue for the sustainability of Pavlos Melas Metropolitan Park. According to the strategic regeneration plan, uses that can attract private investment and contribute to the sustainability of the park (such as gyms, sport and leisure, social/creative/nature-based economy, small scale hotel, conference center, etc.) are foreseen for specific locations and for a limited number of buildings.

Sponsorships, donations, charity as well as corporate social responsibility and the long-term increase in municipal taxes in the Park area can also be identified as sources of revenue.

- c. Capturing value- what does success look like? How will you know if you have succeeded in delivering your value proposition e.g. economically – is direct revenue generated or new business supported? What are the indicators for capturing social or environmental value?

The value proposition delivery should be translated in economic, environmental and social terms. With regard to the value propositions of Metropolitan Park proposal that are directly related to revenue generation, the output is measurable and can be easily evaluated. However, the creation of Pavlos Melas Metropolitan Park can yield indirect benefits (citizen health and wellbeing, quality of life, social cohesion, vulnerable groups inclusion, historical and cultural identity preservation, climate change mitigation and adaptation, etc.) that are not related to revenue generation and are not easy to be evaluated. The contribution of Connecting Nature partners (in particular the University of A Coruña) to the support of the Municipality for a Park Monitoring & Evaluation System is a priority for the NBS project.

Step 4: Implementation of financing and business model plans for specific NBS exemplar

Name of NBS exemplar	Action to be undertaken (arising from BMC & financing plan)	Responsible person	Timeframe for implementation
Pavlos Melas Metropolitan Park	Applications for funding/financing		

Finance Summary Table

City	Pavlos Melas Municipality	
Capital Financing required for NBS Exemplar	€ 64.8m	
Capital financing applications submitted /secured	<ul style="list-style-type: none"> • € 19.9m Regional Operational Programme of Central Macedonia 2014-2020 - Partnership Agreement for the Development Framework 2014-2020 - European Regional Development Fund (2018 secured) • € 2.5m Operational Programme "Competitiveness, Entrepreneurship and Innovation" (EPAnEK) - Partnership Agreement for the Development Framework 2014-2020 - European Regional Development Fund (2019 secured) • € 1.5m Public Investment Program (2020 secured) • € 4.4m Antonis Tritsis Development Programme for Local Government- Partnership Agreement for the Development Framework 2014-2020 - European 	

	Regional Development Fund (2021 submitted)	
	Total: € 28.3m secured	
Unsuccessful capital financing	UIA-INCLUSIVE Parks (2019)	
Sources of capital investment (1) City budget (public) (2) Regional / national / EU other public sources (3) Private/third sector (4) Financial Institutions	1. € 28.3m Total: € 28.3m	
New financing partnerships <ul style="list-style-type: none"> • Capital • Stewardship 	Capital: Public sector, EU funds, Municipal Own contribution Stewardship: Municipal financing of ongoing stewardship costs	
Key Innovations	<ul style="list-style-type: none"> • Governance model 	

5. Entrepreneurship

Step 1: Awareness and strategic alignment

- *What are the priorities for economic development in your city?*
- *How can planned NBS contribute to these economic priorities?*
- *For each NBS Exemplar please consider how could NBEs contribute to the planning, delivery, maintenance and sustainability of these solutions.*
- *What are the challenges and enablers from a city perspective in involving NBEs in the implementation of NBS?*

The municipality of Pavlos Melas is among the municipalities with the highest rate of unemployment in Greece. Moreover, an increased air pollution is observed in the Municipality of Pavlos Melas due to its proximity to large industries and the lack of green spaces in the dense urban fabric. Hence, the municipality is considered as an environmentally deprived area that faces challenges in addressing issues of continuing poverty, high rates of vulnerable social groups and lack of opportunities for economic growth. Through nature-based solutions, Pavlos Melas municipality intends to achieve environmental, social and economic benefits at the same time.

The proposed NBS, the transformation of the former Pavlos Melas camp into a green space of metropolitan scale, is trying to address the multifaceted pressures of the population in the neighboring and city-level area, such as the environmental degradation, the social exclusion, the poverty, etc. Pavlos Melas Metropolitan Park strategic goals are connected to the Operational Program of Pavlos Melas Municipality 2015 – 2019 and are in line with its goals to transform the city into a friendly, resilient and sustainable place to live. According to this operational plan, one of the prioritized sectors is the support of local economy and the reduction of unemployment and poverty. In addition, the goals of the Metropolitan Park also align with global frameworks such as the UN Sustainable Development Goals.

In this framework, a programme to support nature-based enterprises is planning. The ultimate goal of this approach is the awareness raising for nature-based solutions in general and more specifically the value that the nature-based enterprises can create in delivering nature-based solutions. Besides to the culture of nature-based entrepreneurship foundation, the plan aims at the support of the start-up of NBEs and their involvement in the Metropolitan Park implementation and stewardship.

Step 2: Building alliances

- *From an NBE perspective, what are the challenges and enablers to start-up and growth of NBEs?*
- *What are the internal and external barriers faced by nature-based enterprises?*
- *Do NBEs face specific challenges or enablers?*

- *Who are the main actors in the innovation ecosystem of each city?*
- *Open innovation approach engaging a wide variety of innovation ecosystem stakeholders in the development plan to support nature-based enterprises*
- *How will multiple actors be empowered in building a common vision and plan?*
- *How can these actors be engaged to stimulate a culture of nature-based entrepreneurship and support the emergence and growth of NBEs?*
- *What is the level of knowledge and skills of the Connecting Nature team in your city in terms of supporting the emergence and growth of NBE? If skills gaps have been identified, how do you plan to address them?*

A wide variety of innovation ecosystem stakeholders needs to be involved in the building and delivery of the plan to support nature-based enterprises. Initially, cross-department collaboration in the Municipality is needed. In the framework of the **internal open innovation team**, the CN project team is working with **other departments**, such as the finance department and the legal assistance office, the employment support office of social services department and the education department in order to explore the current conditions and the framework to design and deliver the NBE plan.

Research and academic actors, related networks, as well as **chambers and associations** are in contact with the Municipality to introduce their experience and expertise. During co-production labs on the ex-ante feasibility study of Pavlos Melas Metropolitan Park, the CN project team created an innovation ecosystem stakeholders related to the project viability and hence, nature-based innovation and entrepreneurship opportunities in the Metropolitan Park are investigated. In addition, it is important to include **nature-based enterprises** directly in this process to ensure the support measures planned meet their actual needs. During the NBE platform foundation, the city came in contact with local and supra-local NBEs in order to create an initial core and explore the current situation and needs of NBEs in Thessaloniki. These NBEs were registered in Connecting Nature NBE Platform and are members of its featured communities.

Step 3: Planning, implementing and monitoring a customized support program

- *What are the goals of a nature-based enterprise support plan? How do these align with broader strategic goals, in particular the large-scale implementation of nature-based solutions?*
- *Who needs to be involved to deliver this plan? How will innovation ecosystem stakeholders be involved?*
- *Who is going to lead on planning, development and monitoring? Have an adequate budget and resources for piloting or full-scale implementation been assigned?*
- *What specific support measures will be put in place locally to address challenges and enablers? How will these connect with national or international support measures and platforms?*
- *How will success be measured? What are the impact indicators?*

The department of Urban Development and Financing Programs, that has responsibility and knowledge for Nature Based Solutions, is going to lead on the awareness raising programme for nature-based enterprises. The leading department is in collaboration with other departments, in the framework of the internal open innovation team, as described above.

Funding to raise awareness towards NBEs is included in the budget for the promotion of the NBS concept and effectiveness. However, the level of funding required to support the start-up and growth of NBEs is important and should be secured in order to implement a full scale NBE strategy. At the same time, the required resources for further NBE support should not be underestimated.

In order to stimulate the emergence of a culture of nature-based entrepreneurship, to support the start-up of NBEs and to enhance their involvement in the Metropolitan Park, a local NBE support plan is developing.

Taking into account the main challenge, the general lack of awareness of NBS and their multiple benefits that leads to a lack of support and funding towards NBEs, the Municipality focus on the evidence provision of the effectiveness of the NBS and the promotion of the NBE concept.

At the same time, the sector is highly fragmented and it is difficult to reach NBEs. In the framework of the support programme, the registration in the Connecting Nature NBE platform and networking of local and supra-local NBEs is taking place through the creation of the Cluster of Metropolitan Park NBEs on NBE platform.

Another important barrier to be considered is that NBEs are less competitive, compared to conventional enterprises, as the non-monetary indirect benefits are not well established and they are not taken into account in the framework of a cost-benefit approach. Initiatives to support NBEs through promotional events and the development of partnerships and networks, as well as exploration of the legal framework for procurement procedures adaptation are support measures that will be put in place during the next phase of the project.

On the other hand, considering the European Green Deal, a nature-based approach is adopted in a wide range of policies, creating opportunities for NBEs. The potential of the ex-camp as a driving force for economic growth and job creation, social cohesion and environmental sustainability is an important enabler. Expert training and skills development programmes will ensure that new and existing NBS suppliers meet the market demand.

In order to build the evidence of the value connected to NBEs it is necessary to measure their impact. This is directly connected to the impact of the supporting plan of NBEs. The suitable indicators are included in the Impact Assessment Plan that is under development in the framework of the CN project and described in detail in the relevant section of the report.

NBE Strategy Summary Table

<i>NBS</i>	<i>NBS Phase</i>	<i>Type of NBE Involved</i>	<i>Challenge</i>	<i>Goal of NBE Programme</i>	<i>How will this be achieved?</i>	<i>Partner</i>	<i>What does success look like and how will you measure it?</i>
Pavlos Melas Metropolitan Park	All	All	<p>Lack of support and funding towards NBEs due to lack of NBS and their benefits awareness</p> <p>Fragmentation of NBE sector</p> <p>NBEs competitiveness, compared to conventional enterprises</p> <p>Lack of entrepreneurship strategy @ the municipality</p> <p>Lack of eligibility for financial entrepreneurship support @ municipal level</p> <p>Funding & resources for NBE strategy</p>	<p>Metropolitan Park sustainability</p> <p>NBE promotion</p> <p>NBS promotion</p> <p>Local economic growth</p> <p>Job creation</p>	<p>Cluster of Metropolitan Park NBE on NBE platform</p> <p>NBE raising awareness through CN dissemination activities</p> <p>Expert training and skills development programmes</p>	Pavlos Melas Municipality, Associations, Chambers, Universities, NBEs	No of NBE in cluster

6. CO-PRODUCTION

Step 1

Step 2

Step 3

Step 4

Step 5

7. REFLEXIVE MONITORING

PHOTOS from RM sessions, webinars...

Step 1 Rethink what learning process you need to achieve the goals of the nature-based solution

In order to achieve the goals of Pavlos Melas Metropolitan Park as an urban open innovation core with environmental, social, cultural and economic benefits, the need for an innovative learning process, compared to a regular planning process, is obvious.

The implementation of this big scale nature-based solution that combats complex challenges, such as climate change and social exclusion, needs an approaching methodology that gives insight into the progress of the project in real time, aligning daily activities with long-term ambitions and impact and allowing for the adapting of activities. **Proactive problem solving**, by solving the problem in real time and not retrospectively is needed for a successful NBS throughout the project planning, implementation and stewardship phases. Day to day activities should be evaluated considering the bigger picture and combining **different perspectives** and **types of knowledge** along with the participation of **different actors** (civil servants, citizens, voluntary groups, nature-based enterprises and so on).

Reflexive Monitoring (RM) was adopted as a process to identify barriers and translate them into opportunities, through reflection on problems and solutions. By revealing the complexities of the problem and breaking it down into learning questions, RM turns learnings into actions. By focussing on learning, barriers and structural changes are addressed and translated into actions and learning outcomes.

The creation of this learning environment in the municipality has been consolidated and developed through a series of ongoing Connecting Nature support activities, as following:

- A webinar to introduce the reflexive monitoring process methodology to the fast-follower cities, FFC, (12.12.2018).
- A workshop on the reflexive monitoring methodology and good practices from the frontrunner and the fast-follower cities with a peer-to-peer learning set up in Nicosia during the 'Learning Transfer Workshop' (23.01.2019).
- Bilateral webinars to guide FFCs through the process of integrating the reflexive monitoring process methodology in their daily activities to help filling in a dynamic learning agenda (DLA), (May-June 2019).
- A workshop to reflect upon the Knowledge Transfer workshop and gain experience with applying the dynamic learning agenda in Malaga during the Annual General Meeting (02.10.2019).
- Learning Objectives Survey for FFCs (June-September 2020).
- Learning Platform Webinars to present Learning Platform structure, survey results and RM groups of front-runner cities (FRC) and fast-follower cities (FFC) and to present learning outcome analysis and verify with RM groups (October 2020-ongoing).

- RM group one-on-one support meetings (November 2020-June 2021).
- One-on-One support session RM Chapter in CN Framework report (April 2021)
- Reflexive monitoring guidebook (September 2020)

Step 2 Define the roles within the project team

The department of Urban Development and Financing Programs forms the core project team that is also involved in the reflexive monitoring process. The Connecting Nature project manager is the reflexive monitor. However, the RM team consists of five members, who are sharing the different tasks of the reflexive monitor in order to divide the monitoring responsibilities and to prevent conflicts between the roles of project manager and project reflexive monitor.

Contact to and coaching from DRIFT, front runner city of Genk and OSMOS helped to be familiarized with the reflexive monitoring tools and the capacities required for the process. However, the familiarization with the process is an ongoing procedure. The RM process evolves and adapts to the daily work mentality of the team, with the ultimate goal of being integrated into the daily design and implementation function.

Step 3 Recording important events and analyzing critical turning points

In order to avoid parallel processes between project and Reflexive Monitoring meetings, the second ones are connected to the “regular” project meetings.

The reflexive monitor is responsible to produce the dynamic learning agenda and the other team members are involved in different levels. The agenda is shared also with the broaden project team members, especially when other departments are directly connected to the actions that have to be undertaken as follow up actions.

The RM team used to have a weekly scheduled meeting where the progress of the NBS project was monitored. During the COVID-19 period and its restrictions, these periodic meetings were limited to monthly.

These meetings are not labelled with Reflexive Monitoring. However, the work is done in the same way, trying to identify Critical Turning Points and to summarize the follow up actions to find the solutions.

Follow up actions are implemented in practice in order to address barriers and structural changes, in real time and not retrospectively, and turn learnings into actions.

Good practices and lessons learnt sharing with the front runner city of Genk during Reflexive Monitoring Sessions is a follow up action linked to the NBS communication strategy of Pavlos Melas Metropolitan Park (Critical Turning Point) and the Learning Questions: "What kind of support should be asked for the NBS communication plan?", "How to convert Connecting Nature outputs into communication tools?".

The Impact Assessment Training Programme was another example of follow up action that links to the critical turning point of NBS evaluation and to the Learning Question "How benefits related to wellbeing and quality of life are measured?".

Step 4 Use learning sessions to identify learning outcomes

The barriers experienced throughout the RM process were, initially, getting familiar with the procedure concept and its tools and then, finding time to work on the RM. However, the challenge to apply a cycle monitoring methodology to reflect on the project in real time, to identify and solve problems, to fill in gaps, to correct mistakes and to adapt it to new conditions, from the beginning of the Metropolitan Park of Pavlos Melas project and throughout all the project phases was an opportunity for the first big scale NBS project in the city.

At the same time, an opportunity related to the RM was the established way of working in the Department of Urban Development and Financing Programs which included daily reflection and adaptation in a very similar and close to the RM way, but not in a structured framework with methodology and tools.

Using the framework of RM, learning outcomes were effectively embedded in the PMMP project. A typical example is the governance model of Genk shared with Pavlos Melas team during the learning sessions. Based on that, the importance of implementing our project by identifying the main pillars according to its objectives was emerged. This helped to coordinate all the departments and their partial projects related to the PMMP under the same umbrella.

Step 5 Share your findings with others

The lessons on RM learnt from other cities were important to approach the process itself.

All the cities faced difficulties with the process at the beginning, that were addressed with practice and familiarization with the process.

The city context is also a factor that determines the RM process adaptation in each city. It is important to create a team to support RM, like Genk, and to give time to be familiar with the process in order to work with RM as a useful tool in the planning and design approach.

Innovations/lessons learn throughout the one-to-one RM sessions with Genk gave answers to Learning Questions, such as the one related to the balance between the biodiversity protection and the increase of visitors of a NBS place: "Geographical zoning is utilized in the Stiemmer valley. for some segments of the valley the biodiversity objectives are prioritised thus, opportunities for segmentation are reduced." - Genk, RM Session #2.

Step 6 Reflecting on the method and peer-to-peer sharing

Reflexive Monitoring is an innovative process that facilitates monitoring and evaluation of NBS projects. However, it is not totally different from the working concept in the department of Urban Development and Financing Programs of Pavlos Melas Municipality. In the framework of an ongoing monitoring throughout each project timeline, informal reflection meetings took place

but without a structured format and methodology. Tools and methods of RM save time and offer flexibility to use learning outcomes and translate them in actions at any time during the project evolution.

8. IMPACT ASSESSMENT

STEP 1 Engage in structured reflection on NBS impacts, pathways and trade-offs

The strategic objectives of Pavlos Melas municipality were set in municipality's Operational program. The municipality's objectives are classified in the following axes:

1. protection and improvement of the environment,
2. expanded social support services,
3. development of education, culture and sports services
4. support for the local economy, entrepreneurship and the unemployed
5. improving the services provided by strengthening the administrative capacity of the municipality

The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by the United Nations in 2015 (table....). The city's strategic goals are directly related to many of the 17 SDGs. The table below presents the city's strategic goals and the links with the United Nations Sustainable Development Goals.

Sustainable Development Goals	
1	No poverty
2	Zero hunger
3	Good health and wellbeing
4	Quality education
5	Gender equality
6	Clean water and sanitation
7	Affordable and Clean Energy
8	Decent Work and Economic Growth
9	Industry, Innovation and Infrastructure
10	Reduced Inequality
11	Sustainable Cities and Communities
12	Responsible Consumption and Production
13	Climate Action
14	Life Below Water
15	Life on Land
16	Peace and Justice Strong Institutions
17	Partnerships to achieve the Goal

table.... Sustainable Development Goals (SDGs)

City's strategic goals	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Protection and promotion of natural environment			•								•	•	•		•		
Increase of public spaces			•														
Development of degraded areas			•								•		•		•		
Reduction of urban pollution			•								•		•		•		
Promotion of city identity through the protection of historical - archeological sites and monuments			•								•						
Tackling the humanitarian crisis, combating discrimination and social exclusion	•		•					•			•						
Support of local economy, entrepreneurship and the unemployed								•									
Strengthening the administrative capacity of the Municipality					•						•						•

table City's strategic goals and links with the United Nations Sustainable Development Goals (SDGs)

Pavlos Melas municipality applies NBS in large scale. The implementation of NBS in Pavlos Melas Municipality concerns the creation of an **urban metropolitan park** (about 332.104 m²).

More specific, the project concerns the transition of an ex-camp, a place of historical and environmental value, into a metropolitan park. Nowadays the ex-camp is an 'Urban gap' in the city center and contributes at the deprivation of the area. In addition, Pavlos Melas ex-camp concession have been strongly claimed by the administrative mechanisms of the Municipality and the local community, based on the significant shortages in land for the development of public and green spaces. Finally, the concession was completed in 2017 aiming officially at the integration of the former camp into the urban fabric and social life of the city, as a supra-local green space, and at the same time, the area protection and promotion as a cultural heritage site. The strategic regeneration planning was based in different steps and procedures, with increased dialogue and cooperation of key stakeholders and community. The "Strategic plan for the regeneration of the former Pavlos Melas camp in a green space of metropolitan scope" sets out the objectives, pillars, basic planning principles and the implementation steps in phases, recognizing that the intervention is a multi-year, costly and complex administrative program that is feasible and imperative to be implemented in phases.

The first phase of regeneration focuses on the environmental upgrade of the open space and the appropriate infrastructure to ensure accessibility and safe use by the public. Operational difficulties during the COVID-19 pandemic crisis have delayed the start of phase A, which is ongoing and will be completed with the designation of the successful tenderer in the next period. According to the schedule, the works will be completed within 18 months from the day of their start.

The later phase(s) projects will load the metropolitan park with a diversity of functions. Except public uses (new Town Hall, museums, environmental awareness & sustainability development center, etc.), other uses that could attract private investment (sport & leisure,

social/creative/nature-based economy, hotel, conference center, etc.) could be foreseen for specific locations. The projects will focus on the renovation of the preserved buildings (no new construction is permitted) and further development of outdoor spaces.

The objectives of Pavlos Melas NBS are:

- Creation of a green park,
- Economic growth (Create economic values),
- Creation of an open-safe-inclusive place for social interactions,
- Promotion of the cultural identity of the place,
- Co-production in all steps

The vision of PMM (Pavlos Melas Municipality) is the transformation of a historical military camp to a green multifunctional park where the visitors can relax, participate in various activities, have fun and hope to revisit. The PMMP (Pavlos Melas Metropolitan Park) will highlight the uniqueness of the character of the place, establish a new urban identity and meet the requirements for more urban green.

The Metropolitan Park will be a natural resource in the urban environment and not just a combination of green areas. In PMMP there will be a combination of different functions. Also, the development of a new green network into the park will connect all the different functions inside the park area, will create walking paths, enrich the existing biodiversity, improve the urban microclimate and extend the forest ecosystem. In addition, the new green network will promote the environmental education, the sports activities, and the elevation of cultural heritage.

The objectives of Pavlos Melas NBS implementation are related to some actions. In some cases, the same goal may be related to more than one action. The NBS actions are presented in the following table.

NBS Actions	
Action 1	environmental upgrading actions
Action 2	Pavlos Melas Metropolitan Park (PMMP) governance model
Action 3	Communication strategy
Action 4	Funding strategy
Action 5	Strategy of entrepreneurship
Action 6	Creation of social values strategy
Action 7	Co-production labs

table....NBS actions

Through the implementation of NBS, Pavlos Melas Municipality expects some crucial results. The primary expected result is an **increased and “inclusive” use of the park**. With the implementation of NBS, PMM aims to address some serious challenges that concern environmental, health-wellbeing, social cohesion and economic sections. In general terms, the implementation of NBS in PMM is expected to have:

A) environmental results

The creation of a new park in the city will increase the green areas in the urban fabric and have as a result the **increase of the green per capita**. Through the regeneration and reinforcement of the lush vegetation of the area, the enhancement of the natural shapes and routes and the harmonization with the existing natural landscape, PMMP will meet its greatest environmental goal which is the maintenance and reinforcement of the biodiversity. Procedures such as the

maintenance of the existing native species, the regeneration of the existing plant sections and the enhancement with native species will have as result the **enhancement of biodiversity**. In addition, all these procedures will also mitigate the climate change – acting as CO2 sink, reduce the “heat island” effect, reduce air pollution and noise, manage water and flood control and support biodiversity and generally **improve the micro-climate**. Moreover, the close interaction with nature and the environmental education centre (that will be created in one of the buildings in the park area) will help to the **raise the environmental awareness**.

B) results in human health and wellbeing

As it is known close interaction with nature and the promotion of sports have a direct impact on health and human wellbeing. The creation of walking paths, the promotion of sports and in general all the processes of environmental upgrading can help **improve the health** of citizens and visitors of the park.

Furthermore, the creation of an open-safe-inclusive place for social interaction will help promote positive impacts (social, economic, environmental) and also increase social interaction through the PMMP and finally **upgrade the quality of citizens’ life**.

C) results in social cohesion

PMMP will be a green multifunctional park and at the same time an open-safe-inclusive place for social interaction, as well as a space that creates a sense of security and tranquility. All these characteristics make PMMP an excellent place that can contribute to **the social integration of vulnerable groups**.

Also, the creation of museums and the maintenance of the historical character of the place will **promote the cultural and historical identity of the region**.

Moreover, both the creation of an open-safe-inclusive place for social interactions and the promotion of cultural identity will improve the community bonds.

D) economic results

One of the main goals of the NBS in PMM is the economic development. The creation of a new park will **create new jobs, reducing unemployment**. Reducing unemployment is one of the most important challenges, as PMM is among the 17 Municipalities with the highest unemployment rate in Greece.

Also, some other results that are related to the goal of economic development are the **development of new skills, the creation of a city brand name and the enhancement of Entrepreneurship**.

In addition to the above expected results, there are also some results related to the implementation process of the exemplar. These are the **creation of a governance exemplar, the improvement of the administrative & operational capacity of the Municipality and the creation of co-production culture & skills**.

The following table presents the expected results after the implementation of NBS in Pavlos Melas Municipality.

NBS Expected Results	
Primary (PI) ¹	Increased & “Inclusive” use of the park
Environmental (Env)	Increased green/capita

¹ Results related to the use of the exemplar, for example, that the NBS is visited 3 times a week by neighbours, or that the average visit lasts 20 minutes

Environmental (Env)	Enhanced biodiversity
Environmental (Env)	Improved micro-climate
Environmental (Env)	Enhanced environmental awareness
Health and Wellbeing (HW)	Improved health
Health and Wellbeing (HW)	Improved quality of life
Social Cohesion (SC)	Vulnerable groups integration
Social Cohesion (SC)	Improved community bonds
Social Cohesion (SC)	Promoted culture heritage identity
Economic (ECO)	Decreased unemployment-job creation
Economic (ECO)	New skills development
Economic (ECO)	City brand name
Economic (ECO)	Entrepreneurship opportunities
Participatory planning and governance (PPG)²	Governance exemplar
Participatory planning and governance (PPG)	Improved administrative & operational capacity of the Municipality
Participatory planning and governance (PPG)	Co-production culture & skills

table....NBS Expected Results

Finally, the following table presents how the NBS objectives are related to the NBS actions and the expected results. In some cases, the same goal is related to more than one action and one action to more than one results.

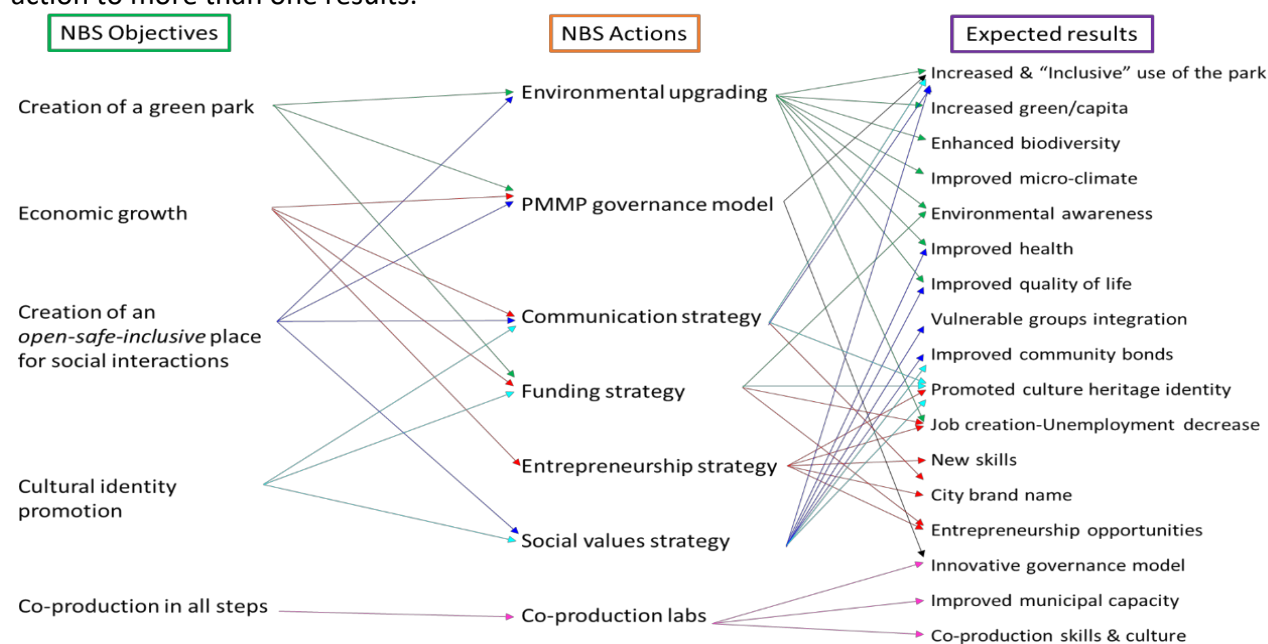


table... Pavlos Melas' Theory of change

² Results related to the implementation process of the exemplar, for example, that citizens have confidence in decision-makers

Some of the results may show synergies with others (a positive effect on one result also has a positive effect on another) or trade-offs (achieving a positive effect on one result has a negative effect on another or a positive effect on a social group entails a negative effect for another). The following table presents the assumptions of why a certain action causes a certain result, the synergies and the trade-offs.

NBS Actions	Expected results	Assumptions	Synergies	Trade-offs
Phase A project actions (environmental upgrading actions & basic infrastructure development)	Increased use of the park	A green park attracts much more visitors than an abandoned ex-camp	If citizens use park, they will improve their health and wellbeing, they will interact more with others and more opportunities for enterprises will be created	none
Phase A project actions (environmental upgrading actions & basic infrastructure development)	Increased green/capita	The planting of more than 6000 plants will increase the ratio of green per capita in the city	More vegetation in the park will enhance the biodiversity and improve the micro-climate	none
Phase A project actions (environmental upgrading actions & basic infrastructure development)	Enhanced biodiversity	Dense and planned vegetation will allow the introduction and survival of a greater number of species	Increasing biodiversity will favour a greater number of visitors	Some species may cause allergies
Phase A project actions (environmental upgrading actions & basic infrastructure development)	Improved micro-climate	A green park functions as a green lung that affects climatic conditions locally	Improving local climatic conditions will bring more visitors in the park	none
Phase A project actions (environmental upgrading actions & basic infrastructure development)	Enhanced environmental awareness	The use of a green place and the contact with nature arises environmental awareness	Environmental awareness will enhance responsibility towards the biodiversity	none
Phase A project actions (environmental upgrading actions & basic infrastructure development)	Improved health	The contact with nature and the opportunities for physical activities in the park improves mental and physical health	Good health will contribute in better quality of life	none
Phase A project actions (environmental upgrading actions & basic infrastructure development)	Improved quality of life	An upgraded environment, even the visual and aesthetic upgrade, as well as a greener environment creates	If the quality of life is improved, social bonds are stronger	none

		better living conditions		
Phase A project actions (environmental upgrading actions & basic infrastructure development)	Job creation - Unemployment decrease	The implementation and stewardship of PMMP will create new jobs and opportunities for economic growth in the area	New jobs will contribute in better quality of life	none
PMMP governance model	Increased use of the park	A governance model that ensures the park viability, the compliance with regulations and the public security will bring more visitors to the park	If citizens use the park, they will improve their health and wellbeing, they will interact more with others and more opportunities for enterprises will be created	none
PMMP governance model	Governance exemplar	A governance model that will ensure the added values of the park will formulate an exemplar of governance for urban NBS	If the governance model ensures sustainability, the park will attract more visitors and will support economic growth	none
Communication strategy	Increased use of the park	Communication will bring more visitors from metropolitan and regional district and more opportunities for economic activity	If citizens use the park, they will improve their health and wellbeing, they will interact more with others and more opportunities for enterprises will be created	none
Communication strategy	Promoted culture heritage identity	A tailor-made communication strategy of the park can promote the local culture heritage identity	A local culture identity will strengthen the community bonds and it can be an element of the city brand name	none
Communication strategy	City brand name	The communication strategy can promote the generation of a city brand name	A city brand name will bring more park users and more opportunities for economic activity	none
Funding strategy	Enhanced environmental awareness	Funding will ensure the creation of the sustainability and environmental awareness center in the park	Environmental awareness will enhance responsibility towards the biodiversity	none
Funding strategy	Promoted culture heritage identity	A culture heritage promotion program needs funds	A local culture identity will strengthen the community bonds and	none

			it can be an element of the city brand name	
Funding strategy	Decreased unemployment-job creation	The funding of the rest phases of the project will enhance the entire project implementation and will create more jobs	New jobs will contribute in better quality of life	none
Funding strategy	Entrepreneurship opportunities	The funding and implementation of the rest phases of the project will create more opportunities for economic development	The operation of new enterprises will create new skills and new jobs	none
Strategy of entrepreneurship	Promoted culture heritage identity	A culture-related entrepreneurship strategy will enhance the promotion of local cultural identity	A local culture identity will strengthen the community bonds and it can be an element of the city brand name	none
Strategy of entrepreneurship	Decreased unemployment-job creation	The municipality will create opportunities for new jobs through entrepreneurship initiatives	New jobs will contribute in better quality of life	none
Strategy of entrepreneurship	Entrepreneurship opportunities	The municipality will create opportunities for new enterprises based on PMMP potential	The operation of new enterprises will create new skills and new jobs	none
Strategy of entrepreneurship	New skills development	A strategy for a nature-based, circular, creative economy will enhance the development of new skills	New skills will decrease the unemployment	none
Strategy of entrepreneurship	City brand name	The city brand name could be based on the thematic innovation promoted by the entrepreneurship strategy, i.e. NBS, technology, culture...	A city brand name will bring more park users and more opportunities for economic activity	none
Creation of social values strategy	Increased & "Inclusive" use of the park	Tailormade social programs will bring more users of the park	If citizens use the park, they will improve their health and wellbeing, they will interact more with others and more opportunities for	none

			enterprises will be created	
Creation of social values strategy	Improved health	Social interaction will help mental health improvement	Good health will contribute in high quality of life	none
Creation of social values strategy	Improved quality of life	Social interaction will help wellbeing improvement	If the quality of life is improved, social bonds are stronger	none
Creation of social values strategy	Vulnerable groups integration	Tailormade social programs will integrate vulnerable groups into the stewardship and use of the park	An inclusive park will strengthen community bonds	none
Creation of social values strategy	Improved community bonds	Having a space where people meet, gaining the sense of common use and of sharing a cultural identity will facilitate social interaction	If strong bonds are established in the community, the quality of life will be improved	none
Creation of social values strategy	Promoted culture heritage identity	Programs for the history and identity of Pavlos Melas camp will help build a local culture identity and will contribute in making the citizens proud of it	A local culture identity will strengthen the community bonds and it can be an element of the city brand name	none
Co-production labs	Governance exemplar	The participatory process will create and support alternatives in governance	If the governance model ensures sustainability, the park will attract more visitors and will support economic growth	none
Co-production labs	Municipal capacity empowerment - Silos degradation - Transparency	The participatory process will promote inter-departmental collaboration, transparency and will strengthen the municipal capacity	If the municipal capacity is improved, co-production processes and governance alternatives will be supported further	none
Co-production labs	Co-production culture & skills	The participatory planning, implementation and stewardship of the park will create co-production culture and skills	The participatory process will create alternatives in governance and transparency in administration	none

table...Nbs actions- Expected results – Assumptions -Synergies

STEP 2 Choose appropriate indicators

The table below presents the indicators that Pavlos Melas Municipality has select in order to measure the expected impacts of the NBS implementation. The indicators were selected to measure the expected outcomes and outputs related to the strategic objectives of the project. The association of NBS objectives, NBS actions and the expected impact with the selected indicators was made through a review of literature and co-production process. The selected indicators form a coherent framework where social, economic, and environmental areas of impact are inter-connected.

First of all, PMM (Pavlos Melas Municipality) made a priority ranking to differentiate between indicators that are critical to evaluating all NBS (core) and indicators that align closely with city strategic priorities but are not relevant to all NBS (feature). Through this process the result was the creation of a list of indicators (core and feature).

The indicators are classified in the following categories: a) primary indicators (PIs), b) outcome indicators (Environmental, Health and Wellbeing, Social Cohesion, Economic) and c) Participatory planning and governance indicators (PPGs).

Primary indicators:

Primary indicators (PIs) refer to the uses that citizens give to the NBS. PIs measure the uses and indicate the spatial influence of intervention (pointing out the group of individuals who may be directly or indirectly involved).

Outcome indicators:

Outcome indicators are classified in four categories. They are used to help understand and measure the expected results in each category, after the implementation of NBS.

Participatory planning and governance indicators:

These are indicators that measure the results (outputs and outcomes) from the NBS design and implementation processes.

The table below presents the PMM's selected indicators (core and feature) for each category while indicating the reasoning of the selection (based on PMM's implementation of NBS expected results).

CODE	NAME	NBS expected result (previous sub-building block)	Selection reasoning
PRIMARY INDICATORS			
PI1	Type of interaction with NBS	Increased & "Inclusive" use of the park	Know the actual usage of PMMP
PI2	Frequency of interaction with NBS	Increased & "Inclusive" use of the park	Know the actual usage of PMMP
PI3	Duration of interaction with NBS	Increased & "Inclusive" use of the park	Know the actual usage of PMMP
PI4	Perceived quality of space	Increased & "Inclusive" use of the park	Know the perceived quality of the new park
ENVIRONMENTAL INDICATORS			
CORE			

Env03	Air temperature reduction	Improved micro-climate	Know the cooling effect of NBS
Env08	Rainfall storage (water absorption capacity of NBS)	co-benefit of Increased green/capita	Know the stormwater performance of NbS
Env23	Public green space distribution	Increased green capita	Measure green area in relation to population
Env24	Recreational value of blue-green spaces	Increased & “Inclusive” use of the park	Measure of the recreational benefits of PMMP
Env25	Cultural value of blue-green spaces	Promoted culture heritage identity	Measure of the cultural benefits of PMMP
Env29	Supporting/increasing biodiversity conservation	Enhanced biodiversity	Find out if there are more efforts to improve biodiversity
Env35	Species diversity	Enhanced biodiversity	Know the number of species currently in the park
Env81	Soil sealing	Enhanced biodiversity & improved microclimate	Mapping impermeable surfaces
ENV89	Community garden area per capita and in a defined distance	Increased green capita	Measure green area in relation to population
FEATURE			
Env01	Carbon storage OR carbon sequestration in vegetation/soil	Increased green/capita	Measure the carbon removed by NBS in soil and vegetation
Env17	Air Temperature reduction	Improved microclimate	Measure the peak air temperatures reduction
Env26	Community accessibility	Increased & “Inclusive” use of the park	Evaluate the accessibility of PMMP
Env55	Green space area	Increased green/capita	Measure green area in relation to population
Env66	Air quality improvement	Co-benefit of increased green/capita	Know the change in air quality
ENV88	Tree shade for local heat change	Improved microclimate	Know the cooling effect of NBS
HEALTH AND WELLBEING INDICATORS			
CORE			
HW3	General wellbeing and happiness	Improved quality of life	Know the state of wellbeing and happiness
HW11	Mental health and wellbeing	Improved health	Estimate the impact on the mental health of the park users
HW12	Enhanced Physical Activity	Improved health	Establish the amount of physical activity that the visitors of the park do
SOCIAL COHESION INDICATORS			
CORE			
SC1	Bonding social capital	Improved community bonds	Know how are the social relations between different social groups
SC2	Bridging social capital	Improved community bonds	Know how are the social relations between different social groups

SC5.1	Perceived safety	Increased & “Inclusive” use of the park Vulnerable groups integration	Know the perceived safety of the park
SC5.2	Actual safety	Increased & “Inclusive” use of the park Vulnerable groups integration	Know the actual safety of the park
SC6	Place attachment	Promoted cultural heritage identity	Estimate the link between people and park
SC11	Positive environmental attitudes motivated by contact with NBS	Enhanced environmental awareness	Estimate resources for environmentally responsible behaviors and impact of environmental education initiatives
FEATURE			
SC3	Linking social capital	Improved community bonds	Find out if there is a relationship between neighbours and power groups
SC10	Environmental education opportunities	Enhanced environmental awareness	Measure environmental education opportunities
ECONOMIC INDICATORS			
CORE			
ECO1	New Businesses 'attracted' or started and additional rates received	Decreased unemployment-job creation Entrepreneurship opportunities	Establish if there are new businesses since the implementation of the park
ECO3	Net additional jobs created/enabled by NBS	Decreased unemployment-job creation	Establish if there are new jobs created/enabled by NB
ECO7	Increase in tourism	Local economy growth	Increase in tourism could be a co-benefit, not of strategic priority
FEATURE			
ECO2	New customers attracted to businesses in the area	Local economy growth	Estimate any increased footfall in the area
ECO9	Upskilling & related earning increase	New skills development	Estimate the new skills related to the NBS (ideally)
ECO11	Overall economic, social and health wellbeing	Improved quality of life	Estimate the quality of life in the vicinity of the NBS
PARTICIPATORY PLANNING AND GOVERNANCE INDICATORS			
CORE			
PPG5	Activation of public-private collaboration	Innovative governance model	Know the degree of collaboration and co - production among stakeholders
PPG7	Reflexivity: identified learning outcomes	Improved municipal capacity	Improved administrative & operational capacity of the Municipality - Silos degradation -Transparency
PPG11	Collaboration between organizational members	Improved administrative & operational capacity of the Municipality - Silos	Establish the interactions between

		degradation -Transparency	individuals from the same departments or different departments
FEATURE			
PPG13	Facilitation skills for co-production	Co-production culture & skills	Know the skills of collaboration and coproduction among stakeholders
PPG17	Reflexivity: time for reflection	Improved municipal capacity	Improved administrative & operational capacity of the Municipality - Silos degradation -Transparency

table.... Building Block 2 choosing appropriate indicators

STEP 3 Develop a data plan for impact evaluation

Pavlos Melas does not have an available baseline for the selected indicators. The main reason that Pavlos Melas does not have the appropriate baseline data is the fact that until now there was no necessity to collect all the data that are essential for measuring the selected indicators. In addition, there is a lack of means and equipment for the collection of the data. For the above reasons, the information that was required for the baseline data was not available to use. So, there is no use describing the data's sources or the methods that were used for the collection of these data for the simple reason that the data do not exist. The data plan will consist of the new data collections, specified in Building Block 4.

STEP 4 Implement the data plan

The following table describes the methods selected for measuring each indicator. Every chosen method for each indicator is included in the Connecting Nature indicator methodologies. The relationship between every indicator and its measurement method is determined by specific criteria such as data quality, temporal adequacy and cost-benefit ratio assessment. As we can see in the following table, some of the methods that are selected in order to measure the indicators include GIS analysis (computer-based administration), observational studies (survey procedures and paper-and-pencil administration), questionnaires, satellite images, sensors and thermal cameras, data from the local weather-stations, aerial photography.

CODE	NAME	Connecting Nature method
PI1	Type of interaction with NBS	Observational study-GIS
PI2	Frequency of interaction with NBS	Observational study-GIS
PI3	Duration of interaction with NBS	Observational study-GIS
PI4	Perceived quality of space	Questionnaire (ad hoc)
Env03	Air temperature change	Blackbody flux (Landsat 8)
Env08	Rainfall storage (water absorption capacity of NBS)	Soil moisture sensors and pressure sensors
Env23	Public green space distribution	Aerial photography combined with census data
Env24	Recreational value of blue-green spaces	Register of available facilities

Env25	Cultural value of blue-green spaces	Registration of cultural events in close proximity to NBS
Env29	Supporting/increasing biodiversity conservation	Biodiversity monitoring programme Pocock et al. (2015)
Env35	Species diversity	Urban Biodiversity Inventory Framework (UBIF 2017)
Env81	Soil sealing	Satellite images from Landsat and Normalised Difference Built-up Index (NDBI)
Env89	Community garden area per capita and in a defined distance	GIS distance to greenspace (mapping buffer areas of 330 and 660m)
Env01	Carbon storage OR carbon sequestration in vegetation/soil	i-Tree Eco (2019)
Env17	Air temperature - Energy demand	On-site temperatures from the local weather-station
Env26	Community accessibility	ArcGIS ModelBuilder environment: actual proximity to green spaces
Env55	Green space area	Satellite images from Landsat
Env66	Air quality change	On-site data from the local weather-station
Env88	Tree shade for local heat change	Thermal cameras
Env90	Community garden area per child capita and in a defined distance	GIS distance to greenspace (mapping buffer areas of 330 and 660m) in relation to census data
HW3	General wellbeing and happiness	Satisfaction with Life Scale (Diener et al., 1985)
HW11	Mental health and wellbeing	General Health Questionnaire (GHQ-12) (Goldberg, Gater, Sartorius, Ustun, Piccinelli, Gureje, & Rutter, 1997)
HW12	Enhanced Physical Activity	International Physical Activity Questionnaire (IPAQ)
SC1	Bonding social capital	2 items measuring the presence type of connections, and respondent's perception of quality of interactions (Anucha et al., 2006)
SC2	Bridging social capital	2 items measuring the presence type of connections, and respondent's perception of quality of interactions (Anucha et al., 2006)
SC5.1	Perceived safety	Criminal Victimization and Perceptions of Community Safety Survey (Smith et al., 1999)
SC5.2	Actual safety	Crime rate per area (i.e., in and around NBS) for time frame (i.e., before and after NBS implementation)
SC6	Place attachment	Place Identity Scale (Williams & Vaske, 2003)
SC11	Positive environmental attitudes motivated by contact with NBS	Environmental Attitudes Inventory (EAI) (Milfont & Duckitt, 2010)
SC3	Linking social capital	2 items measuring the presence type of connections, and respondent's perception of quality of interactions (Anucha et al., 2006)
SC10	Environmental education opportunities	Ethnographic case study & No. of educational activities in 'close proximity' to NBS
ECO1	New Businesses 'attracted' or started and additional rates received	No. of new start-ups in 'close proximity' to NBS
ECO3	Net additional jobs created/enabled by NBS	Number change in Full Time Employment (FTEs) or the number of 'decent' jobs or jobs providing 'adequate livelihood'
ECO7	Increase in tourism	Number change in visitors to the area
ECO2	New customers to business in proximity to NBS	Asking businesses to report the number of total customers per period (month / year / quarter)
ECO9	Upskilling & related earning increase	"21 st Century Skills" or 'competencies' (Soland et al 2013)
ECO11	Overall economic, social and health wellbeing	Human Development Index

PPG5	Activation of public-private collaboration	Measurement or count data for number of collaborations activated
PPG7	Reflexivity - identified learning outcomes	Number of identified reflexive learning outcomes per month or year that can be specified in number of changes in the context based on reflexivity type (rules, and/or relations, and/or practices and/or discourse)
PPG11	Collaboration between organizational members	Team Boosting behavior scale (Fortuin, van Mierlo, Bakker, Petrou & Demerouti, 2021)
PPG13	Facilitation skills for co-production	Items aimed at assessing facilitator's skills (Weyers and Rankin 2007; Bens 2009)
PPG17	Reflexivity - time for reflection	Counting number of hours spent on reflection per week/month

table... New data collection on the exemplar scale from the methods proposed in the Connecting Nature Indicator Reviews

Specifically, for the primary indicators PI1, PI2 and PI3 we chose the quantitative procedure with questionnaires as the selected method to measure indicators. The tool for the measurement procedure is the observational study along with GIS analysis. Data will be gathered on site, in scale 1:1. For the indicator PI1 the attributes that will be collected are the number of users, gender, type of activity, age referenced data, location and dimension of occupancy, backgrounded by circumstantial data such as observation day (i.e., date, time of a day, weather conditions of a day). For the indicator PI2, frequency and intensity of use will be addressed by collecting data such as the number of users participating in the activity, number of days of the participated activity, location and dimension of occupancy, and backgrounded circumstantial data such as weather conditions of a day. For the indicator PI3, the key attributes to address duration of interaction with NBS are minutes of stay in a place. Last but not least, for the indicator PI4, ad-hoc questions were selected as a tool for indicator measurement. Users of the park will be asked to answer (using a scale from 1 to 5) how they rate the quality of elements such as aesthetics, accessibility, distance to their home, safety, upkeep and maintenance, events organized and attractiveness in terms of smell, sound and microclimatic conditions in the PMMP.

Moving to the environmental indicators, we have a plethora of measurement procedures and tools. Beginning with core environmental indicators, for the indicator ENV03, a combination of high-resolution satellite images and thermal infrared data will be used. For the indicator ENV08, we will use remote sensing and GIS technologies for water monitoring and management. These tools are useful because they can provide a solution for the planning and management of future water resources. ENV23 will be measured through satellite images combined with census data in order to determine demographics in relation to distribution. For the indicator ENV24, direct feedback from users and local communities in the form of questionnaires was chosen as a measurement procedure combined with a modelling approach (GIS, earth observation/remote sensing metrics) in order to register the available facilities. For the indicator ENV25, the number of events/visitor metrics and the demographics of attendees through questionnaires can generate useful data and will help to register the cultural events in close proximity to NBS. In addition, remote sensing/earth observation tools and spatial data will be used to measure ENV25 indicator. About ENV29, we will follow the biodiversity monitoring programme that was developed by Pocock et al. (2015). Pocock et al. (2015) have developed a checklist of priority

attributes that includes 25 attributes with a range from elemental to aspirational. As it is referred to the indicator's factsheet, this can be used as a checklist to clarify objectives and justify investment in resources and provides an excellent resource for local authorities or city stakeholders wanting to establish monitoring programmes. For measuring indicator ENV35, we will use the Urban Biodiversity Inventory Framework (UBIF 2017) that offers an alternative 3 track methodology to collect species diversity information. For ENV81, the measurement procedure and tools that will be used for sensing and measuring soil sealing, are satellite images from Landsat. The identification, analysis, measurement and evaluation of soil loss through sealing can then be obtained from NDBI (remote sensing technique). Finally, for the last core environmental indicator that we chose, ENV89, the measurement procedure for the identification of community garden areas is to gather data from land use plans on location, extent and characteristics and to use them in a GIS database for digitization (Senes et al., 2016).

For the indicator ENV01 that belongs to feature environmental indicators, i-Tree eco tool was chosen for basic calculation of carbon dioxide storage estimates for vegetation in urban areas. For ENV03, on-site temperatures and date from the local weather stations will be gathered to measure the air temperature reduction. For the indicator ENV26 a model for greenspace (GS) accessibility can be developed in the ModelBuilder environment of ArcGIS, where (according to Stessens et al., 2017) the actual proximity of GS can be calculated. For ENV55, satellite images from Landsat will help us to measure green space areas in relation to population. For ENV66, we will use the on-site data from the local weather stations for the measurement of air quality change. For ENV88, we chose temperature sensors, thermal cameras, globe thermometers in combination with weather station data and tree species morphology to measure tree shade for local heat change. Last but not least, the ENV90 will be measured with collated data that will be used in a GIS database and will be digitized.

Moving to the human and well-being indicators, for the core indicator HW3 we chose to use as measurement tool Satisfaction with Life Scale (Diener et al., 1985), a 7-point scale comprising 5 items that measure individual's general satisfaction with own life as a cognitive-judgmental process (i.e., based on a comparison with a standard that individual had set for him/herself). For the measurement of HW11, we will use the General Health Questionnaire (GHQ-12) (Goldberg, Gater, Sartorius, Ustun, Piccinelli, Gureje, & Rutter, 1997), which consists of 12 items, each one assessing the severity of a mental problem over the past few weeks using a 4-point Likert-type scale (from 0 to 3). Finally, for the HW12, the International Physical Activity Questionnaire (IPAQ) (International Physical Activity Questionnaires, n.d.) will be used, which assesses physical activity undertaken across a comprehensive set of domains.

For the social cohesion indicator SC1, we will use a scale that consists of 2 items measuring the presence of bonding social capital (BoSC) type of connections, and respondent's perception of quality of interactions within BoSC type of connections (Anucha et al., 2006). For SC2, we will use the same method as SC1 but for bridging social capital. For SC5.1, 7-items from Criminal Victimization and Perceptions of Community Safety Survey (Smith et al., 1999) adapted to the purposes of NBS research will be used for measuring perceived safety. For SC5.2, crime rate per area (i.e., in and around NBS) for time frame will be measured for actual safety. For SC6, Place Identity Scale (Williams & Vaske, 2003) will be used, which consists of 6 items that measure place dependence and place identity as dimensions of place attachment. For SC11.1, Environmental Attitudes Inventory (EAI – Milfont & Duckitt, 2010, includes 24 items) will be used, which assesses

broad evaluating perceptions of or beliefs regarding the natural environment, including factors affecting its quality. For the indicator SC3, we will use a scale that consists of 2 items that will measure the presence of linking social capital (LSC) type of connections, and respondent's perception of quality of interactions within LSC type of connections. For SC10, we will use the Ethnographic case study and we will count the number of educational activities in 'close proximity' to NBS.

Moving to the economic indicators, for ECO1, we will measure all the new start-ups in 'close proximity' to NBS. 'Close proximity' may be in relation to spatial chain or network. For the indicator ECO3, we will measure the number in Full Time Employment (FTEs) or the number of 'decent' jobs or jobs that provide 'adequate livelihood'. For ECO7, we will measure the number of visitors to NBS. For ECO2, we will measure all the new customers to existing businesses. For ECO9, we will measure the revenues and profits of NBS companies. For ECO11, Human Development Index will be used in close proximity to NBS.

Finally, for the indicator PPG5, we will count the number of collaborations activated. For PPG7, we will count the number of learning outcomes identified per month or year. For PPG11, Team Boosting behavior scale (Fortuin, van Mierlo, Bakker, Petrou & Demerouti, 2021, includes 18 items) will be used that assesses individual interpersonal behaviors in teams, characterized by dominance and energy, positive expressivity, and a social focus. For the indicator PPG13, we will use 8 items for measuring respondents' perception of their/the facilitator's facilitation skills for co-production. A questionnaire of facilitation (self-)assessment is essential. Last but not least, for PPG17, we will count the number of hours spent in reflection per week/month. Timesheets of total amount of time spent on reflection are essential.

Unfortunately, Pavlos Melas is not in the place to perform causality analysis for any of the indicators. The lack of available data, equipment and personnel are a major obstacle for the conduct of any analysis.

After the selection of the appropriate indicators and their measurement methods, it is necessary to outline the plan design process. The plan for the collection of new data must include some aspects. First of all, we have to determine the procedure that will be followed. We have to describe when we will collect all the essential data for the measurement of each indicator. In addition, it is important to determine our sample such as citizens, satellite images, species etc. Furthermore, for the data planning, we must define who will collect and analyze the data such as the city council staff, the Data department of the regional government, a local university or a local company. Finally, we have to estimate the budget for collecting data, buying equipment, collaborations or hiring.

STEP 5 Integrate evidence into the policy process

Depending on the data collection method that we have chosen, the data analyses will be quantitative or qualitative. This information is given to us in the indicators' factsheets. In the table below, we describe the type of data analyses.

CODE	NAME	Connecting Nature method	Quantitative	Qualitative	Geolocation
PI1	Type of interaction with NBS	Observational study-GIS	X		
PI2	Frequency of interaction with NBS	Observational study-GIS	X		
PI3	Duration of interaction with NBS	Observational study-GIS	X		
PI4	Perceived quality of space	Questionnaire (ad hoc)	X		
Env03	Air temperature change	Blackbody flux (Landsat 8)	X		
Env08	Rainfall storage (water absorption capacity of NBS)	Soil moisture sensors and pressure sensors	X		
Env23	Public green space distribution	Aerial photography combined with census data	X		
Env24	Recreational value of blue-green spaces	Register of available facilities	X	X	
Env25	Cultural value of blue-green spaces	Registration of cultural events in close proximity to NBS	X	X	
Env29	Supporting/increasing biodiversity conservation	Biodiversity monitoring programme Pocock et al. (2015)	X	X	
Env35	Species diversity	Urban Biodiversity Inventory Framework (UBIF 2017)	X	X	
Env81	Soil sealing	Satellite images from Landsat and Normalised Difference Built-up Index (NDBI)	X		
Env89	Community garden area per capita and in a defined distance	GIS distance to greenspace (mapping buffer areas of 330 and 660m)	X	X	
Env01	Carbon storage OR carbon sequestration in vegetation/soil	i-Tree Eco (2019)	X		
Env17	Air temperature - Energy demand	On-site temperatures from the local weather-station	X		
Env26	Community accessibility	ArcGIS ModelBuilder environment: actual proximity to green spaces	X		
Env55	Green space area	Satellite images from Landsat	X		
Env66	Air quality change	On-site data from the local weather-station	X		
Env88	Tree shade for local heat change	Thermal cameras	X		
Env90	Community garden area per child capita and in a defined distance	GIS distance to greenspace (mapping buffer areas of	X	X	

		330 and 660m) in relation to census data			
HW3	General wellbeing and happiness	Satisfaction with Life Scale (Diener et al., 1985)	X		
HW11	Mental health and wellbeing	General Health Questionnaire (GHQ-12) (Goldberg, Gater, Sartorius, Ustun, Piccinelli, Gureje, & Rutter, 1997)	X		
HW12	Enhanced Physical Activity	International Physical Activity Questionnaire (IPAQ)	X		
SC1	Bonding social capital	2 items measuring the presence type of connections, and respondent's perception of quality of interactions (Anucha et al., 2006)	X	X	
SC2	Bridging social capital	2 items measuring the presence type of connections, and respondent's perception of quality of interactions (Anucha et al., 2006)	X	X	
SC5.1	Perceived safety	Criminal Victimization and Perceptions of Community Safety Survey (Smith et al., 1999)	X		
SC5.2	Actual safety	Crime rate per area (i.e., in and around NBS) for time frame (i.e., before and after NBS implementation)	X		
SC6	Place attachment	Place Identity Scale (Williams & Vaske, 2003)	X		
SC11	Positive environmental attitudes motivated by contact with NBS	Environmental Attitudes Inventory (EAI) (Milfont & Duckitt, 2010)	X		
SC3	Linking social capital	2 items measuring the presence type of connections, and respondent's perception of quality of interactions (Anucha et al., 2006)	X	X	
SC10	Environmental education opportunities	Ethnographic case study & No. of educational activities in 'close proximity' to NBS	X	X	
ECO1	New Businesses 'attracted' or started and additional rates received	No. of new start-ups in 'close proximity' to NBS	X		
ECO3	Net additional jobs created/enabled by NBS	Number change in Full Time Employment (FTEs) or the	X		

		number of 'decent' jobs or jobs providing 'adequate livelihood'			
ECO7	Increase in tourism	Number change in visitors to the area	X		
ECO2	New customers to business in proximity to NBS	Asking businesses to report the number of total customers per period (month / year / quarter)	X		
ECO9	Upskilling & related earning increase	"21 st Century Skills" or 'competencies' (Soland et al 2013)	X		
ECO11	Overall economic, social and health wellbeing	Human Development Index	X		
PPG5	Activation of public-private collaboration	Measurement or count data for number of collaborations activated	X		
PPG7	Reflexivity - identified learning outcomes	Number of identified reflexive learning outcomes per month or year that can be specified in number of changes in the context based on reflexivity type (rules, and/or relations, and/or practices and/or discourse)	X		
PPG11	Collaboration between organizational members	Team Boosting behavior scale (Fortuin, van Mierlo, Bakker, Petrou & Demerouti, 2021)	X	X	
PPG13	Facilitation skills for co-production	Items aimed at assessing facilitator's skills (Weyers and Rankin 2007; Bens 2009)	X		
PPG17	Reflexivity - time for reflection	Counting number of hours spent on reflection per week/month	X		

table... Type of indicators (quantitative-qualitative)

Unfortunately, Pavlos Melas will not be able to geolocate the indicators' data because there are neither the essential equipment for the geolocation nor educated personnel having the knowledge for the exact subject

In the following table, we describe the way that we want to represent the evaluation results of the indicators that we selected. Moreover, we indicate to which stakeholders we would want to communicate our impact assessment results.

As we can see from the table, all the results will be represented with visual charts. In addition, we want all the results to be disseminated to citizens and to higher political levels. Then most of the results will be represented to the economic sector and scientific partners. And finally, we want only a few results to be disseminated to the media.

CODE	NAME	Visual chart	Scientific partners	Economic sector	Higher political levels	Media	Citizens
PI1	Type of interaction with NBS	●		●	●	●	●
PI2	Frequency of interaction with NBS	●		●	●	●	●
PI3	Duration of interaction with NBS	●		●	●	●	●
PI4	Perceived quality of space	●		●	●	●	●
ENV3	Air temperature change	●	●	●	●		●
ENV8	Rainfall storage (water absorption capacity of NBS)	●	●	●	●		●
ENV23	Public green space distribution	●	●	●	●		●
ENV24	Recreational value of blue-green spaces	●	●	●	●		●
ENV25	Cultural value of blue-green spaces	●	●	●	●		●
ENV29	Supporting/increasing biodiversity conservation	●	●	●	●		●
ENV35	Species diversity	●		●	●		●
ENV81	Soil sealing	●	●	●	●		●
ENV89	Community garden area per capita and in a defined distance	●	●	●	●		●
ENV1	Carbon storage OR carbon sequestration in vegetation/soil	●	●	●	●		●
ENV17	Air temperature - Energy demand	●	●	●	●		●
ENV26	Community accessibility	●	●	●	●		●
ENV55	Green space area	●	●	●	●		●
ENV66	Air quality change	●	●	●	●		●
ENV88	Tree shade for local heat change	●	●	●	●		●
ENV90	Community garden area per child capita and in a defined distance	●	●	●	●		●
HW3	General wellbeing and happiness	●	●	●	●		●
HW11	Mental health and wellbeing	●	●	●	●		●
HW12	Enhanced physical activity	●	●	●	●		●

SC1	Bonding social capital	●	●	●	●	●
SC2	Bridging social capital	●	●	●	●	●
SC5.1	Perceived safety	●	●	●	●	●
SC5.2	Actual safety	●	●	●	●	●
SC6	Place attachment	●	●	●	●	●
SC11	Positive environmental attitudes motivated by contact with NBS	●	●	●	●	●
SC3	Linking social capital	●	●	●	●	●
SC10	Environmental education opportunities	●	●	●	●	●
ECO1	New Businesses 'attracted' or started and additional rates received	●	●	●	●	●
ECO3	Net additional jobs created/enabled by NBS	●	●	●	●	●
ECO7	Increase in tourism	●	●	●	●	●
ECO2	New customers to business in proximity to NBS	●	●	●	●	●
ECO9	Upskilling & related earning increase	●	●	●	●	●
ECO11	Overall economic, social and health wellbeing	●	●	●	●	●
PPG5	Activation of public-private collaboration	●			●	●
PPG7	Reflexivity - identified learning outcomes	●			●	●
PPG11	Collaboration between organizational members	●			●	●
PPG13	Facilitation skills for co-production	●			●	●
PPG17	Reflexivity - time for reflection	●			●	●

table... building block 5. integrating evidence into the policy process



How to tell your city's story

Connecting Nature Framework

- Sarajevo –

Project partner: Sarajevo Economic Region development Agency SERDA with support of City of Sarajevo





Contents

How to tell your city's story.....	1
Summary	4
Connecting Nature Framework.....	5
STEP 1 - Identify the city context	5
STEP 2 - Define the goals of your nature-based solution	7
STEP 3 - Identify your target audience and other relevant actors	8
STEP 4 - Introduce your nature-based solution exemplar	9
STEP 5 - Position this report Explain the big picture.....	11
Co-production.....	13
STEP 1 - Define the goals of the co-production process.....	13
STEP 2 - Use the design principles to flesh out the coproduction goals and structure	14
STEP 3 Plan the co-production steps and activities	15
STEP 4 Select the co-production tools.....	17
STEP 5 - Reflect on the co-production process and results.....	19
Financing and business models	20
Governance	24
STEP 1 - Make the case: aligning nature-based solutions with the wider goals of a city or a community.....	24
STEP 2 - Current status of the location	25
STEP 3 - Who are the required partners.....	25
STEP 4 - How will you work together?	27
Impact assessment	28
STEP 1 - Engage in structured reflection on NBS impacts, pathways and trade-offs.....	28
STEP 2 - Choose appropriate indicators.....	30
Nature-based enterprises.....	31
STEP 1 - Awareness and strategic alignment.....	31
STEP 2 - Building alliances	34
STEP 3 Planning, implementing and monitoring a customised support programme	35
Reflexive monitoring	37
STEP 1 - Rethink what learning process you need to achieve the goals of the nature-based solution.....	37
STEP 2 - Define the roles within the project team.....	38
STEP 3 - Recording important events and analysing critical turning points.....	39
STEP 4 - Use learning sessions to identify learning outcomes	41
Technical solutions (steps 1 and 2).....	42
STEP 1 - Define the nature-based solution.....	42



STEP 2 - Develop an understanding of the landscape context and ecosystem services needs	45
STEP 3 - Embedding multiple functions into the planning, delivery and stewardship of the nature-based solution	47
STEP 4 Monitoring and evaluation Stewardship management.....	47
STEP 5 Build an evidence base to promote naturebased solutions to a wider catchment ..	48



Summary

Sarajevo is a city in the heart of Europe that is specific in historical, cultural, and natural aspect, a city that unites east and west and that is open to the new and different. The citizens of Sarajevo, taught by experience, appreciate the opportunities, especially taking into account the premise that everyone is equal.

The development of a resilient city pleasant for the life of citizens of all ages and meeting their needs is one of the goals of the city. Thus, within the project, the Sarajevo exemplar was created, as first nature-based solution, which will provide the inhabitants of the city a place for relaxation, entertainment, learning and play, not forgetting one specific target group - people with special needs - children with intellectual and/or physical disabilities.

The Sarajevo exemplar idea is to create urban garden and sensory park within the Secondary Vocational Education and Training School which will have multifunctional purposes and will be opened to all citizens, but it would be adjusted to special target groups.

The exemplar will have double purpose:

- 1) it would provide multipurpose area for the pupils of the School (urban garden will be used for learning and sensory park will be used for developing motoric skills of the pupils)*
- 2) it would include numerous activities for various target groups in order to provide societal, economic and environmental benefits, but also to contribute to solving abovementioned issues of Sarajevo.*

As a result of the joint work of the Sarajevo Economic Region Development Agency and the City of Sarajevo in applying the CN Framework, the exemplar is developed which satisfy more factors: it is in line with local, city and cantonal plans (as wider objective), it is in line with EU recommendations, contributes to health and well-being, can contribute in solving Sarajevo's issues (pollution, lack of green areas in the urban area), it promotes importance of the green zones in everyday's life of the city habitants and it is also focused on inclusive approach to the children with disabilities/marginalised groups and their integration into society.



The exemplar is developed with huge support of the project partners, by listening, learning and exchanging ideas and experiences. As a key tool Connecting Nature Framework was applied in defining all 7 elements of the Sarajevo exemplar.

The Framework helped the Sarajevo team in communication, better defining ideas, involvement of relevant stakeholders and engagement of the people in the process of the exemplar development, which contributed to the exemplar with multiple elements and purpose.

Connecting Nature Framework

STEP 1 - Identify the city context

Sarajevo is capital and largest city in Bosnia and Herzegovina, a city located in the valley, surrounded by mountains, situated along the Miljacka River in the heart of the Balkans, a region of Southern Europe. Sarajevo has a rich and long history of religious and cultural diversity, which experienced its development in the 80s of the last century (e.g. Winter Olympic Games in 1984).

During the nineties of the 20th century Sarajevo experienced the destruction and for 1,425 days (from April 1992 to February 1996), the city suffered the longest siege of a capital city in the history of modern warfare, after that the recovery is still slow.



Due to the destruction, Sarajevo has encountered a number of problems in several segments, there is an evident problem of pollution, especially in the winter, deforestation, turning green areas into parking lots and buildings, and illegal construction that affects airflow, which exacerbates pollution. Sarajevo faces the problem of traffic and heating that affect pollution as well, and this problem requires systemic changes, not short-term solutions.

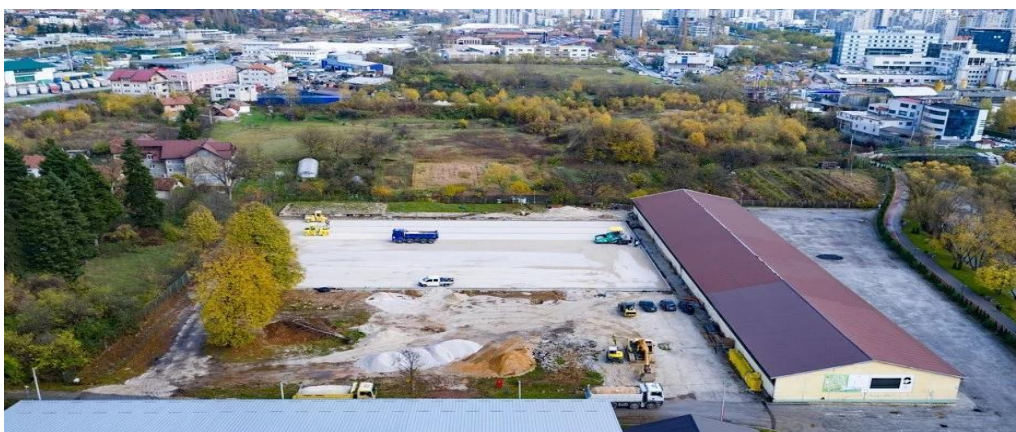
Now, Sarajevo is characterised with a lot of new buildings for living and business purposes, but often, these buildings are built on green areas within the municipalities and local communities, often not respecting urban planning. This approach creates additional issues, such as lack of wind, creating high pollution and fog in winter periods.

Sarajevo, as a modern city, is a complex of buildings for various purposes: architectural and infrastructural buildings, free spaces, water surfaces, green plantations, etc. However, the city cannot be defined as a mechanical sum of its constituent elements, but a connected whole, which is constantly growing and evolving. The character of the interconnections of the components of that system is complex and determined by numerous factors. However, the basic condition for its normal functioning is ecological unity. A certain balance of environmental factors, which form the area of the city, primarily determines the living conditions of the inhabitants.



It is important to mention Sarajevo administrative organisation, which directly determines jurisdiction of the government of the city level. Area¹ of the City of Sarajevo covers four municipalities: Stari Grad, Centar, Novo Sarajevo and Novi Grad. City Council consists of representatives of these municipalities.

There are some excellent examples of the creation of the green areas in the city. In some municipalities such as Novi Grad former military objects are transformed into multifunctional park “Safet Zajko”. The Park is intended for education, sports and recreation, with beautiful green areas. These initiatives have positive feedback from citizens.



Former military object “Safet Zajko” (before)



Former military object “Safet Zajko” (after)



View on Sarajevo and cable car

Many projects and initiatives from the private and public sector have been implemented in recent years, but they are mostly pilot activities that are not replicated yet. Usually, these are small scale projects, but even though they are “small”, they are very important for a city and citizens. Some of these projects are solar panels, solar benches, bike paths, etc. The City of Sarajevo as a local self-government unit supports all types of projects and initiatives especially capitals such as the Sarajevo Cable Car.

As a city, Sarajevo unfortunately does not have enough green areas. Large green spaces are located on the hills around the city (Trebević Hum, Barice etc.). Small parks,

¹ Canton Sarajevo consists of 9 municipalities



promenades and green corridors along the roads are only green areas in the city. These surfaces are maintained by KJKP PARK (Cantonal Public Utility Company PARK).

One of the ways to improve the environment is to raise green areas. In order for green areas to be able to fulfil health, microclimatic and aesthetic functions, it is of great importance to connect them into a single system of greenery, which must be set on certain organizational principles.



Sarajevo during winter

There is evident increasing concentration of population in small areas. This causes the appearance of various sources of atmospheric pollution (soot, gases, dust, etc.) Plants are among the rare living organisms that can resist the effects of air pollution. Therefore, the positive role of plants is reflected not only in the decorative-aesthetic role,

but also in a number of other functions, of which most importantly sanitary-hygienic and cultural-educational.

Need for nature-based projects and their long-term significance for the city and its inhabitants is still not sufficiently developed within all layers of government- from municipal and city level, cantonal, entity and finally state level, there is no strategic goal for the environment, particularly NBS is not recognised as a priority. Bearing in mind that the development of the city is a constant process, there are great opportunities for such solutions, which should be an integral part of the plans of all levels of the state.

STEP 2 - Define the goals of your nature-based solution

The development of a resilient city pleasant for the life of citizens of all ages and the satisfaction of their needs is one of the goals of the City, but also of other institutions. The City of Sarajevo faces challenges in achieving these goals (often insufficient financial resources, shared competencies, political factors, etc.). These challenges faced the Agency, as well, and they were taken into account in defining the exemplar.

The visit of Osmos in November 2018 identified the main challenges and problems in the city, but also identified and interviewed various stakeholders, which provided the basis for further work.

Several exemplary options were considered internally and discussed (energy efficiency, environmental protection, etc.).



Within the workshop with Nua Horizon (held in February 2020), the Agency and the City defined an exemplar that included several factors: economic, social, environmental, etc., and due to events in the recent history of BiH and the city, another additional factor was taken into consideration, and that is peace and reconciliation. Thus, the first idea of the example was a park of friendship/ future on the border between the two cities, but after considering the

administrative requirements and due to the complicated bureaucracy, the second idea was approached.

Bearing in mind that there is a lack of green areas, the exemplar envisages the design and implementation of an urban garden with sensory park, which will have multifunctional purposes. Also, the goal is for the exemplar to have a cross-generational exchange (youth, elderly people), to be inclusive (for sensitive groups e.g. children with disabilities) and to have an educational character as an added value.

The urban garden with sensory park will be implemented on a green area, and it is in accordance with the urban plan of the city, but also with a strategy of the development of the Sarajevo Canton. Also, as an important step, SERDA proposed NBS as one of the priorities in development strategy of the Municipality of Novo Sarajevo (in its territory the urban garden will be placed) and it is accepted, and later strategy is adopted by Municipal Council.

Implementation of the first urban garden with sensory elements will be done by established cooperation of two governmental levels, with involvement of NGO and international support and can be used as a model for larger projects in Sarajevo and other cities in BiH.

STEP 3 - Identify your target audience and other relevant actors

Based on their previous experience and experience in other projects, the City and the Agency have defined an exemplar and prepared a document based on the process and using available tools, and with the support of project partners.

Although the City and the Agency have defined the key stakeholders, they have been generally identified during the development of the framework, the Sarajevo Team is still working on their concrete recognition and definition and how they can be involved in the implementation of the exemplar, as inputs from the various stakeholders can be valuable.



The Sarajevo Team did this by exchanging experiences with FRC - a peer to peer learning session was held with Glasgow, where we exchanged experiences, key stakeholders, but also the way how they will be engaged in the project (e.g. cooperation with universities, involvement of NGO dealing with environmental protection, cooperation with architects etc was mentioned as a good approach). Also, during communication with some of the project partners, the idea of additional cooperation between cities was raised in order to share experiences and good practices.

Also, support in defining the key stakeholders was provided by the partner Osmos. Through a conversation with Glasgow the Sarajevo Team realised it would be useful to do stakeholder mapping and then an engagement plan.

The Sarajevo Team gave the attention to the aspect of interest of key stakeholders, and to get involved in the project and how we can achieve mutual cooperation and connections that can maintain long term cooperation (e.g. with the university, Faculty of Science - Department of Biology), also, how to involve actors who can contribute to the project and development of the exemplar.

Work with Osmos started in December and it was continued in 2021 through their support in the application of tools (tools for engaging with stakeholders, type of interaction, approach) etc within the project. The workshop was held in May 2021 with the main aim to explore stakeholders, and provide us tools and exercises to better identify and connect with stakeholders (Sarajevo was the first city to complete this workshop)

More on:

https://www.youtube.com/watch?v=8nm4C3CKmQ8&list=PLDKIXfg_m8sd5xuwllrkZDElcGsrYcW4C

STEP 4 - Introduce your nature-based solution exemplar

The exemplar in Sarajevo will be focused to include following segments: societal, economic and environmental, but also to connect different age groups.

The idea is to create an urban garden and sensory park which will have multifunctional purposes and will be open to all citizens, but it would be adjusted to special target groups.

The exemplar includes design and implementation of green garden and sensory park within the Secondary Vocational Education and Training School. Location of the School is in the Municipality of Novo Sarajevo, urban area, surrounded by the pedestrian lane by the river on the one side and busy street with residential area on the other side. Nearby the School there are other relevant institutions/organization: elementary school with children with disabilities, centre for healthy ageing, municipality, shops, kindergarten, elementary school etc. This surrounding is important for the purpose of the exemplar and main activities (urban gardening day, cross generational exchange etc).

Beside the establishment of the garden, exemplar will include use of the artistic tool developed within the project (e.g. Memory work, Eco Therapy, Immersion in Nature



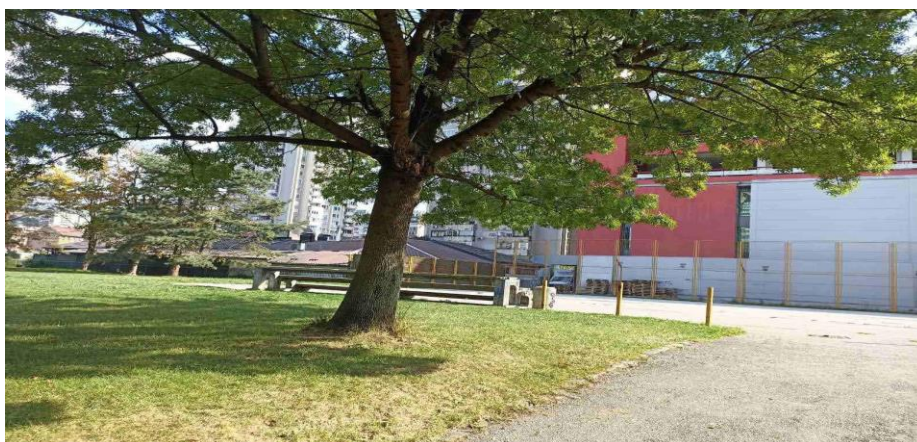
and Body Mapping). This tool will be implemented in order to connect people with the nature and inspire them to spend more time in nature and participate in activities envisaged in the urban garden. Also, the tool is recognised as appropriate to gather different generational groups (youth and elderly people) to share their experiences. In this way, it will foster intergenerational exchange, but also it will provide socialisation of the specific target groups who are often disconnected from the society (elderly).

The main aim of exemplar is to create a multifunctional green area within the urban part of the city, which will be a pilot project and replicable in other areas. Decision on the exemplar which includes implementation of a green garden is based on real needs of the city (lack of green areas), but also as a tool for solving issues detected by government such as air pollution due to heating system, traffic, deforestation etc.



School yard

Size of the area for the exemplar is approx. 1500m², surrounded by a busy street and pedestrian lane/promenade, next to the river.



School yard

Beside the establishment of the garden, exemplar will include one additional important element - artistic approach to connect with nature (The Sarajevo Process) which is developed within the Connecting Nature project.



The green garden and sensory park will have double purpose: 1) it would provide multipurpose area for the pupils² of the School (urban garden will be used for learning and sensory park will be used for developing motoric skills of the pupils) 2) it would include various activities (e.g. urban gardening day) for various target groups in order to provide societal, economic and environmental segments, but also to contribute in solving issues of Sarajevo (air pollution, raising awareness on importance of nature in everyday life etc). Taking into account that urban garden and sensory park will be located in urban area of the city, and it is surrounded with streets open for traffic (creating pollutions and noise) with evident lack of the green areas, the exemplar will be oasis for local habitants and members of the school and other above-mentioned institutions/organisations.

In setting up the garden and the park, the partners will be municipality, school, centre for healthy ageing, company Greens (socially responsible company which employs persons with disabilities and produces microgreens). We will involve KJKP Park, public company in charge of greenery, for donation of seeds and plants. These are the main actors in implementation of the garden. For sustainability, beside these actors, it is important to involve other actors: Centre for Healthy ageing and elementary school for children with disabilities for creation of activity plan and various events and activities within the garden (e.g., "the urban garden day"). Important part of the activities will be co-production, ensured through The Sarajevo Process (the memory work, body mapping, eco therapy) which will have multiple values - creating connections between participant and benefits for health and wellbeing (stress release, calmness etc). It is planned develop "urban garden membership" and have symbolic badges or stickers, and data base of people who are participating at maintaining the garden. All these activities will be followed by a journalist who is active in writing articles about urban agriculture. And all activities will be filmed. We will suggest promoting this urban garden through social media (FB/Instagram) Urban Garden Sarajevo.

STEP 5 - Position this report Explain the big picture

Taking into account the specifics of the city, as well as the needs and challenges it's faces, and the problem it currently has, exemplar is one of the steps, but also a way to contribute to solve the city problems and to improve the quality of life.

Thus, the Sarajevo Team started from the exemplar goal, activities that are needed to achieve the goal, and through the definition of activities, the Sarajevo Team came to a set of needs that will enrich the exemplar and implement it in a way that has multiple purposes.

Connecting Nature framework allowed the Sarajevo Team to fantasize, and to go a step further and think long term and to see the exemplar as one of the steps in its development and upgrading.

It covered main phases:

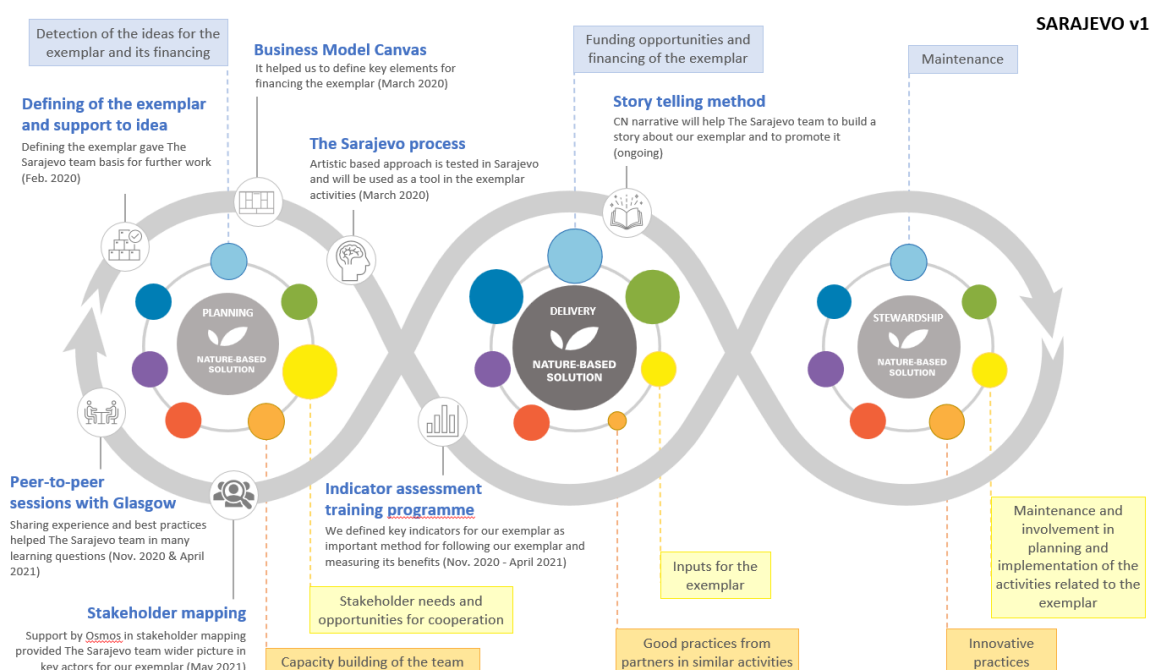
² School attendants are children with intellectual and/or physical disabilities



Planning phase: included detection of ideas for the exemplar and its financing – defining the exemplar provided the Sarajevo team basis for further work, including peer-to peer sessions with FRC Glasgow – sharing experience and best practices helped the Sarajevo Team in many learning questions and stakeholder mapping – gave the Team wider picture in key actors for the exemplar; Business Model canvas helped the team to define key elements for the financing the exemplar and The Sarajevo process – artistic based approach firstly tested in Sarajevo, which will be used as a tool in the exemplar activities.

Delivery phase: included activities regarding funding opportunities and financing the exemplar, ex-change of good practices in similar activities (Glasgow, Poznan, A Coruna) and inputs for the exemplar – stakeholder needs and opportunities for cooperation; indicator assessment training programme – defining key indicators for the exemplar as important method for measuring the benefits.

Stewardship phase will involve maintenance of the exemplar and its replication in other areas of the city, but also ambition to create sustainable model for the design and implementation of the urban gardens and its recognition as strategic project of the city/canton.



The co-production, as one of the elements of the Framework was great tool for the Sarajevo team to get reflections, opinions, to ex-change ideas and good practices and to apply in the exemplar defining. It helped the team to solve certain dilemmas on the exemplar (e.g. financing, involving experts etc – were topics with peer to peer sessions with City of Glasgow).

Main transformation points in this process are shown here:

Transformation points



Defining of the exemplar and support to idea



Stakeholder mapping



Business Model Canvas



The Sarajevo process



Peer-to-peer sessions with Glasgow



Indicator assessment training programme

What is important to point out is that exemplar, even when implemented, can be upgraded and different functions can be added for different target groups.

The innovative aspect has been there since the beginning of the development of the framework, through the participation of several people and departments, sharing ideas and brainstorming, but also considering exemplar from more angles and what effects we achieve with its implementation.



Co-production

STEP 1 - Define the goals of the co-production process

The Goal for co- production is to have legitimacy of process, to mobilise and empower local actors. The Sarajevo Team intention is to include all relevant stakeholders in the process. In the process design, relevant experts are needed. During the development of the CN framework and Business model Canvas, Agency and City staff determined various stakeholders who could contribute to its design and development. In the planning phase, it is important to see what stakeholders need and what opportunities are for collaboration. In the delivery phase, the Sarajevo Team will gather their inputs for the exemplar and later we work on maintenance and further development of the exemplar. This approach will also provide new experiences and learnings to the team.

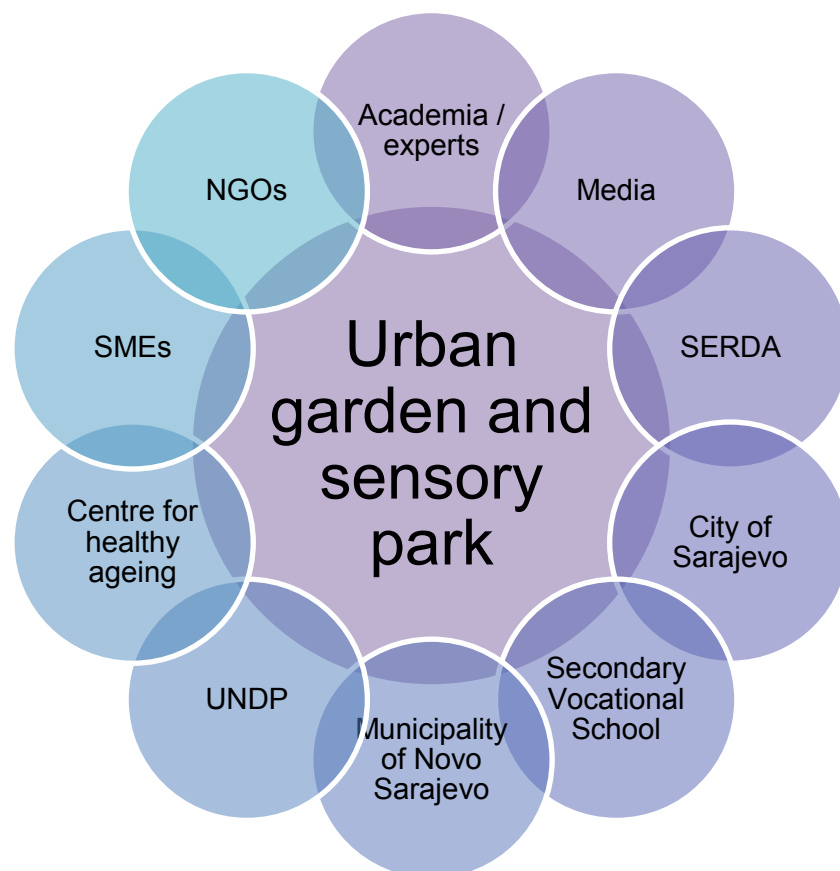


This will also provide adjustment of the exemplar to the needs of the specific target groups (e.g. inclusion of children with disabilities).

Usual practices in project design and implementation include targeted stakeholders which are directly involved in the project and have direct benefits (financially or other kind). Wider picture of the stakeholders and target groups is not included or its involvement is very limited.

New practices show that better effects and results are achieved if we include different actors in different stages of the projects (depending on several factors such as interest, possibility of contribution, final goal etc). In this way sustainability can be ensured, but also replication is easier. Therefore, the Municipality of Novo Sarajevo was informed and invited to support the exemplar. Also, it is important to encourage community engagement in all phases, as they have jurisdiction in some important aspects (permits etc).

Our exemplar in the co-production process in the very early phase included staff of the Agency and the City, with different profiles and experience in order to ensure a wider picture of the exemplar and to have a comprehensive approach (economists, architects, legal advisor etc).



STEP 2 - Use the design principles to flesh out the coproduction goals and structure

During the co-production process, taking into account the exemplar, the project team became aware of inclusivity needs. On one side, the exemplar can be implemented with not so much involvement of various stakeholders (in order to avoid possible problems



or disagreements), but on the other side, this approach will not generate effects of the design and development of the exemplar.

For the project team, the exemplar is a new innovative project in Sarajevo, which can be recognised as valuable, therefore, our main intention is to ensure smooth implementation and its sustainability and upgrade.

The team will work on following principles:

- inclusivity - firstly through stakeholder mapping, by involving different age generations, local citizens;
- openness: by providing various activities available to the stakeholders and beneficiaries and building trust among them;
- legitimacy: by institutional support of the local community.

STEP 3 Plan the co-production steps and activities

Urban garden with sensory park can be implemented in several phases and can include more objectives (not only infrastructure works, but it can also be an exemplar of environmental protection and provide tools for social cohesion, cross generation networking etc). Also, as Sarajevo has a wide number of the gardens around and between buildings, this exemplar can be replicated in other locations. It is important to mention that during Osmos visit to Sarajevo, lack of quality green space in the city is identified as one of the issues, and that urban gardening can be one of ways to improve the local social cohesion.

Certain activities are implemented before designing the exemplar, actually, based on these activities, the Team was able to define the exemplar and its main elements:

Finance and business model - identifying opportunities for financing was done during the workshop and the team identified some of the financing opportunities such as embassies, local funds etc. The main ideas were: collaborating with ambassadors, the Sarajevo team have prepared a proposals for the Czech and Slovak embassy. As a result, the team submitted several applications for funding submitted e.g. Slovak embassy, Czech embassy (but this is challenging because many funds go to covid relief).

Initial meeting with the Municipality and the School - in the initial phase it was important to present the idea and to get approval, then to set the size and shape of the urban garden in order to establish cooperation between key actors, agree on main project activities, timeline and necessary resources in order to explore other funding options. Key actors in this activity are: SERDA, City of Sarajevo, Municipality Novo Sarajevo, Secondary Vocational Education and Training School, Centre for healthy aging. This was done through informal meetings + tour around the School + viewing of the location of the urban garden and collaboration on draft design of the exemplar with main elements. In this phase speaking informally creates a more positive vibe for future collaboration.



Identifying SMEs active in greenery: SME Greens, Public Institution Park etc), with support of local experts (architect, horticulture) in order to involve experts for the implementation of the exemplar. This was done through SME survey to identify businesses, difficult to attract interest in the planning phase, hopefully easier in the delivery phase.

Inter Department collaboration within the partner institutions etc: involving middle management, making sure to first build the reaction and later "ask" for help and informing the high management level for approval.

Urban garden and sensory park can be implemented in several phases depending on several factors: available budget, conditions for implementation (weather, school plan etc) and it will promote wider objective (not only preparatory and infrastructure works, but also it will be exemplar of multiple combined aspects - environmental protection, tool for social cohesion, place for learning and rehabilitation etc).

Activities will be implemented in the following phases:

- Establishment of cooperation between key actors (SERDA, City of Sarajevo, Municipality Novo Sarajevo, Secondary Vocational Education and Training School, Centre for healthy aging) with agreement on the exemplar design and its content³, implementation dynamic, main project activities, and necessary resource
- Implementation of the project on selected area with project added values (work with children and elderly people – intergenerational exchange, social inclusion of pupils with disabilities)
- Cooperation with other city municipalities in order to implement similar project in other schools, centres for healthy ageing and other organisations (kindergarten etc)
- Promotion and raising awareness of NBS and its multiple benefits
- Advocate for improvement of institutional framework for NBS implementation on municipal and city level
- Based on the experience of this exemplar, identify and design draft of sustainable model for NBS design and implementation

As supporting partners can be involved: UNDP, University of Sarajevo (relevant faculties), SMEs (to promote its products/services and provide it for the exemplar) and NGOs dealing with environmental protection, youth etc.

Project partners will include Public enterprise Park (which maintains green areas within the city and canton) and/or some private SME which will provide materials and later maintain the garden in the future.

The exemplar would be presented to the relevant ministries (for environment, education, economy) in order to replicate and implement urban gardens in future. City “ideal” governance model for long-term management of the exemplar will be a

³ Exemplar shall be adjusted to the pupils with physical/mental disabilities (e.g. included tactile path, outdoor furniture adjusted to the wheelchair etc).



combination of the city and citizen managed urban garden. Local governance would provide a budget for managing and maintaining the urban garden (higher investments and works) and citizens would manage its parts during urban garden activities (cleaning, seeding, watering etc).

STEP 4 Select the co-production tools

The co-production process included brainstorming, exchange of ideas, and discussion on various approaches and the sense of jointly working on the same idea helped us to develop the idea of the exemplar which is multidimensional and multifunctional.

An important co-production tool that was firstly implemented in Sarajevo is an artistic based approach called the Sarajevo Process.

The Sarajevo Process (Pilot) is a co-creative arts-based engagement approach that has been developed by Connecting Nature partners in Trinity College Dublin and University of East London, in collaboration with cities. The process draws on our memories, places us in nature and captures our embodied experiences to help us tell our stories with/in nature.



The Workshop “Sarajevo process”, Body mapping

The Process was implemented in March 2019 in Sarajevo within the small group, including methodological process is composed of the following elements:

- Memory-work
- Immersion in Nature and Embodied Reflection
- Eco-therapy practices
- Body Mapping



The Sarajevo process will be key part of the Sarajevo exemplar in order to enable key stakeholders and in the city to tell the story of nature/NBS in Sarajevo, to engage with citizens to tell their stories and to use these stories to help the co-creation process for NBS and to design NBS to address a particular challenge in the city.

More concrete – the Sarajevo process was tested during public consultations on the exemplar with multiple purposes: to provide inclusiveness of the specific target groups into society (children with disabilities/other marginalised groups), to provide intergenerational exchange (youth and elderly people) and to raise awareness on nature importance for health and well-being.

The public consultations were organised in November 2021 in The School, including pupils and representatives of the Centre for healthy ageing. The Sarajevo team had to take specific approach to each target groups, and to adjust the story to their special needs and levels of understanding. Certain elements of Sarajevo process were very helpful in this task. For example, Memory Work, part of the Sarajevo process, was perfect for elderly people from the Centre for healthy aging. They used their photos and their reflections on their photos when they were connected with nature, to inspire themselves and others for visioning of our Urban Garden of the future. This tool was very successful in our co-production and co-designing process, and it helped the Team to get some great innovative ideas for the design of the Urban Garden. More on: <https://www.youtube.com/watch?v=wJXqTg2-Yew>.





It is important to mention that creation of the exemplar is continuous work and it requires changes and improvement in order to design it and implement it properly. Some of the processes which helped the Sarajevo Team to improve initial exemplar idea are: peer-to-peer sessions with Glasgow and their valuable inputs, OSMOS stakeholder mapping where we defined the most important actors for development of the exemplar in terms providing knowledge, financing, implementation phase, maintenance etc.

STEP 5 - Reflect on the co-production process and results

As a result of the joint work of the Agency and City, the exemplar is developed which satisfy more factors: it is in line with local, city and cantonal plans, it is in line with EU recommendations, contributes to health and well-being, can contribute in solving Sarajevo's issues (pollution, lack of green areas in the urban area), it promotes importance of the green zones in everyday's life of the city habitants and it is also focused on inclusive approach to the children with disabilities/marginalised groups and their integration into society.

The results of the co-production processes are: we were to build relations, we now recognise the main actors of the processes through stakeholder mapping and are able to present usefulness of NBS for the target group e.g. The School will see benefits for its users.

Main opportunities recognised are: many new elements to the co-production method: learning about the method & opportunities for implementation, we have experience

Business Model Canvas for Sarajevo exemplar



During our work on Business Model Canvas, special attention was on financing the exemplar, as the Team determined it as one of the possible obstacle (based on experience and current situation on COVID).

Therefore, during and after work on BMC, following financing opportunities were identified: involvement of government in order to provide systematic support (financing, technical preconditions, permits etc),

- by involving SMEs active in environmental protection in order to support them, but also to provide quality implementation and maintenance of the urban garden,
- to invite NGO sector to integrate their experience in designing the urban garden, and most important
- financing through available domestic and international funds.

Based on the knowledge and experience gained during the workshop, we identified environmental, social, economic and other values the exemplar will create.

The exemplar will create following environmental, social, economic values:

Environmental: improved accessibility to green spaces, air temperature reduction (for micro location, biodiversity increase, air pollution decrease, raising awareness on multiple benefits of NBS, community accessibility educational component of importance on environmental protection, more green areas in urban area

Social: cross generation networking, creating cooperation with various stakeholders, social cohesion, creating cooperation with various stakeholders, inclusion of marginalised groups, Community involvement in NBS implementation

Socio-cultural life in the city is increasingly transferred to open green spaces. Parks, squares, gardens and other categories of greenery contribute to the development of social life and provide the city population with the opportunity to gather in nature, connecting the useful with the beautiful.

Economic: new business attracted, public-private partnership promoted

Possibility of establishment of public-private partnership which is undeveloped and not used often. The exemplar will provide partnership between public institutions and private companies and NGO. The exemplar will also contribute to increase of the work for SMEs active in environmental protection and creation and implementation of the green solutions, especially if the exemplar is replicable. Although this kind of the project cannot be fully sustainable without support of the key actors in the process, additional activities can be planned, which can ensure economic value, e.g. use the garden for workshops, exhibitions, artistic projects etc. For example, in the city centre, between three buildings, there is a yard which is transformed into a concept store and café, with a lot of events during the summer, but the place is enriched with trees, flowers and herbal plants etc. Some of the events organised are: promotion of local products, art workshops etc which have elements of community building, support to local producers, artists etc. In terms



of the exemplar, it is important to mention that some of the SMEs started promotion of the planting and have their own products. For example, company Greens has its own plants (herbal and micro greens) and their products (e.g. planting set "Plant yourself") can be used for the Sarajevo exemplar.

Other: environmental educational and promotional opportunities, community building, health and well-being, NBS recognised in strategic documents and public budgets



Also, the Sarajevo Team tried to look and determine some negative factors related to our exemplar.

There are no determined negatives associated with urban gardens, but there are potential risks, such as: lack of systematic support of the local communities, not enough interest of the stakeholders, and proper sustainable maintenance of the green garden.

Urban garden and sensory park can be implemented in several phases depending on several factors: available budget, conditions for implementation (weather, school plan etc) and it will promote wider objective (not only preparatory and infrastructure works, but also it will be exemplar of multiple combined aspects - environmental protection, tool for social cohesion, place for learning and rehabilitation etc).

Activities will be implemented in the following phases:

- Establishment of cooperation between key actors (SERDA, City of Sarajevo, Municipality Novo Sarajevo, Secondary Vocational Education and Training School, Centre for healthy ageing) with agreement on the exemplar design and its content, implementation dynamic, main project activities, and necessary resources
- Implementation of the project on selected area with project added values (work with children and elderly people – intergenerational exchange, social inclusion of pupils with disabilities)
- Cooperation with other city municipalities in order to implement similar project in other schools, centres for healthy ageing and other organisations (kindergarten etc)
- Promotion and raising awareness of NBS and its multiple benefits
- Advocate for improvement of institutional framework for NBS implementation on municipal and city level
- Based on the experience of this exemplar, identify and design draft of sustainable model for NBS design and implementation

Due to limited budgeting for this purpose, The Sarajevo team decided to design exemplar in three phases which can be completed independently, but after implementation of all three phases, exemplar would have additional elements providing added-value and more content for users.

Three phases would roughly include:



- *Adjustment of the location (levelling of the ground, entrance adjustment, infrastructure works and equipment) with multiple purposes, activity plan will be established*
- *Exemplar additional elements (sensory elements and equipment for motoric skills etc) to ensure assistive technology*
- *Exemplar additional content (climbing wall, sensory room etc) to provide sensory integration*

Major ongoing costs are determined as follows: design of the urban garden, procurement of equipment, plants and seeds, preparation of the ground, expert for planting, promotion, costs of organisation various activities e.g., "urban gardening day", artistic based workshops (memory work, immersion in nature etc) or similar. Some of the costs in the initial phase can be reduced by involving relevant actors (public institution Park and SME Greens for donation of the seeds and plants), and maintenance can be done by staff of the School.

Costs can be reduced by involving project partners staff (mainly the School in managing and maintaining the exemplar) and various NGOs who are familiar with volunteering of its members and using funds available for BiH.

Possible measurable indicators:

- Economic: number of SMEs involved, number of events for SME promotion,
- Environmental: accessibility to green areas, decrease of air pollution, more biodiversity and green spaces;
- Social: evaluation/questionnaire for users (quality of content, impact on quality of life), number of participants events etc.

For the purposes of establishment of indicators, within WP 1, a set of indicators is developed and Impact assessment plan is created for the exemplar.

SERDA and the City made first steps in possible financing of the exemplar and applied for co-funding to the embassy of Czech Republic and Slovak Republic in BiH, evaluation results are still expected. Also, as opportunity for co-financing, UNDP is recognised and several meetings with their representatives were held. Cooperation is established for the activity of public consultation on the exemplar design, which were held in December 2021.

Also, SERDA and the City of Sarajevo started a series of workshops with OSMOS in order to identify key stakeholders - their identification and mapping. Within these workshops, capital is also identified which will help us to target stakeholders which can contribute to the financing part of the exemplar.

During the exemplar definition and planning of its implementation, main learning outcomes on financing, business and governance models have emerged:

1. Engagement of various stakeholders for design and implementation of the exemplar is comprehensive approach which will ensure that all elements of the exemplar will be included



2. Involvement of financing actors for exemplar implementation and sustainability through budget planning for maintain the exemplar and replication in other territories
3. Providing initial funds for the exemplar is first step which will ease further funding (pooling resources)
4. Creation of sustainable and replicable model can be one of the priorities of the local communities
5. Management plan for the exemplar will define mid- and long-term main steps in managing and maintaining the exemplar
6. Raising awareness on importance of NBS will have impact on NBE development

Governance

STEP 1 - Make the case: aligning nature-based solutions with the wider goals of a city or a community

During OSMOS visit to Sarajevo, following governance and decision-making process is determined: Planning is effective at a policy level however has lacked ambition and capacity at the urban design, implementation and regulation level. -Many layers of bureaucracy. With Sarajevo being the focus of investment, tourism, business and identity, it lays to claim by all levels of government. Due to the layers of government, there is a huge overlap of competences. This shows a serious trust deficit that causes each level of government to second guess the intentions of the others. The result is a diffusion of competencies and poor investment in qualified and competent administrative staff to handle complex projects. Politicians have a vested interest in divisive rhetoric, which harks back to the tension fabricated over three decades ago. However in practice religion plays little into the administrative level where there is even a noticeable balance between male and female staff. The deputy ministry contains stable technical staff that are not bound to politics and help deliver long-term projects. Policy and planning is irrelevant if developers are not punished for illegal development. This is in part due to corruption of local officials (who are paid little) and corruption of decision makers. The developers are said to be aggressive and reprehensible which has resulted in physical harm to building inspectors.

This issue is important to mention in order to take them into account during the development of the exemplar and to avoid some obstacles during its implementation.

As noted earlier, City and the Agency developed the exemplar based on real needs of the city, but also in line with the strategic goals of all levels of the government, as the exemplar is one of the steps in solving main issues and challenges of the BH cities (Sarajevo is not the only city fighting with the pollution - bigger cities as Zenica, Tuzla, Banjaluka, Maglaj etc have the same issue).

It is important to mention that the City of Sarajevo, although sometimes do not have authority for certain things, its management is determined to work and implement strategic projects which can enhance the city such as Smart City Initiative, Future cities of SEE, Energy efficiency at Primary school Saburina, Trebević Cable Car etc.

STEP 2 - Current status of the location

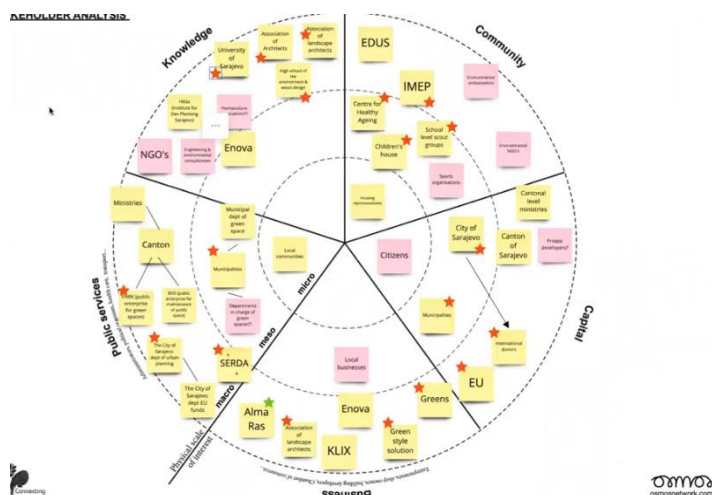
Location for the exemplar implementation is in the city urban area, Municipality Novo Sarajevo, close to the city centre and will be implemented based on agreement with the School. It is surrounded with residential buildings, on the one side there is a street (24h open for traffic), on the other side is the promenade next to the river Miljacka. In this environment, the exemplar will be located, and it perfectly fits to enrich this area and to provide more activities for inhabitants.

The place is managed by Secondary Vocational Education and Training School, which has a yard for their purposes. Management of the School maintains this area (cutting, cleaning etc).

STEP 3 - Who are the required partners

The work in the identification of the relevant actors/stakeholders started in 2018 by Osmos visit to Sarajevo. Preparation activity included identification of the stakeholders: public services, business, capital, knowledge and community, where the Sarajevo team identified the most important institutions/organisations. The Osmos conducted exploratory interviews and created the report.

The aim of the exploratory stage of interviews was to recognise stakeholders who can be part of a longer stakeholder engagement process - to become more active partners and to support project activities.

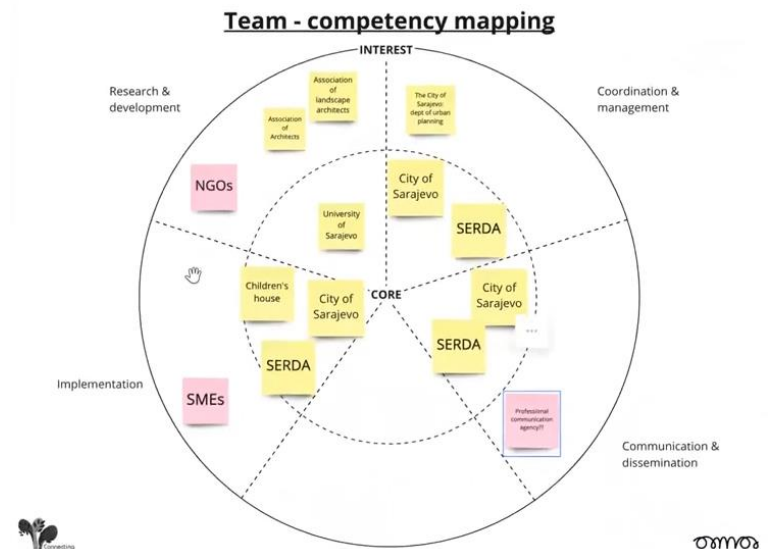


Taking into account complicated administration/jurisdictions and lack of knowledge on NBS in Bosnia and Herzegovina, the Sarajevo team asked for support of Osmos in more depth identification of the stakeholders, especially in terms of financing and who to use existing resources and how to engage them in the all phases of the exemplar.

Osmos supported project partners by organising the workshop on stakeholder mapping and engagement and open innovation team. The workshop was organised in 2020 and helped the Sarajevo team to check already identified stakeholders and to see opportunities for cooperation for more institutions/organisations on micro, meso and macro level.

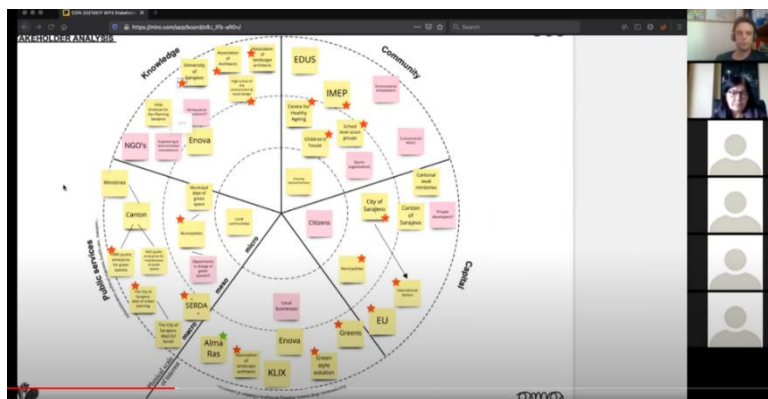
Penta helix stakeholder analysis included recognition of the most important actors and benefits they can provide to the exemplar, but also their level of interest in the project activities (collaborative/opposed, active/passive).

The Team – competency mapping included identification of the core team including research and development, coordination and management, implementation and communication and dissemination and their level of interest.



Also, Osmos completed the topic on end users' identification, creation of their profiles and persona as one of the tools which help to be more specific and targeted in order to find the most appropriate way to reach them.

The gained knowledge Sarajevo team used to motivate additional stakeholders to contribute to the project – e.g. the team had meeting with Faculty of architecture in order to provide expert's opinion and suggestions of the exemplar, the team also confirmed earlier conclusion of necessity to have institutional support and to include local government in the exemplar, the team also identified most important SMEs active in environmental protection who can further develop if they also gain knowledge and practices on NBS.



Workshop on Stakeholder mapping

The mentioned workshops and brainstorming provided the Sarajevo team clear picture on necessary elements of the exemplar and what to take into consideration, but also it affected to the exemplar in the most positive way - to introduce some innovative aspects within the exemplar in order to include more

target groups (e.g. initial meeting with the Municipality led the team to the location of the exemplar - school and discussion with management of the school opened cooperation with their experts for the inclusion of the children with disabilities and how to integrate them into society).

Therefore, the Sarajevo team after completing the workshop with Osmos got main actors identified, the structure of the open innovation team, main target groups, end users and got new tools for the stakeholder engagement.



The workshop was excellent way to gain new knowledge and practices which can be used in all phases of the project and stakeholder engagement provided systematic identification, analysis, planning and implementation of actions designed to influence stakeholders and to include them in more active and long-term way.

Based on gained knowledge and advices from Osmos, but also other partners (e.g. City of Glasgow) The Sarajevo Team identified Key partners in the first phase: SERDA, City of Sarajevo, Municipality Novo Sarajevo, Secondary Vocational Education and Training School and Centre for healthy aging as main operational and implementing partners. The exemplar can be implemented within these institutions. Also, as the exemplar includes urban garden, it is necessary to include public or private enterprise for providing materials for the exemplar. Project partners will include KJKP Park (which maintain green areas within the City and Canton) and/or some private SME which will provide materials and to promote its products/services and provide it for the exemplar and other local companies who can contribute to the exemplar (e.g. www.farmer.ba, online shop of domestic products, where the exemplar can be promoted and their users can be invited to join). Currently, The Sarajevo Team works on operationalisation of cooperation with key actors.

As supporting partners can be involved: UNDP, University of Sarajevo (relevant faculties), and NGOs dealing with environmental protection, youth etc.

Later the exemplar would be presented to the relevant ministries (for environment, education, economy) in order to replicate and implement urban gardens in future. City “ideal” governance model for long-term management of the exemplar will be combination of the city and citizen managed urban garden. Local governance would provide budget for managing and maintaining the urban garden (higher investments and works) and citizens would manage its parts during urban garden activities (cleaning, seeding, watering etc).

In later phases, relevant ministries on other state levels will be included, as well as various potential donors. Taking into account planned promotion, embassies and other international organisations will be target groups for project involvement.

Currently, it is planned to design the exemplar through phases and additional stakeholders will be attracted in creating a bigger picture of the exemplar and its replication to other areas.

STEP 4 - How will you work together?

SERDA and the City have long term successful cooperation and the City provides support within the project in order to achieve greater results. For both institutions it is important to strengthen their capacities and to gain new knowledge, therefore project staff is determined to fully commit to the project and the exemplar. Within other projects, both partners already established cooperation within various institutions and organisations. In order to create something sustainable and valuable, different partners will be included (depending on the phase -Agency and the City will consider tides to create internal plan for their engagement - who, when and what for to engage). For this, it is not only important to ensure the financial aspect of the



project, but also it is our goal to create a model for the exemplar within which can be adjustable (depending on real needs of each area) and replicable, but also the goal is to create something which can be upscaled.

STEP 5 What will you need to succeed?

In order to be successful, main preconditions shall be fulfilled: joint interest of main actors and real need for the activities, which are achieved. Project partners (The Sarajevo Team) have the knowledge and skills to monitor and implement activities, as well as to act on risks and possible problems in a timely manner.

For these reasons, the project partners have formed a team that has prior knowledge and is dedicated to project implementation, and will include other relevant stakeholders: architects, horticultural engineers, urban departments, and will introduce a segment of education.

Also, partners who can contribute to economic value will be involved, and we expect the exemplar will support the development of the economy and small businesses.

What is especially specific for Sarajevo exemplar is the implementation of the Sarajevo process which is an artistic based approach and connection with nature. This will be especially important and useful, and we expect it to have effects in cross generational exchange. The Sarajevo process can be used within the exemplar, but also among project partners in order to strengthen connections and to share experience.

Impact assessment

STEP 1 - Engage in structured reflection on NBS impacts, pathways and trade-offs

When it comes to the strategic goals of the City of Sarajevo and Canton Sarajevo, it is important to mention that the last Development strategies were until 2020, therefore, the new ones are in the process of development (for both levels).

The City and the Canton, as well as other levels of government in BiH, are aware of modern times and the need for development of the city and urban areas, but on the other hand, development in all segments can lead to negative impacts on the lives of citizens.

In this regard, the first strategic goal in **Development Strategy of the City of Sarajevo 2016-2020** was defined, as well as the need for development of green areas in the city, as one of the long-standing problems, but also the protection of existing ones.

Strategic goals of the mentioned strategy are:

1.	Protection, development and promotion of historical features and cultural contents of the city in the function of building Sarajevo as a world tourist destination
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2.	Revitalization of Sarajevo as the World Winter Olympic Centre
3.	Reform of the constitutional - legal position and administrative - territorial organization of the City
4.	Support to the education system in the areas of non-formal education, lifelong learning, education of persons with disabilities, vocational guidance and specialized educational programs
5.	Creating a favourable business environment
6.	The balance between urban development and environmental protection
7.	City administration reform

Although the strategy is due date, we believe strategic goals regarding creation a favourable business environment and the balance between urban development and environmental protection will be focus of the new strategy. This is important because these goals are directly related to the exemplar. Also, the Sarajevo Team is indirectly involved in creation of the new strategy, therefore, NBS will be proposed as one of the priorities within city's strategic goals.

At the cantonal level, the quality of people's lives in the context of the environment is especially emphasized (Development Strategy of Canton Sarajevo 2016-2020).

It is also important to mention **Strategy⁴ of the Municipality of Novo Sarajevo** (integrated version until 2023), which foresees following strategic goals:

Develop the economy with a focus on the creative industry and the developed service sector

Improve the quality of life and safety of citizens

⁴ Strategy of Municipality of Novo Sarajevo 2021-2027 is in draft version



Improve environmental protection based on the model of developed European cities

The Sarajevo team proposed NBS and green infrastructure as one of the priorities of the new Strategy of Municipality of Novo Sarajevo, the proposal is adopted and integrated in the Strategy draft.

Green Action Plan of Sarajevo Canton 2021-2025 foresees following goals:

- Improve air quality in line with EU standards
- Improve water efficiency with sustainable water services for all users Improve and maintain the condition of surface and groundwater in Canton Sarajevo in accordance
- with water management plans of the Federation of BiH
- Protect and improve soil quality in the entire Sarajevo Canton
- Expand and improve the provision of high quality and affordable green areas
- Reduce greenhouse gas emissions
- Maintain and improve natural environmental resources by protecting biological diversity throughout the Sarajevo Canton and Reducing the impact of human activities on biological diversity

It is important to mention that Sarajevo team with the support of the project partner Helix did comparison of the strategic goals of the above-mentioned documents with UN SDG.

Providing systematic support to NBS shall be one of the main tasks of the governments of all levels (depending on project scale) and relevant institutions (ministers, institutes for development etc), with inputs from relevant stakeholders (NGOs, education organisations etc) to create useful measures which provide long-term sustainable growth. This approach can be led by the government (but there is a factor of bureaucracy) in all phases involving stakeholders when and where appropriate. Important task in the development of NBS is their maintaining and their impact which must be measured. Therefore, when developing strategic goals and priorities in this segment, the baseline shall be well known and a set of indicators developed, following a methodological framework for this kind of document

STEP 2 - Choose appropriate indicators

Project partners participate in the series of webinars dedicated to the impact assessment and determining appropriate indicators for the exemplar. This process was



lead by project partner UDC and the Sarajevo Team participated in 5 webinars, organised in Building blocks.

Building Block 1 included linking City's strategic goals with the UN development Goals (SDGs) and NBS description. Important part of this Building block was development of the Sarajevo's Theory of change – defining NBS objectives, NBS actions needed, expected results and determining assumptions, synergies and trade-offs.

Building Block 2 was focused on choosing appropriate indicators (primary indicators, environmental, economic, social etc.).

The Sarajevo team defined some of the indicators related to the exemplar.

Determined measurable indicators related to the Sarajevo NBS are:

- Economic: number of SMEs involved, number of events for SME promotion,
- Environmental: accessibility to green areas, decrease of air pollution, public green space distribution, species diversity, community accessibility, biodiversity increase, air quality change;
- Social: to develop general wellbeing and happiness, mental health, solidarity between neighbours, tolerance and respect, environmental education opportunities;
- Participatory and governance planning: diversity of the stakeholders involved, transparency in co-production, community involvement in NBS implementation.

Within the Building Block 3 The Sarajevo Team was focused on development of data plan for Impact evaluation, where for each chosen indicator baseline data, source, granularity and periodicity was determined.

Building Block 4 Implementing the Data plan covered new data collection of the exemplar scale from the methods proposed in the CN Indicator Reviews and the Building Block 5 Integrating evidence into policy process which included type of evidence for the chosen indicators (documentary report, visual chart) and to whom the city will communicate the impact of the NBS (scientific partners, economic sector, higher political levels, media or citizens).

For the purposes of establishment of indicators, within WP 1, set of indicators is developed and Impact assessment plan is created for the exemplar.

The Agency and the City of Sarajevo defined the indicators that will be monitored and measured, in cooperation with project partners and with the support of the University of Slovenia.

Nature-based enterprises

STEP 1 - Awareness and strategic alignment

The economic development of the City but also the entire country is one of constant challenges that Bosnia and Herzegovina faces. The reasons are multiple- complete



devastation of the city in the war, weak allocation for the real sector (SMEs), lack of systematic support from the state for SMEs and poor monitoring of investments.

Traditionally, the wood processing and metal processing sector, as well as the tourism sector, are the most developed in the whole BiH; while in recent years the IT sector has also experienced development. Support through grants is mostly aimed at companies from these industries, especially at companies who export their products/services on other markets (regional and international).

Small businesses also strengthen the economy of a country, and countries with more developed economies rely on small (family) businesses, so support is directed to start-ups from the initial phase to the maturity phase. In addition, small businesses, in addition to financial, need other types of support - strengthening human capacity, marketing, networking etc. There are private initiatives that provide these types of

support for SMEs - the creation of common platforms, the organization of promotional events, fairs, etc.



Activities organised within the yard in the city centre

For example, in the city centre, between three buildings, there is a yard which is transformed into a concept store and café, with a lot of events during the summer, but the place is enriched with trees, flowers and herbal plants etc. Some of the events organised are: promotion of local products, art workshops etc which have elements of community building, support to local

producers, artists etc. In terms of the exemplar, it is important to mention that some of the SMEs started promotion of the planting and have their own products. For example, company Greens has its own plants (herbal and micro greens) and their products (e.g. planting set "Plant yourself") can be used for the Sarajevo exemplar.

When it comes to the strategic goals of the City, it is important to mention that the last Development strategy of the City is until 2020, therefore, the new one is in the process of development. Higher level of the city is cantonal level and there is a similar situation. Current Development Strategy of Canton Sarajevo for the period 2021-2027 is in draft version, but data presented here are used from draft version, which is expected to be adopted until this year.

Vision of the development of the Canton Sarajevo: "Sarajevo Canton is a European, dynamic and creative region, prosperous for the citizens of all generation, comfortable living and lucrative business", and strategic focuses are defined in line with the vision.

Following strategic focuses are defined:

1. Functioning of the employment system and competitiveness of the economy



2. Availability, quality and sustainability of public services (health, education, social policy, culture and sport)
3. Environment and public infrastructure for the purposes of the sustainable development and raising quality people's lives
4. Efficiency and accountability within the public sector

and it will be implemented through following strategic goals:

1. Improve the competitiveness of the economy and increase employment
2. Create conditions for inclusive socio-economic growth and decrease poverty and improve accessibility and reliability of all public services (health, education, social politics, culture and sports)
3. Responsible environmental management, space, natural and infrastructure resources
4. Improve efficiency and accountability public sector

For each strategic goal, measures are identified with indicators expected (baseline and expected value). It is important to note that the strategic goals of Canton are in line with strategic goals of the Federation of BiH and in line with sustainable development goals in BiH.

Strategic goals directly and indirectly affect development of the SMEs as they create conditions for economic growth. This is important for all sectors, but especially for NBEs since NBS are underdeveloped in BiH and still do not have importance as they should have.

It is important to mention that SERDA and City of Sarajevo started activities to involve NBS into local and city strategic documents.

Namely, SERDA, as a member of the team for creation of the Strategy of Municipality of Novo Sarajevo, proposed two projects:

- ✓ within Strategic goal: To improve quality of life and safety of citizens - project "Development and implementation of urban gardens that encourage inclusion, community engagement, and social and economic activities at the local level" and
- ✓ within Strategic goal: To improve infrastructure and environmental protection following the example of developed European cities - project "Development and implementation of green infrastructure in the Municipality of Novo Sarajevo".

Therefore, planned NBS will contribute to achieving of the strategic goals, especially taking into account that this model will be replicated to other areas. Activities related to the NBS will be focused to SMEs, citizens, NGOs and public sector in order to involve them in NBS planning and implementation. As already mentioned, there is lack of SMEs directly active in NBS - usually they are involved in some green solution, therefore, after their identification, relevant SMEs are involved to contribute in development of the NBS, but also to recognise activities useful for their development (e.g. raising awareness on NBEs and economic benefits etc).



STEP 2 - Building alliances

As already mentioned, companies from non-traditional sectors, dealing in environment, green solutions or similar, are not represented in BiH in large numbers, and in their work they have various obstacles. It is especially difficult for such companies to position themselves on the market and reach their consumers. However, the latest trends are focused on environmental protection and ecology in all segments (lifestyle, nutrition, physical activity etc) and citizens' awareness of these segments is developed (but insufficient), but NBEs are increasingly represented in the market. This refers to NBEs that deal with horticulture, green areas, etc. These NBEs are active in developing and providing innovative solutions (e.g. for city challenges such as lack of green infrastructure), but there is still no systematic support to these kind of activities and no dedicated budget in public budgets. So, usually these NBEs are looking for opportunities by themselves from available funds (UNDP, EU, local etc).

NBEs that deal with other forms of environmental protection in the last 10 years have been on the market and deal with energy efficiency, pollution reduction, etc.

Companies that deal directly or indirectly with nature-based solutions have experts and staff who can contribute to the development and implementation of examples, especially bearing in mind that experts in companies are also professors who deal with scientific research.

In this regard, more attention to NBS and therefore to NBEs is necessary, as it has multiple benefits: economic development, environmental protection, social cohesion, health benefits etc and it shall be recognised by government to start investing and to focus on its promotion.

Taking into account the fact that NBS are not strategically recognised in BiH, there is no funding for these purposes. At lower levels of the state (municipal, city, cantonal etc) there is certain progress of implementation of NBS, but until now mostly unsuccessful due to few reasons (unadjusted NBS for the environment, lack of practical knowledge on NBS functioning and no maintenance secured). There is a causal relationship between development NBS and NBE – therefore lack of knowledge on NBS (purpose, benefits etc) is main reason why SMEs in this sector are not recognised as one of the key factors for their development.

Urgent need for NBS in Sarajevo (and whole BiH) can be solved by investing and supporting NBEs, especially taking into account Sarajevo problems (air pollution, fog and smog, air temperatures, lack of multifunctional green spaces etc). This can be part of strategic documents and action plans for support of local economy and SMEs, but also part of the documents related to the city development. It can be done by recognising importance of the NBS for the city and then creation of measures for the NBEs (raising knowledge, good practices, cooperation with EU SMEs etc).

In this regard, more attention to NBS and therefore to NBEs is necessary, as it has multiple benefits: economic development, environmental protection, social cohesion, health benefits etc. Also, more attention shall be focused on raising knowledge how to support NBEs, especially in public institutions and policy makers (all levels).



STEP 3 Planning, implementing and monitoring a customised support programme

The NBE strategy is still in the development phase, and during the NBE survey, SERDA and the City identified the most important NBEs and invited them to participate in the project, and they registered on the NBE platform, which provides new opportunities for cooperation. It is important to point out that local SMEs will establish cooperation with companies from other countries, and thus transfer good practices and implement new solutions.

During the design of the exemplar (and we expect the same during the implementation), the city and the agency will rely on the experiences of partners, good practices and transfer it to BiH, in order for the example to be successful and sustainable.

The agency and the city have already had initial conversations and sessions with some of the partners regarding the implementation of the best exemplar solutions (Glasgow, A Coruna etc). Also, in order to share knowledge, we attended a webinar about an innovative program by the South Dublin County Council to deliver natural play spaces in the county, including the issues to overcome in delivering them and the benefits to children and communities. This is especially important, since our example is intended for all generations.

The exemplar can be defined as NBS for public and urban spaces (sub-sector: Green areas, parks and gardens) and main challenges faced are: lack of sufficient knowledge on NBS and financing of environmental projects (lack of funding).

Based on experience gained within the project, following goals of NBE programme are defined:

- Strengthening capacities of the NBE
- Designing sustainable model for design and implementation of the urban gardens.

This goal can be achieved through following elements/activities:

- Co-production process and collaboration with public and private sector, with the support of international organisations, embassies etc. in raising awareness of necessity of the NBS (and its benefits)
- Developing concrete measures for support to NBS (and NBEs)
- Promoting public-private partnership
- Creating and organising educations and trainings on 1. Environmental protection 2. Fundraising (EU funding, local funds etc).

Planning a programme to support nature-based enterprises

Through the NBE strategy, the city and the agency will define the inclusion of NBEs, not only in the implementation phase, but also in the example maintenance phase. Also, since the goal, through this example, is to create a basis, ie. model for the establishment of urban gardens, the partners consider ways to include projects of this



type in the planning documents and the provision of funds through the budgets of municipalities, city and canton.

Since there is no strategic and systematic support to the NBEs and their active development, it is important to start with strengthening capacities of the NBE, dedicating grants for their solutions and to include them in designing sustainable model for design and implementation of the urban gardens.

Therefore, some conclusions raised regarding NBEs:

1. Development of NBS will lead to development of NBE
2. Local governments shall introduce NBS as strategic goal and support SMEs active in design and development of NBEs
3. Sharing good EU practises and networking can build capacities of the NBEs

NBE Strategy Summary Table

NBS	NBS Phase	Type of NBE Involved	Challenge	Goal of NBE Programme	How will this be achieved?	Partner	What does success look like and how will you measure it?
Urban Gardens	ALL	NBS for public and urban spaces (sub-sector: Green areas, parks and gardens)	<p>Lack of sufficient knowledge on NBS</p> <p>Financing of environmental projects (lack of funding)</p>	<p>Strengthening capacities of the NBE</p> <p>Designing sustainable model for design and implementation of the urban gardens</p>	<p>Co-production process and collaboration with public and private sector, with the support of international organisations embassies etc. in raising awareness of necessity of the NBS (and its benefits)</p> <p>Developing concrete measures for support to NBS (and NBEs)</p> <p>Promoting public-private partnership</p> <p>Creating and organising</p>	<p>SERDA City of Sarajevo Municipality of Novo Sarajevo Government of Canton Sarajevo with its relevant institutions (Ministries for environmental protection, for economy etc, institute for development planning)</p> <p>And support of specific actors: Schools, Centre for Healthy Ageing UNDP</p>	<p>No of SMEs with NBE elements</p> <p>Value of the support for NBS and NBEs</p> <p>Institutional recognition of NBS and NBE (in strategic documents, plans)</p> <p>No of NBS developed</p> <p>No of NBS implemented (including additional indicators: No of participants No of activities</p>



					educations and trainings on 1. Environmental protection 2. Fundraising (EU funding, local funds etc)		Feedback)
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Reflexive monitoring

STEP 1 - Rethink what learning process you need to achieve the goals of the nature-based solution

Goals

Through learning process (which is continuous) SERDA and City of Sarajevo defined main challenges of the city (air pollution, traffic, heating etc) Also, we identified of state of the NBS in Sarajevo (successful and unsuccessful), and our exemplar which is urban garden and the sensory park, its main purpose, technical details (size, location, surrounding etc.), our ambition, and we determined main issues/challenges we are facing.

Learning questions

Within the reflexive monitoring process, key learning questions were identified (who to involve, how to finance it etc), some of them are regarding issue on funding of the exemplar, process of involvement of target groups and stakeholders, technical details on exemplar and organisational and maintenance details regarding the urban garden.

Also, as part of the process, we provided a Dynamic learning agenda where our team defined main critical turning points, learning questions, CN framework element and follow up actions for each defined turning point. Our DLA defined in more detail these issues and transferred them into learning questions which were part of discussion with peer to peer learning sessions with Glasgow.

Learning environment

Our main take-away of using of the reflexive monitoring not only for our exemplar, but for our daily work, that for our exemplar would be useful to do stakeholder mapping and make an engagement plan. We also defined the workshop plan; the communication plan; visibility for the exemplar, as documents we need.

Our learning environment is created to follow daily tasks and to be easily fitted in our schedule. This approach provides us continuous updates on project progress. For some activities the project team has to follow internal procedure and project rules, so it is



work which is done within more daily activities. This environment provides us informal discussions (daily, weekly) by phone or email. Project team has long term cooperation (SERDA and City of Sarajevo) which provides better and smooth communication. More formal approach is required with other departments and institutions, but also with high levels in the institutions.

STEP 2 - Define the roles within the project team

Roles within the Reflexive monitoring team

Our Project team, as core team, has been established on projects beginning within the Agency and the City in order to establish a basis for successful implementation of the project. The project team consists of three managers who lead the process and follow all procedures, communication etc. Within the process, colleagues with specific knowledge are involved, depending on the phase (architects, urban planning department etc). The main principle of the work is a joint and flexible approach in defining activities and steps for their implementation. The core project team is also monitoring team, ensuring smooth implementation of the activities and reflexive monitoring system in every phase.

Stakeholder involvement

During Osmos workshop in February 2020, we discussed about Open Innovation team and its structure. This helped the project team to think about additional team members for the purposes of the design and implementation of the exemplar (e.g. we included architect from SERDA).

The conclusion was that partnerships will be essential to ensure that this pilot project can be launched, suitably funded and will engage the extensive range of local actors that are required or impacted by this kind of project. As there are many actors that could be involved in the long term, it is important to select a small but agile team for the pilot project. Involving too many partners may lead to complexity and confusion, while not involving the right partners from the beginning may also result in conflict.

We agreed to select a small group of those actors directly involved (those doing work, that own the land or are financing the project) while having a larger communications network to ensure that the development process can engage new actors in the long term.

In the forthcoming period, we will work on defining key stakeholders in Sarajevo and involving them concretely in the project.

Support on working with Reflexive Monitoring

Also, very helpful in reflexive monitoring process is support from project partners DRIFT and Glasgow, especially in DLA and its experience, but also communication with University of Slovenia, A Coruna City regarding sharing knowledge and processes regarding exemplar funding and indicators related to the exemplar. Other participants in the RM process are also other departments in City of Sarajevo, SERDA, University of Sarajevo, NGOs as possible partners regarding the exemplar.



In our work and using RM tools we use available project documents, attend webinars and use experience with other projects but also we have experience in using DLA within other projects.

STEP 3 - Recording important events and analysing critical turning points

Dynamic learning Agenda was prepared by the core project team, led by project manager from City of Sarajevo, based on our work and our exemplar definition.

process of creating DLA was interactive, followed by short discussions, sometimes by phone/email in an informal way, with the main aim to update each Sarajevo team member on a daily basis. Our approach is that one of the team members create a rough draft after the informal meeting, then we have another session to discuss and to complete the DLA.

Critical turning point/Event	Learning question	Connecting Nature Framework element	Follow-up action
Choosing the place for Urban Garden and sensory park	What place would suit the best targeted goals of the project?	Technical solution	<p>After assessment, contacting the School, owner of suitable green space (Playground for children</p> <p>Playground for dogs</p> <p>Busy street</p> <p>Promenade next to the river</p> <p>Centre for healthy ageing</p> <p>Elementary school near by for children with disabilities</p>
Designing the Urban Garden and sensory park	<ul style="list-style-type: none"> - What kind of expertise do we need? - How do we approach the designing process? 	Technical solution	Choosing the right experts and stakeholders who will participate in the process of the Urban Garden and sensory park designing



	<ul style="list-style-type: none"> - Who are the stakeholders? 		
Finding funds to get Urban Garden and sensory park operational	<ul style="list-style-type: none"> - How do we get initial funds to get started? - How do we create sustainable model? 	Finance and business models	Apply for relevant funds and develop self-sustainable model for the work of the Urban Garden and sensory park
Involving target groups (children, elderly, citizens)	<ul style="list-style-type: none"> - How do we approach target groups? 	Co-production	Approaching relevant institutions which gather our target groups (schools, Centers for healthy aging...)
Designing the Workshop Plan	<ul style="list-style-type: none"> - Who should participate in the design of the workshop plan? - Who should implement the Workshop plan? - How do we get funds for Workshops? 	Finance & business models, Entrepreneurship	Define who will design and who implement the Workshop plan, and who will it be funded
Opening the Urban Garden and sensory park	<ul style="list-style-type: none"> - Who will be the official owner of the garden? - Who will manage the Urban Garden and sensory park? - How will it be funded? 	Technical solutions, Governance, Finance & business models, Entrepreneurship	Define the ownership and management of the Urban Garden and necessary funds



Consistent Urban Garden Mondays (workshops)	<ul style="list-style-type: none"> - Who will be managing the workshop from inviting the participant all the way to assessment? 	Reflexive monitoring, Impact assessment	Define workshop management who will run the whole process
Promoting Urban Garden and sensory park as role model for the use of green spaces	<ul style="list-style-type: none"> - Who to include in designing of visibility plan? - What social networks to use? - Who will be in charge of promotional activities? 	Co- production	Define visibility plan and who will be in charge for its implementation

Peer-to -Peer learning sessions feedback on DLA

We presented our DLA to our FRC Glasgow in first peer-to-peer meeting. We created DLA and short presentation of the Sarajevo exemplar. The DLA was delivered to the Glasgow team before the meeting, it served us as a guide of the meeting and we heard about their experiences and we got some good advices. The second session was also productive, they provided us good directions and practical advices we are following now.

For example, we discussed with Glasgow about funding and involving with stakeholders. They advised us to include the university, e.g. university of Architecture, natural science faculty for indicators, look for synergies / mutual cooperation. FA follow-up action we took was to contact NGO consisting of professors from University of Architecture, who would contribute to the design.

STEP 4 - Use learning sessions to identify learning outcomes

Opportunities and barriers

As we mentioned earlier, we used reflexive monitoring processes in our daily work and it is a great tool for developing activities and to properly have phases of planning, co-production and finally implementation.

Some challenges associated with the process can be organisational - for example sometimes it is hard to organise other colleagues and partners involved to communicate with them - we all have other obligations aside the project, sometimes hard to find the time to suit everybody.

As added value, in our daily work RM helps us to see different perspectives of the project - something like brainstorming, helps to bring in different perspectives.



Widens our views and perspectives, which helps to minimise additional problems and risks. From the beginning we can better anticipate problems and react on them.

Lessons learned from Peer-to Peer learning sessions

As one of the examples of the learning process within the RM is applied advice shared by Glasgow: "Is it worth noting that when going through the process of identifying partners, record what you're doing, and the lessons learned along the way, so you have a record of what happened. It is also good to set some key objectives to measure against. Sometimes we are guilty of not thinking or planning for this sort of thing at the beginning of a project, we have had to do a lot of work on this" (RM Session no. 2). Based on this advice we think recording approaches can help us in the future - the idea is to make a replicable model, a solid basis (our experience) so the next garden can be improved.

Within the sessions, Glasgow shared their experiences with the process, which was quite academic, and the terms are not straightforward, therefore, they simplified the process and made it easier and more friendly (MR session no. 1). We were advised not to be afraid to adapt it and to apply it to the local level.

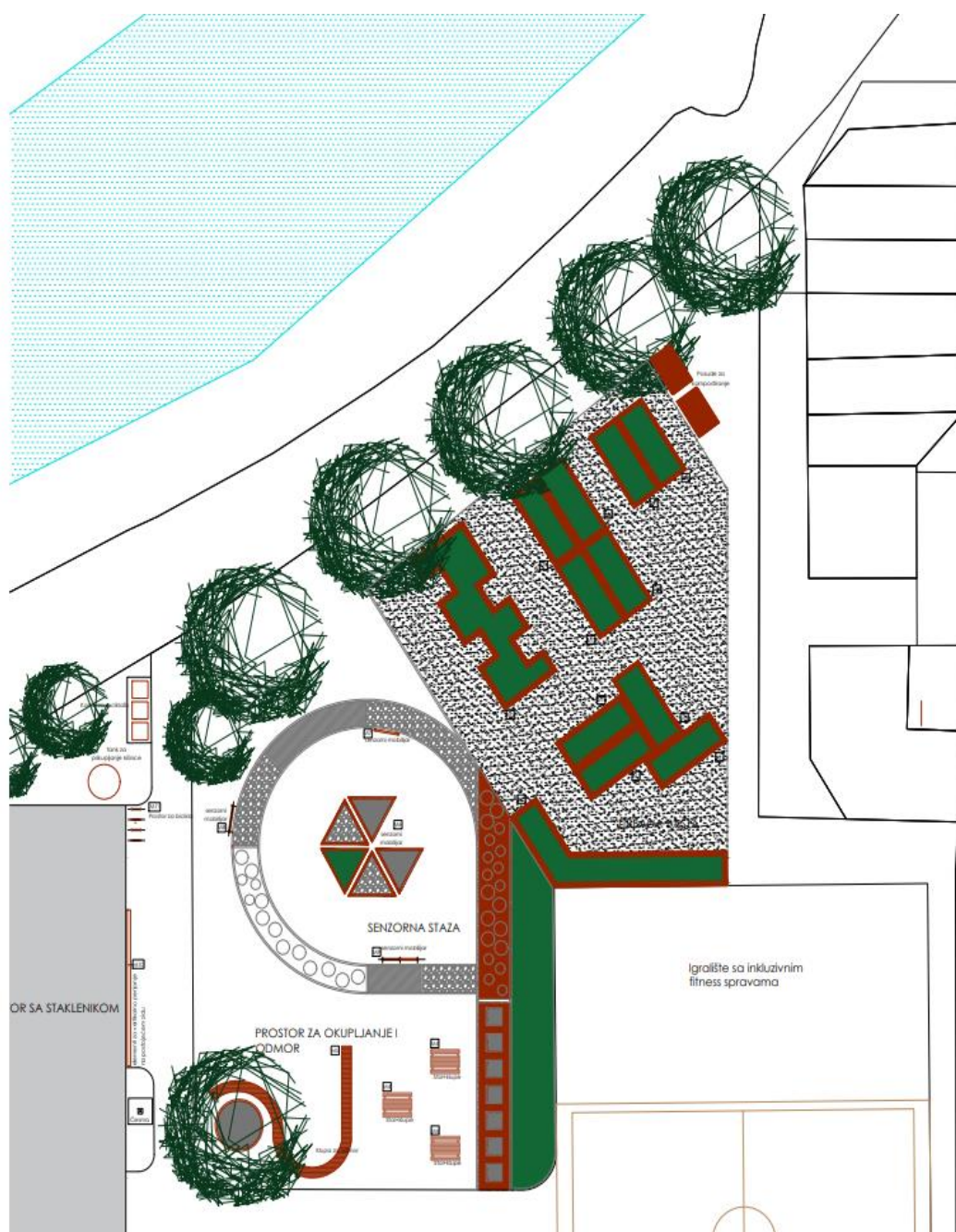
Therefore, our daily work now helps us to see different perspective of the project - something like brainstorming, it helps us to see different perspective, it widens our views and perspectives, good thing, good way to minimise additional problems and risks. From the beginning we can better anticipate problems and react promptly.

Technical solutions

STEP 1 - Define the nature-based solution

Sarajevo exemplar idea is to create an urban garden and the sensory park at the spot (approx. 1500m²), and to have various activities for different target groups (e.g. one day in a week dedicated for "urban gardening", activity which will be opened to all citizens).

The Sarajevo exemplar will have multifunctional purposes and will be open to all citizens, but it would be adjusted to special target groups.



The exemplar will have double purpose:

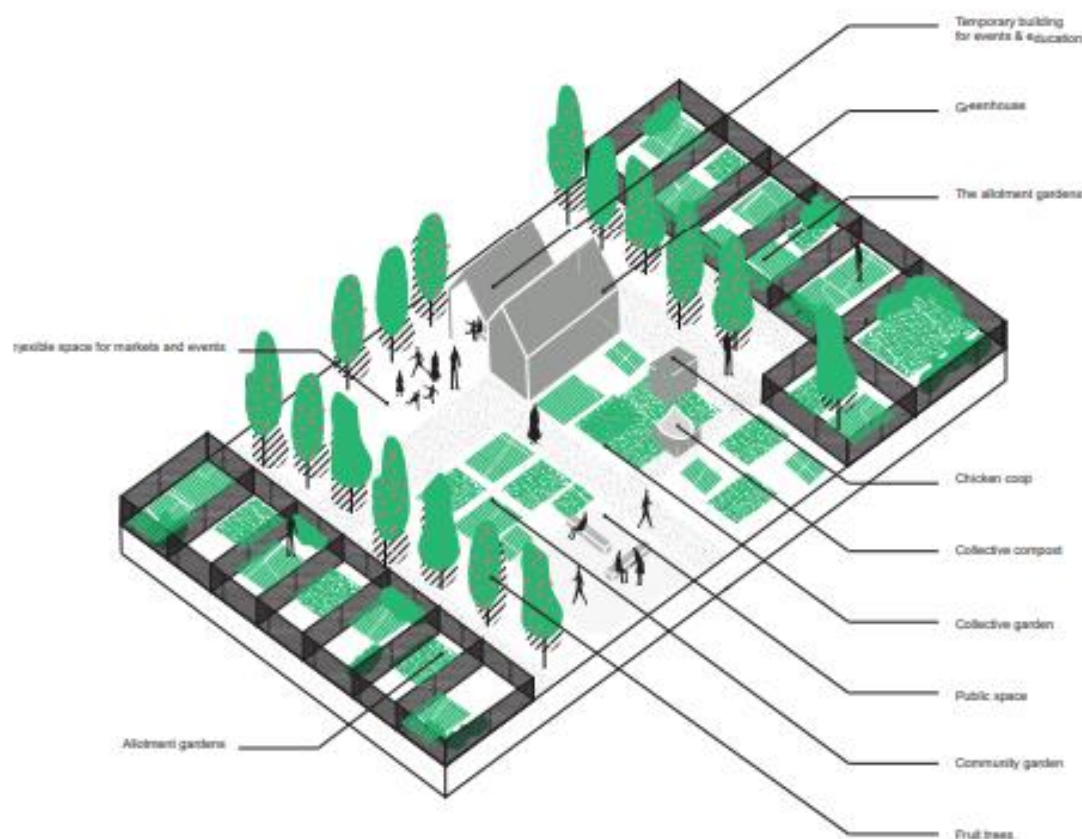
- 1) it would provide multipurpose area for the pupils of the School (urban garden will be used for learning and sensory park will be used for developing motoric skills of the pupils)
- 2) it would include numerous activities for various target groups in order to provide societal, economic and environmental benefits, but also to contribute to solving environmental issues of Sarajevo.

Beside the establishment of the garden, exemplar will include artistic approach (Memory work and Body Mapping).



The green garden would include various activities (e.g. urban gardening day) in order to provide societal, economic and environmental segments, but also to contribute in solving issues of Sarajevo (air pollution, raising awareness on importance of nature in everyday life etc). Taking into account that urban garden will be located in urban area of the city, and it is surrounded with streets open for traffic (creating pollutions and noise), urban garden will be an oasis for local habitants and members of the Children's house and centre for healthy ageing.

During Osmos workshop, participants also discussed the garden model, as community gardens can come in a range of formats: The allotment garden, The community managed garden, The cooperative garden and community managed park. Osmos presented a description of each of it, its weaknesses, strengths, application and some of the examples. We discussed the format of our exemplar and we agreed it will be a community managed park.



Sarajevo has many green public spaces which are not well used. Even though the time of COVID-19 pandemic brought an increased number of personal gardens in front of houses, buildings, in various public green spaces, it also showed the need to educate people how these spaces can be used in the best interest of both citizens, but also biodiversity of the city. Creation of a unique Urban Garden with sensory park within the School will provide a platform for education, inclusion of children with disabilities, for intergenerational exchange of knowledge and cooperation between children and elderly, and it is meant to be a role model for other local communities on how green spaces can be put in functional use. We would also involve social companies

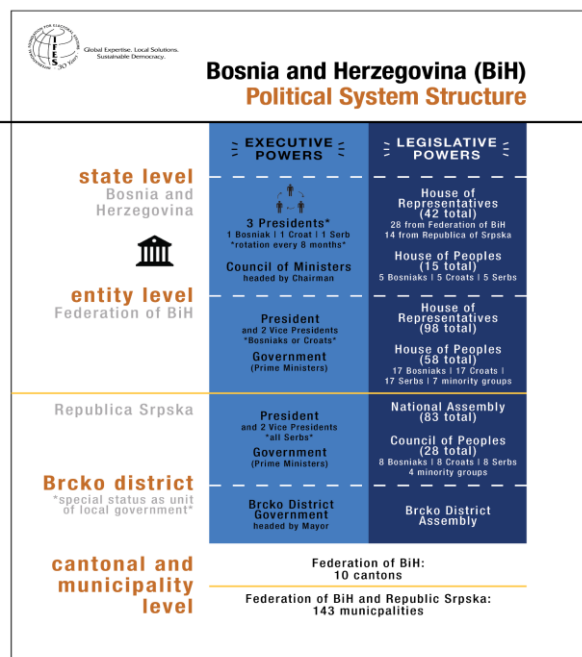


(e.g. Greens), which gathers people with disabilities who produce microgreens, seeds, vegetables and spices. Therefore, in terms of the target groups, we will actively involve marginalized groups, persons with disabilities, elderly people, children, women. Every Monday (or some other day in the week) will be declared Urban Garden day, when we will organize different kinds of workshops in the Urban Garden. Apart from that, every citizen will have the opportunity to come and work in the Urban Garden. Special invitations for workshops will go to schools and Centers for Healthy Aging, which are located nearby, in order to encourage intergenerational interaction. The whole process will be presented and promoted through social media, with the aim to make it a role model for other communities, and we hope to see many similar urban gardens in the future.

STEP 2 - Develop an understanding of the landscape context and ecosystem services needs

To understand city context, it is important to mention complex state organisation and governmental levels within the country. This also takes a role during planning activities and understanding jurisdiction of each governmental level.

State administrative structure, including all levels is shown:



Sarajevo is near the geometric centre of the triangular-shaped Bosnia-Herzegovina and within the historical region of Bosnia proper. It is situated 518 meters (1,699 ft) above sea level and lies in the Sarajevo valley, in the middle of the Dinaric Alps. The valley itself once formed a vast expanse of greenery but gave way to urban expansion and development in the post-World War II era. The city is surrounded by heavily forested hills and five major mountains. The highest of the surrounding peaks is Treskavica at 2,088 meters (6,850 ft), then Bjelašnica mountain at 2,067 meters (6,781 ft), Jahorina at 1,913 meters (6,276 ft), Trebević at 1,627 meters (5,338 ft), with 1,502 meters (4,928 ft) Igman being the shortest. The last four are also known as the Olympic Mountains of Sarajevo (see also 1984 Winter Olympics). The city itself has its



fair share of hilly terrain, as evidenced by the many steeply inclined streets and residences seemingly perched on the hillsides.

The Miljacka river is one of the city's chief geographic features. It flows through the city from east through the center of Sarajevo to west part of the city where it eventually meets up with the Bosna river. Miljacka river is "The Sarajevo River", with its source (Vrelo Miljacke) 2 kilometres (1.2 miles) south of the town of Pale at the foothills of Mount Jahorina, several kilometers to the east of Sarajevo center. The Bosna's source, Vrelo Bosne near Ilidža (west Sarajevo), is another notable natural landmark and a popular destination for Sarajevans and other tourists. Several smaller rivers and streams such as Koševski Potok also run through the city and its vicinity.

The city has an urban area of 1,041.5 square kilometres (402.1 sq mi). Veliki Park (Great park) is the largest green area in the centre of Sarajevo. It's nestled between Titova, Koševo, Džidžikovac, Tina Ujevića and Trampina Streets and in the lower part there is a monument dedicated to the Children of Sarajevo.

The average yearly temperature is 10 °C, with January (−0.5 °C on average) being the coldest month of the year and July (19.7 °C on average) the warmest.

Air pollution is a major issue in Sarajevo. According to the 2016 World Health Organization's Ambient Air Pollution Database, the annual average PM_{2.5} concentration in 2010 was estimated to be 30 µg/m³ based on PM₁₀ measurement, which is 3 times higher than recommended by WHO Air Quality Guidelines for annual average PM_{2.5}. There are no recent direct long-term PM_{2.5} measurements available in Sarajevo and only estimates can be made from PM₁₀, which is the less health relevant than PM_{2.5}.

Sarajevo's large manufacturing, administrative, and tourism sectors make it the strongest economic region of Bosnia and Herzegovina. Indeed, Sarajevo Canton generates almost 25% of the country's GDP.

Major urban challenges are:

Air quality

Main sources of pollution: Heating of small residential buildings, Mobility; large number of private cars with low fuel efficiency, Industry - Topographical factors reinforced by tall buildings that block air circulation. No skyscraper should have been constructed in certain areas. This has not been respected due to short-term profit motives. - Lack of official and reliable measurements. Last detailed analysis was in 2013 and should be done on a yearly basis to identify precise sources of the pollution and effect of policy measures.

Waste Management

Landfill of municipal waste at Smiljevići - Lack of alternatives: - Incineration difficult due to impact on air quality - No culture of waste separation - Wastewater management has received a lot of attention and investment, but still remains a challenge (obsolete water network, asbestos in pipes, old methods for chlorination)

Risk of natural catastrophes: floods, landslides, fires



Catastrophe in 2014. Funds of the current budget were not sufficient to cope with the damage. Reallocation of funds and international solidarity were necessary. - Risk mitigation activities focus on addressing the symptoms (water levees) and not the disease (deforestation + impervious surfaces). - Increased risk of landslides due to erosion and deforestation. This risk is addressed through physical interventions such as support walls. - All these risks will increase due to climate change (higher frequency of extreme weather events such as heavy rain falls).

Urban regeneration

Management challenge of the transformation of obsolete functions (military, industrial). focus on the transition to commercial and residential uses. - Large amount of informal development. - Poor building regulation due to: - lack of building inspectors - risk for existing inspectors (due to aggressive building owners) - bribery and corruption of public officials. - Lack of vision and master planning for urban regeneration. - Poor translation of policy and regulation into tools.

Lack of quality green space in the city

Concerns about no proper park in the city centre. - No encompassing green space strategy at any scale (municipal, city, canton) - Municipalities prioritise development of new buildings that need parking spaces to the detriment of green spaces or green infrastructure

Mobility

Public transport company in weak financial position: vehicles from donations (average is 17 years old). - Car-based mobility creates a shortage of parking spaces in the city centre - Link between air pollution and car mobility - Poor Road network: congestion and slow movement of vehicles. Cars and public transport share the same space. - Active mobility does not reach outside of city centre (bikes only for recreational use) - Concerns over transport safety - Dependence on car mobility exacerbated by housing development on the outskirts

STEP 3 - Embedding multiple functions into the planning, delivery and stewardship of the nature-based solution

The exemplar design phase included co-production process with various stakeholders to hear their opinion and needs, but the most significant inputs for technical design are given by the School staff, especially related to the urban garden and sensory park elements. Special concern was given to the safety and practical issues of the urban garden, taking into account target groups.

Also, technical design of the exemplar included some of the priorities of the city and municipal needs (green areas, inclusion, decrease of air pollution), so some of the solutions are included in the exemplar.

STEP 4 Monitoring and evaluation Stewardship management

The exemplar is developed according the School inputs, following needs of the inhabitants and the specific target groups and due to need for project with these elements. Therefore, the exemplar is in line with the School activities and plans, so



managing maintenance of the exemplar will be organised within the School capacities (e.g. the School has technical staff for the green area maintenance, expert staff for the planting etc).

The intention of the project Team, the School and the municipality is to do upgrade of the exemplar in the future with new elements and new activities and the School management is open for new ideas and ready to provide their support in that process.

Taking into account comprehensive approach in the defining and designing the exemplar and involvement of the key actors, there is a low risk that the expected benefits will not delivered.

STEP 5 Build an evidence base to promote nature based solutions to a wider catchment

Taking into account the future plans for upgrading the exemplar, it will be necessary that managing and maintaining the urban garden is followed from the technical side, so it shall be part of the planning and procurement, especially regarding the equipment for the stewardship.

The key lessons learned during defining the nature-based solution are: it is necessary to include relevant profession in each stage and in each part of the exemplar, needs of the target groups are one of the most relevant factors to consider, every phase of the exemplar shall take into consideration sustainability issues (e.g. in choosing materials, taking into account external factors – in our case climate etc).

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Bringing cities to life, bringing life into cities



**Connecting Nature Framework report for
Ioannina city**

Contents

1	Connecting Nature Framework	4
	Step 1. Identify the city context.....	4
	Step 2. Define the goals of your nature-based solution.....	5
	Step 3. Identify your target audience and other relevant actors	6
	Step 4. Introduce your nature-based solution exemplar	6
	Step 5. Position this report.....	7
2	Technical Solutions	8
	Step 1. Define the nature-based solution.....	8
	Step 2. Develop an understanding of the landscape context and ecosystem services needs	19
	Step 3. Embedding multiple functions into the planning, delivery, and stewardship of the nature-based solution	21
	Step 4. Monitoring and evaluation	21
	Step 5. Build an evidence base to promote nature based solutions to a wider catchment	21
3	Governance	22
	Step 1. Make the case: aligning nature-based solutions with the wider goals of a city or a community	22
	Step 2. Current status of the location: identify the current use, ownership and management of where you want to implement your nature-based solution	23
	Step 3. Who are the required partners: identify all relevant partners and bring everyone together to co-create a vision and goals for the nature-based solution	23
	Step 4. What will you need to succeed? Identify conditions, skills and reflexive learning capacities to ensure ongoing success	24
4	Financing and business models:	25
	Step 1. Lessons learned from how NBS has been financed in each city to date	25
	Step 2. Explore opportunities for innovation in financing, governance and business models	25
	Step 3. Planning the financing and business model of Connecting Nature NBS exemplars	26
	Step 4. Implementation of financing and business model plans for specific NBS exemplar	32

5	Nature-based enterprises	33
	Step 1. Awareness and strategic alignment.....	33
	Step 2. Building alliances	34
	Step 3: Planning NBE strategy	34
6	Co-production	38
	Step 1. Define the goals of the co-production process.....	38
	Step 2. Use the design principles to flesh out the coproduction goals and structure	38
	Step 3. Plan the co-production steps and activities / Co-production tools used.....	39
	Step 4. Reflect on the co-production process and results	39
7	Reflexive monitoring	41
	Step 1. Rethink what learning process you need to achieve the goals of the nature-based solution.....	41
	Step 2. Define the roles within the project team.....	42
	Step 3. Recording important events and analysing critical turning points.....	42
	Step 4. Use learning sessions to identify learning outcomes	43
	Step 5. Share your findings with others	43
	Step 6. Reflecting on the method and peer-to-peer sharing.....	44
8	Impact assessment	48

1 Connecting Nature Framework

Step 1. Identify the city context

Ioannina is the capital and largest city of the Ioannina regional unit and of Epirus, an administrative region in north-western Greece. According to the 2011 census, the city population was 65,574, while the municipality had 112,486 inhabitants. It lies at an elevation of approximately 500 metres above sea level, on the western shore of lake Pamvotis. Ioannina is located 410 km (255 mi) northwest of Athens, 260 kilometres (162 miles) southwest of Thessaloniki and 80 km (50 miles) east of the port of Igoumenitsa in the Ionian Sea.

The city's foundation has traditionally been ascribed to the Byzantine Emperor Justinian in the 6th century AD, but modern archaeological research has uncovered evidence of Hellenistic settlements. Ioannina flourished in the late Byzantine period (13th–15th centuries). It became part of the Despotate of Epirus following the Fourth Crusade and many wealthy Byzantine families fled there following the sack of Constantinople, with the city experiencing great prosperity and considerable autonomy, despite the political turmoils. Ioannina surrendered to the Ottomans in 1430 and until 1868 it was the administrative center of the Pashalik of Yanina. In the period between the 18th and 19th centuries, the city was a major center of the modern Greek Enlightenment. Ioannina was ceded to Greece in 1913 following the Balkan Wars.

In recent times, the city has become the centre of three particular functions. It is home to two large regional hospitals. Over the last decade, the university and technical college have fused, to create the University of Ioannina with a 30,000 strong student body. Finally, it is home to a number of key agricultural activities including poultry (~70% of Greece's demands), dairy products (representing a large share of the Greek market) and mineral water (~50% of Greece's market).

The territorial economy is an important vector for change. While roads have opened to both Athens and Thessaloniki in the last years, cutting travel from a full day down to a few hours, and the airport has gained more regular schedule, Ioannina's age-old spirit persists. There is a fairly reactive approach to problems. Tourism is poorly defined and there is a serious risk that mass-tourism will bring more trouble than it is worth. There is attraction from European business to build on the city's university and educated graduates yet there are no clear programs for hosting new business. The two large regional institutions, the hospitals and the university, are largely disconnected from the old city. Finally, there is a challenge to inspire social entrepreneurship, where the community plays a larger role in developing projects that concern them.

Nowadays, one of the main axes for the development of the city is the sustainable management of its resources and the development of ecotourism. In that concept the city has developed a Strategic Plan for Sustainable Urban Development with its main goal to be the intelligent and sustainable urban development on the basis of the city's particular spatial and socio-economic characteristics.

Through that Plan, interventions are expected to be implemented that will cover various strategic parameters of the region, such as:

1. spatial planning
2. culture
3. environment
4. transport
5. smart applications to enhance smart entrepreneurship
6. networking and utilization of human resources

One of the specific goals of the Strategic Plan is “the Protection, rehabilitation and strengthening of the natural environment and history of the city and its cultural heritage as factors of enhancing competitiveness and employment promotion.”

In that framework, the nature-based solutions have the potential to play a crucial role for fulfilling these targets. Although the concept of nature-based solutions is relatively new in the city, the Connecting Nature Project is an excellent opportunity to introduce them to Ioannina and showcase their importance and effectiveness in the sustainable development of the city.

Step 2. Define the goals of your nature-based solution

The exemplar project for Ioannina city is the restoration of Pirsinela Park, popularly known as ‘the living room of Ioannina’.

The objectives of this exemplar project are outlined in the list below:

- Connecting nature-people: restore the experiential relationship of residents with the largest green park in the city. In terms of architectural planning, some focal points are: redesign the existing lanes, add new paths, stops and special areas of interest throughout the park, improvement of the overall park structure.
- Connecting people: Turning the park into a hub of a multitude of cultural, sports and educational activities. The aim is to promote social cohesion through a variety of opportunities that will arise from the different uses of the park.
- Connecting nature: Conservation, protection and further enhancement of the park's green space based on resilience.
- Sustainable economic development through the integration of commercial and social actions in the site. Possible value outcome: job creation, increase in the value of the land property, revenue for the Municipality, increased number of visitors.
- Upgrade the quality of city's life, by providing a neglected park with historical significance to the citizens.

The Restoration of Pirsinela Park is directly linked to the general agenda for sustainable urban development of the city, as part of the Strategic Plan for Sustainable Urban Development described in the previous chapter. Moreover, the Management Plan of the Pirsinela Park, developed after a public consultation process, was approved by the city council and the restoration plan secure a funding of 10M € by national funds (and specifically by Greek Recovery Fund).

Step 3. Identify your target audience and other relevant actors

The Connecting Nature Framework Report was developed by the City of Ioannina's CN Team, in collaboration with other colleagues in different Departments of the Municipality (e.g. Technical Department, Department of Green Spaces, Department of Finance).

The CN Framework Report addresses to a wide audience which includes both the internal structure of the municipality, but also the general public. Internally, the Report is used as a tool for the information of all the colleagues involved in the exemplar regarding the current status of the Project and also as a valuable guiding document in the meetings with the elected leadership of the municipality.

Moreover, the Report is used as a dissemination tool in reaching the general public and increasing public awareness regarding both our exemplar and the nature-based solutions in general.

Step 4. Introduce your nature-based solution exemplar

Pirsinela Park is a neglected park located in the urban boundaries of the city. It is considered to be the largest area of existing greenspace (almost 250.000 m²). The site contains a forest and several built infrastructures, which are currently in decay. Historically, this region used to serve as the green and entertainment hub of the city, offering opportunities for physical activities (running, tennis) and access to nature. However, the last fifteen years the park has been totally abandoned, due to a legal dispute between the Municipality of Ioannina and the Greek State over the ownership of the land. Finally, the Municipality has dealt with the ownership matters and as we have already been informed the Pirsinela park is one of the first line projects for the new government. The municipality of Ioannina has the ambition to make the park more accessible and to revive its cultural use, while doing so in an environmentally friendly and sustainable manner. In this ambition, the municipality will focus on the main part of the park.

The planning phase of the Project was concluded with the completion of a Public Consultation Process for determining the key characteristics of the restoration of the Park, which led to the development of the Management Plan of Pirsinela Park, approved by the city council.

The delivery phase of the Project (which we are currently on) started with the securing of the fundings for the work. The next step in that phase is the tendering process for the external contractors working in the Project, that is scheduled to be finished in the first semester of 2022.



Figure 1. Pirsinela Park

Step 5. Position this report

The Connecting Nature Framework is a valuable tool in the implementation of the exemplar as it serves as the central point that connects all the key contributors of the project and helps them all to stay focused in the same target.

Various elements of the Framework, like the Reflexive Monitoring, were incorporated for the first time in the development of a Project, as important as the restoration of Pirsinela Park is, in the Ioannina City. With their use, the multidisciplinary team that was created from different Departments of the municipality manages to co-operate in a systematic, organised and timely fashion while all its members have a clear picture of the project and its status at any given time.

In addition, the work done for the Framework was a significant help in developing the 'story' of our Project and communicating it effectively to the general public, something that is evident in the significant participation of all the citizens of Ioannina in the public consultation process during the design of the project.

Finally, the Connecting Nature Framework could be used as a guidebook and a best-practise example in the development and implementation of other nature-based solutions in the area.

2 Technical Solutions

Step 1. Define the nature-based solution

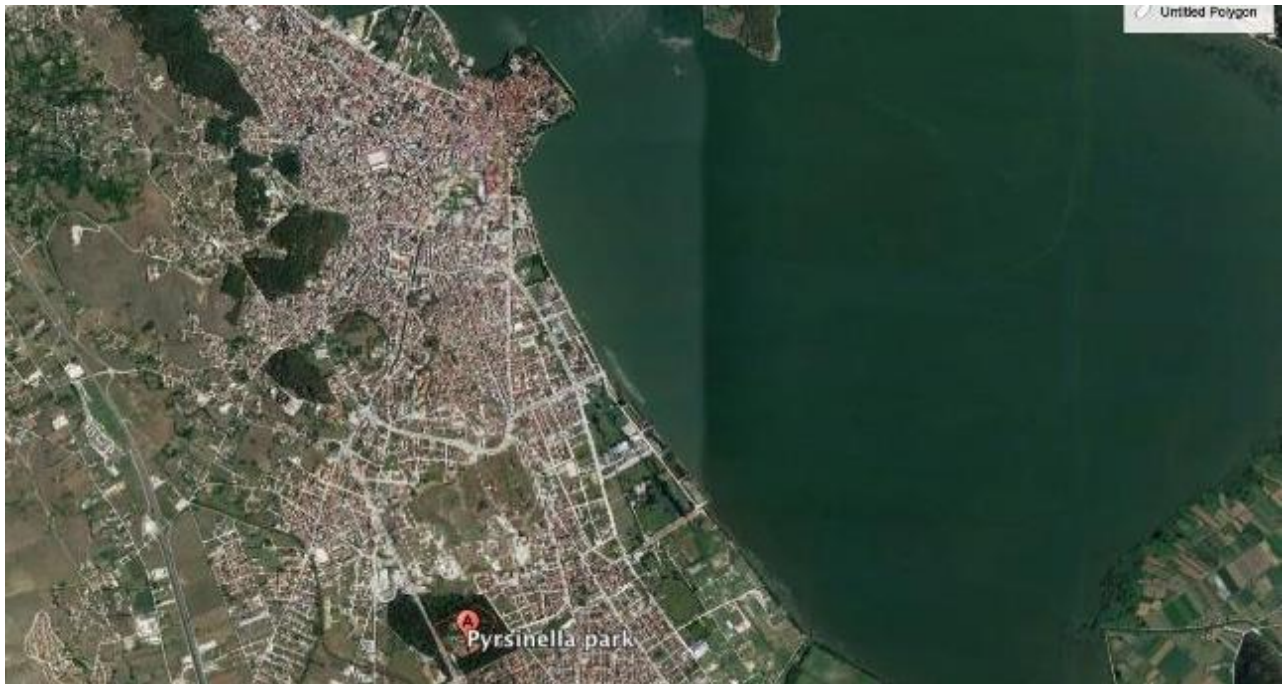
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The objectives of this exemplar project are outlined in the list below:

- Connecting nature-people: restore the experiential relationship of residents with the largest green park in the city. In terms of architectural planning, some focal points are: redesign the existing lanes, add new paths, stops and special areas of interest throughout the park, improvement of the overall park structure.
- Connecting people: Turning the park into a hub of a multitude of cultural, sports and educational activities. The aim is to promote social cohesion through a variety of opportunities that will arise from the different uses of the park.
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- Sustainable economic development through the integration of commercial and social actions in the site. Possible value outcome: job creation, increase in the value of the land property, revenue for the Municipality, increased number of visitors.
- Upgrade the quality of city's life, by providing a neglected park with historical significance to the citizens.

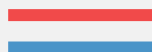
The following Figures present the location of the Park relative to the city, an overview of the current status of the Park and the main technical solutions that are going to be implemented in the Park..





General masterplan for the regeneration of Pirsinella park

A. Redesign of pedestrian and cycling paths



B1. Wooden warehouse for Environmental education center

B2. Urban green gardens



C. Restoration of the main building



D1. Maintain and expand sports infrastructure (tennis court, free for leisure activities court)



D2. Outdoor fitness - gym equipment



E. Dog park (former local animals zoo)

F1. Regeneration of the lake

F2. Cultural activities (outdoor event space - theatre)



G. Environmentally oriented playground

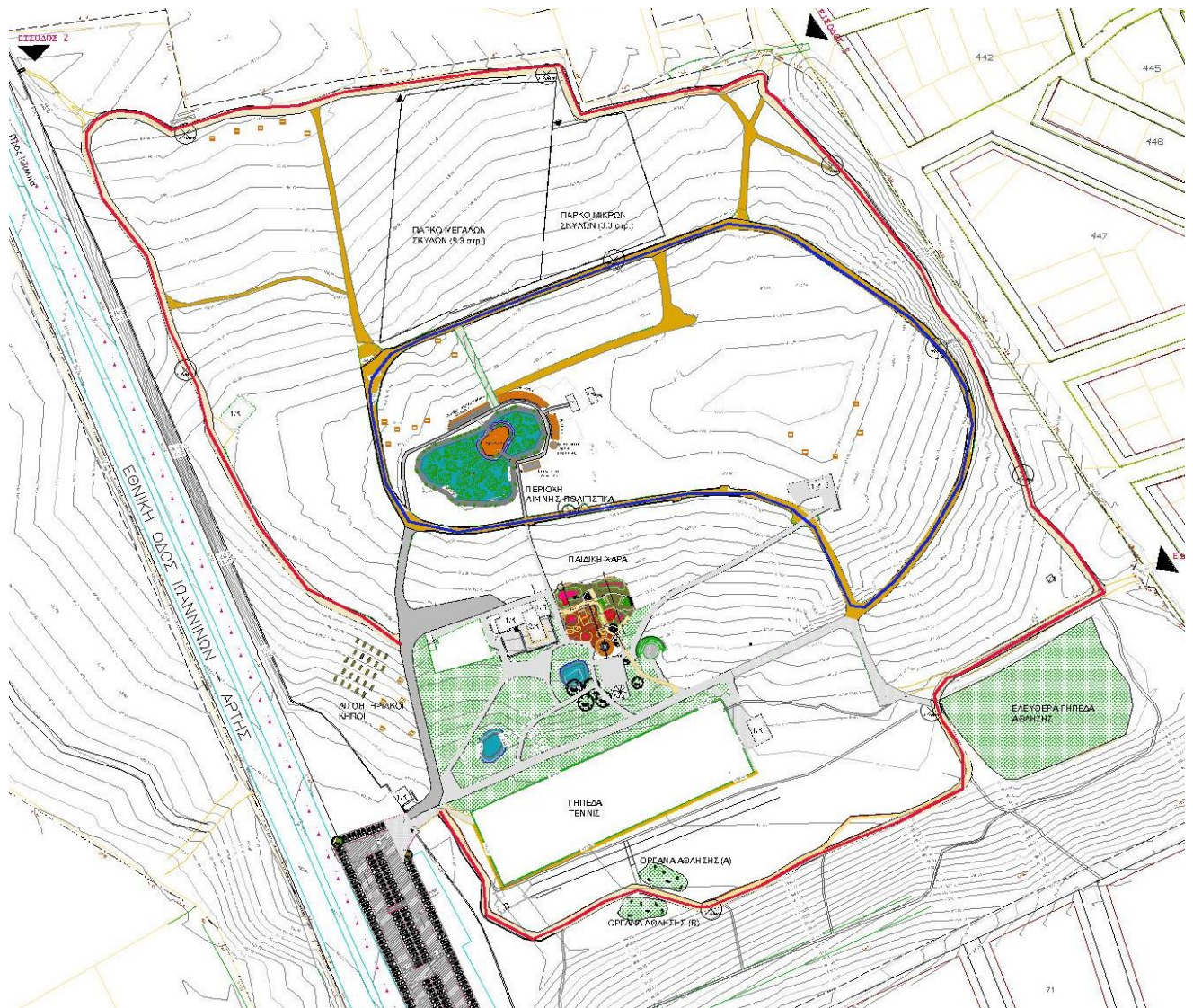


More precisely, the technical design includes:

A. Path network design

Objectives:

- maintain the existing character of the parkland landscape as a priority
- use materials that are visually sympathetic to the setting, where necessary





Path network design

A1. Redesign of pedestrian and cycling paths



- Pedestrians comprise the majority of visitors across the parks, but with many other users including cyclists, provision for all visitors needs to be balanced to maintain a high quality of experience.
- The proportion between hard and soft landscaping across the park remain the same. Current path alignments are to be preserved where designated as an important part of the park character.
- The only newly proposed alignment is the south part of the red -walking ad cycling- route.

USERS +



PATH
FOR PEDESTRIANS ONLY



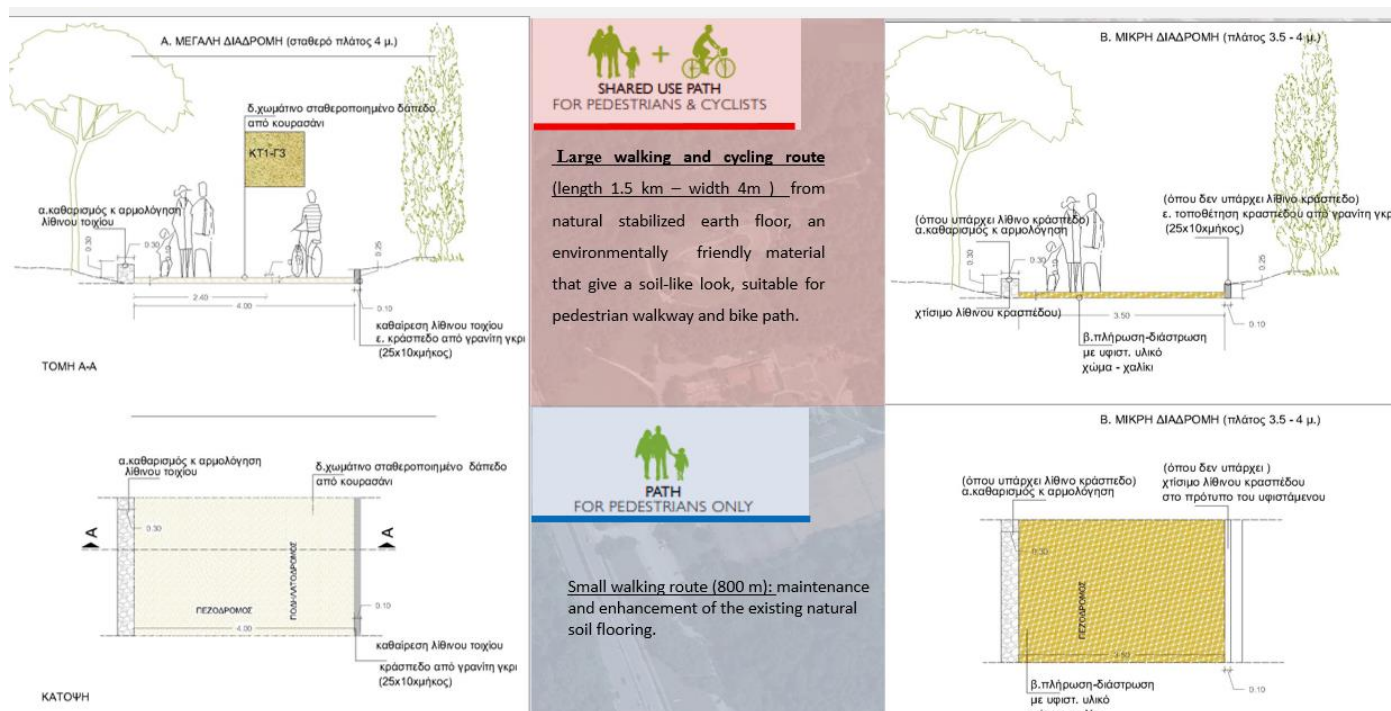
SHARED USE PATH
FOR PEDESTRIANS & CYCLISTS



Current natural walking paths

Path network design

- Large walking and cycling route (1.5 km)
- Small walking route (800 m)



A2. Rest areas in the path network



- Large walking and cycling route (1.5 km) – 6 rest areas
- Small walking route (800 m) – 3 rest areas



- Creation of 9 rest areas across the two main pathways
- The rest areas will also be info points with informative signalization
- Reuse the branches of the trees that will be cut to make natural park furniture out of them



B1. Ecological education center

B2. Urban sensory gardens



B1
Wooden
warehouse

- B1:** In the east side of the park there is a wooden warehouse that would be reused and could host the ecological education center or an environmental educational hub for teenagers.
- B2:** Next to the wooden warehouse a place (total area of 600 m²) is designated for urban gardening to be included in the educational activities
 - These are botanical gardens mainly endemic plants that follow the philosophy of sensory gardens with a large number of different plants, such as aromatic, herbs, flowers in different colors.
 - Planting classes will be available to groups of students or others interested in growing herbs, spices and flowers to encourage people to get in touch with nature - the use of pesticides and biocides will be strictly prohibited.
 - They will consist of separate planting sections of 2.5m² with dimensions of 1m x 2.5m and with a soil depth of 0.5m. Indicatively, it is proposed to place 25 sections, following the natural altitudes of the area, with different species and a distance between them of about 3 meters.



B2 Urban sensory
gardens

C. Restoration of the main building D. Sport infrastructure



D1. Maintain and expand sports infrastructure (tennis court, free for leisure activities court)

D2. Outdoor fitness - gym equipment



C: The main building and its outdoor space and kiosk will be renovated to host its former use (coffee / eco - restaurant operation)

D: In the southern part of Pysrinella Park are located the organized sports areas:

D1: free sports fields with 4,340 sq.m. lawn, with flexibility in the use of space - possibility of utilization in different sports activities (football, golf, paintball, etc.)



D2: Installation of free training equipment, south of the tennis courts. Indicatively, a total area of about 500 sq.m. is proposed, divided into two sections, on either side of the section of the long route, south of the tennis courts.

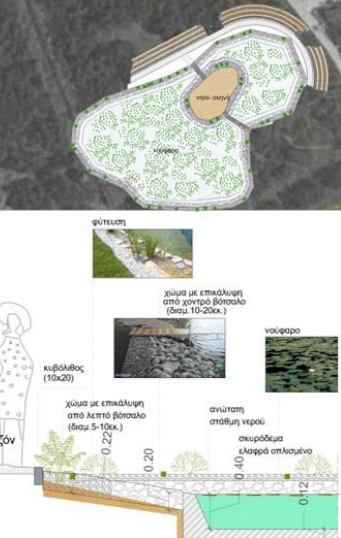
E. Dog park



- The total area of Pysrinella Park that can be a Dog Park classifies it in the category of large Dog Parks, with an area of about 11.6 acres.
- The features and dimensions, however, allow the park to be divided into two sections - with a separate entrance, depending on the size of the dogs it hosts: the large dog park occupies 8.3 acres and the smaller park for small dogs area 3.3 acres
- The dog park will be a fenced area with two secure gates



F1. Regeneration of the lake



F1: The design of the large lake area was carried out with the aim of:

- The smooth coexistence of the water element of the park and the human element that surrounds it as well as the integration of mild cultural uses in the area by the lake.
- The preservation and enhancement of the existing aquatic vegetation and the biodiversity of the lake, minimizing the interventions regarding the hydrology and the earthworks on the bottom and the shore of the lake
- The creation of a natural landscape: a combination of plant element that grow on its water surface and a small ecosystem - water lilies and plants-oxygenators that clean and oxygenate the water

F2. Cultural activities (outdoor event space - theatre)

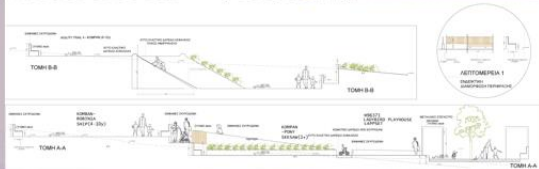


F2: The large lake and its surrounding space, due to the special natural beauty and the central location in the park, is proposed to be used as an area of mild cultural activities.

- The existing small island in the middle of the lake could function as a place of action - a stage for cultural events.
- A metal - reversible- structure with three rows of stands for the spectators will be located in the northeast side of the lake, following its natural curve.



G. Environmentally oriented playground



- The general design shapes the playground into two parts (upper and lower), according to the age group of children, utilizing the existing path that separates the two spaces, with the ultimate goal mainly the optimal physical and mental development of children, of all age groups.
- The design separates the functions (movement-attitude-play), but at the same time 'unifies' the space within the connection of the two parts and the use of the same natural and environmentally friendly materials
- The green is used as a natural boundary in all the playground areas while the equipment is mainly made of recycled wooden material.



Total management of the park

- Green management: take care of the forest area. Lots of the existing pine trees that have been planted around 60 years ago are sick. New trees should be planted for replacement. The forestry management agency of the municipality will follow the use plans that are decided upon by the city council.
- Redesign of 4 entrances of Pyrsinella Park and equip the entrances with complimentary functions, such as a bike rental.
- Redesign of fencing and facade throughout the perimeter of the park (necessary for the well-groomed appearance and for the safety of the space)
- Creation of information points within the park (info kiosks) with the peculiarities of the specific area or short information stories about the environment of the park or the city of Ioannina and its special features.
- Creation of additional parking spaces.



Step 2. Develop an understanding of the landscape context and ecosystem services needs

The main characteristic element, in terms of environment, of the municipality of Ioannina is the lake Pamvotida, where the island of Ioannina is also located. With the JM 22943/2003 (Government Gazette 649 / Δ / 5.6.03) the area of the Lake Pamvotida has been designated as an "eco-development area" and the Pamvotida Lake Management Body was established (K.Y.A (135074/5193 / Sheet No. 1531/9/12/2002). With previous decisions (Government Gazette 648 / B / 25.11.68), 4425/212/75 / 4.3.77 (Government Gazette 266 / B / 21.3.77) and (Government Gazette 660 / B / 1981), Lake Pamvotida and the perimeter areas have designated as an area of "special natural beauty" and are therefore inextricably linked to the long history of the city.

Lake Pamvotida is an aquatic ecosystem and has been designated as an area of eco-development. The island of the lake and the cave of Perama are touristic attractions. From the natural environment of the area, the suburban forest of the city stands out, as is one of the 19 aesthetic forests of the country. Beyond the suburban forest, the green spaces in the city are limited and focus on the small parks of Litharitsia and Kouramba in the city center, in Katsari park in the lakeside area, as well as the Pirsinella park which occupies a large area and is located at the entrance of the city.

It is also noted that the "Suburban Forest of Ioannina" belongs to the landscapes of special beauties with a total area of 106.06 ha. An artificial pure pine forest, aged 80-90 years, which extends on the outskirts of the city of Ioannina on 3-4 hills and tends to become an urban one grove, since it has already been surrounded by the residential expansion of the city.

Regarding the social and economic context of the area, the Municipality of Ioannina has a permanent population of 112,486 inhabitants, it is the largest Municipality of Region of Epirus and the 10th largest in the country according to the 2011 census.

Based on the 2001 census, there is an increase in the population of the Municipality in the decade 2001-2011 which is in line with its general development in infrastructure, employment and especially in the tertiary sector of services and enterprises. In addition, it is due to the general tendency of Greek residents to move to large urban centers, such as the city of Ioannina for the region of Epirus.

The fact that at the same time throughout the country there is a decrease in population by a percentage of 1.34% while in the Prefecture of Ioannina an increase of the population of 3.96% is recorded, documenting the role that the city of Ioannina begins to play in Epirus and the wider region of Northwestern Greece.

Regarding the educational level of the residents of the Municipality, based on the 2011 census, 25% have completed post-secondary or tertiary education, 36% are graduates of secondary education (high school, lyceum) and 20% are graduates of elementary school. Also 10% of the population dropped out of primary school or does not know how to write/read.

School dropout is an indicator that is associated with specific social and economic problems and is related to social exclusion, ie the social degradation of the individual. According to official data of the Ministry of Education (Research of the Pedagogical Institute for student dropout) the student dropout in primary school education is considered almost negligible since in primary school it has been almost eliminated. In the first cycle of secondary education (Gymnasium) the student dropout is significantly lower (3.81%) compared to the average condition of the country (13.1% in 2011), in the Unified Lyceum is relatively small (1.73%) while more severe is the situation in technology education where the percentages approach those of the national average of 20.28%.

Regarding gender, the following are noted:

- 48% of the permanent population are men and 52% are women.
- In relation to the university graduates of the Municipality 53% are women and 47% are men.
- From all the graduates of the secondary education the proportion is approximately the same between men and women (50.3% men and 49.7% women).
- Regarding the population that has dropped out of primary school or is illiterate, women represent 58.7% of the population, compared to 41.3% of men.

The Municipality is distinguished by a positive population dynamic in relation to other urban centers of the Region, but also from a fairly educated and educationally upgraded human resources. The combination of these features and further investment on them make the base for the economic and development growth of the city.

The city's economy has purely urban characteristics determined by the fact that the city is the commercial and administrative center of the Region, as well as by its existence of the University of Ioannina.

The majority of employees are in the tertiary sector, while the corresponding percentage for the primary sector is minimal. In the secondary sector prominent place is occupied by the manufacturing activity that is concentrated both in the industrial area of the city as well as in scattered form.

Tourism also plays an important role in both the economy and social mobility, which in recent years has increased due to the better interconnection of the area. The traditional historic town, the Lake and its surrounding landscapes, monuments, history and the city's traditions attract tourism and the developing tourist infrastructure of the city supports it.

However, the local economy in recent decades has not developed particularly large incentives to improve its macroeconomic environment. Beyond the existence of industrial area of Ioannina and the establishment of the Science and Technology Park of Epirus near the University, no policies were developed for the reorganization and promotion of the local economy, in order to make large investments.

In recent years, the city's economy, like that of Greece, has experienced a recession resulting in a significant increase in unemployment.

Step 3. Embedding multiple functions into the planning, delivery, and stewardship of the nature-based solution

The restoration of Pirsinela Park will have a significant environmental, social and economic impact in the wider city area. The historical importance and magnitude of the Park in combination with the public support of the Project guarantees the success of the exemplar.

In addition, the vast public participation in the open public consultation during the planning phase indicates a successful co-production process in that phase. The significant experience of the Technical Department of the municipality in the delivery of numerous similar projects in the area guarantees a successful implementation of the delivery phase as well.

Step 4. Monitoring and evaluation

Regarding the stewardship phase of the Project, until now all the parks of the city are managed exclusively by the municipality. The magnitude and the significance of the exemplar in the city make it a difficult case in order to try and implement a different management scenario. On the other hand, the experience of the municipality in the management of large green spaces will guarantee the successful implementation of the stewardship phase of the project.

Step 5. Build an evidence base to promote nature based solutions to a wider catchment

As mentioned in the previous chapter, the main barrier during the stewardship management of the park is not technical, but more a lack of flexibility in the management models for green spaces, something that can be contributed in part to bureaucratic restraints and ineffective legislation and in part to the significance of the project which doesn't allow opportunities for trying out new management scenarios.

The key lessons learned from the implementation of the planning phase of the exemplar and the city's attempt to utilise a different approach based on the Connecting Nature Framework was the importance of co-operation both internally and externally. Internally, the project showcased the effectiveness of multidisciplinary teams working systematically under a common framework for the development of a project, while externally the co-operation with the general public created a base for a Management Plan for the Park which incorporates and respects the needs of all the citizens of the city.

3 Governance

Step 1. Make the case: aligning nature-based solutions with the wider goals of a city or a community

- ***Home of the exemplar within the city departmental structure and other departments needed for successful implementation***

The Technical Department of the municipality is the responsible Department for the implementation of the Project. Nevertheless, due to the nature and complexity of it, a number of other departments is involved as well. For instance, the Department of Green Spaces will assist in the initial design of the green spaces in the park and with their maintenance after the restoration phase. Additionally, the Department of Finance contribute to the determination of the appropriate funding tools for the implementation and assists in the preparation of the funding request.

- ***Legal framework within which the exemplar will be implemented, for example by being formally integrated into the city spatial plan, climate resilience plan***

The exemplar is part of the city's goal of sustainable development, as described in the Strategic Plan for Sustainable Urban Development.

- ***City strategic goals at various scales (local/ city/national/larger) that the exemplar helps to achieve***

The strategic goals of the city of Ioannina for the next period (as described in the city's Strategic Plan for Sustainable Development) that the exemplar helps to achieve can be summarized as follows:

- Promoting and strengthening the transnational - national - interregional role of the city of Ioannina.
- Promoting sustainable organization, functionality and territorial cohesion in the urban area of Ioannina, in favor of the quality of the built environment, the efficiency of interconnections and the adaptation to the new requirements of sustainable mobility and energy management.
- Protection, restoration and promotion of the natural environment, the historicity of the city and the cultural heritage as factors enhancing competitiveness and promoting employment.
- Supporting social cohesion and promoting employment, through enhancing competitiveness and innovative entrepreneurship. Promoting the social economy and developing the skills of human resources.
- Facilitate access to work for socially vulnerable groups through proactive policies as well as preventive measures.
- Stopping the consequences of the crisis and tackling the phenomena of social exclusion, poverty and social impoverishment through the development of integrated structures and functions of social care, social protection and solidarity.

Step 2. Current status of the location: identify the current use, ownership and management of where you want to implement your nature-based solution

The Pirsinela Park is owned by the Municipality of Ioannina City which currently both uses and manages the space.

Step 3. Who are the required partners: identify all relevant partners and bring everyone together to co-create a vision and goals for the nature-based solution

The main partners involved in the project are presented in the following list. These partners are more heavily involved in the planning phase of the exemplar delivery, as the delivery phase of the project will be conducted mainly by the Technical Department of the municipality and regarding the stewardship phase, the Department of Green Spaces will be the responsible authority.

- Political leadership of the Municipality
 - Mayor
 - Vice Mayors
- Different Departments of the Municipality
 - Technical Department
 - Department of Finance
 - Department of Green Spaces
 - Department of Planning
- Other Agencies outside of the Municipality
 - Prefecture
 - Forestry Directorate
 - Archaeological Agency)
- University
- Environmental NGOs
- Chambers (Technical Chamber, Chamber of Commerce)
- Cultural associations
- All citizens of Ioannina city

The communication between the various stakeholders is conducted mainly through meetings, both internal and external. The internal meetings are conducted within the municipality in two levels: i) in the first level regular monthly meetings are conducted with the participation of the members of the interdepartmental Project team, ii) frequent meetings with the political leadership of the municipality and other members of the different Departments are conducted in key moments of the project implementation. External meetings were planned and conducted with all the other key stakeholders of the project, both in one-to-one basis, but also more open with the participation of more than one stakeholder.

A very important tool in the development of the planning phase of the project was the open public consultation process which was conducted through the city's internet platform. In that

process every citizen of Ioannina had the opportunity to express its opinion for the project and how it can better suit everyone's needs. The great number of participants in that process ensured that the design and planning of the restoration of the Park (which took into consideration all the remarks of the consultation process) is accepted by the majority of the citizens and express their vision for the functions and design of the Park.

Step 4. What will you need to succeed? Identify conditions, skills and reflexive learning capacities to ensure ongoing success

The concept of nature-based solutions is relatively new in the municipality and as a result the Connecting Nature Project has the potential to become an example and an introduction to innovative solutions in planning and managing a project. On the other hand, the vast experience of the city's Departments in planning and implementing large scale project are a very important asset in the successful implementation of the exemplar as well. The combination of these two conditions (the innovations of the Connecting Nature Framework and the city's experience in project implementation) create the opportunity to put the Framework in a real-life test and in addition to further enhance and improve the capacity of the Department's employees.

4 Financing and business models:

Step 1. Lessons learned from how NBS has been financed in each city to date

Both capital and operational costs of NBS projects in Ioannina city to date have been financed by the same sources: a. regional municipal budget b. national public investment plan (government grants) and c. government and EU co-funding programs. NBS projects are usually managed by the Municipality of Ioannina (Mainly by the Technical Department or the Department of Green Spaces). There have been also cases where a programming agreement has been created between the Municipality of Ioannina and other public bodies (such as the Region of Epirus and the Ministry of Culture), in order to foster synergies for the co-design or co-operation of a project. In limited cases, there have been public-private partnerships, that is long-term contracts between a private party and the Municipality, for providing a service, in which the private party bears significant risk (as every 4 years the administration may change, the decisions taken from the previous administration may not be followed by the new one, making it a risky investment environment for private investors to invest within municipality) and the Municipality carries the management responsibility.

One major challenge concerning financing and business models of NBS projects to date is the bureaucratic Greek legislation (a lot of different and conflicted laws and Decisions, many different Agencies and Ministries have to issue an opinion). In terms of governance, one challenge already faced is how to bring together and connect different public actors, in order to overcome co-production issues (with main problems being the lack of experience from all parties, as this form of governance is not common in the city resulting in mistrust issues in the process).

For the Pysinela Park, the Municipality has secured a budget of 10M € through the National Recovery Fund.

Step 2. Explore opportunities for innovation in financing, governance and business models

Initially, in order to cover the upfront capital expenditure costs of the NBS, possible sources of revenue were examined, including additional municipal taxes, public funds or private donations (philanthropic contributions).

In terms of new sources of recurring operational costs as part of a sustainable business model, revenues could be generated by user fees (entrance fee for the park), voluntary contributions, rents from the key beneficiaries (building owners, investors).

Eventually, for the restoration of the Pysinela Park the up-front cost will be covered by the National Recovery Fund, with a budget of 10M €.

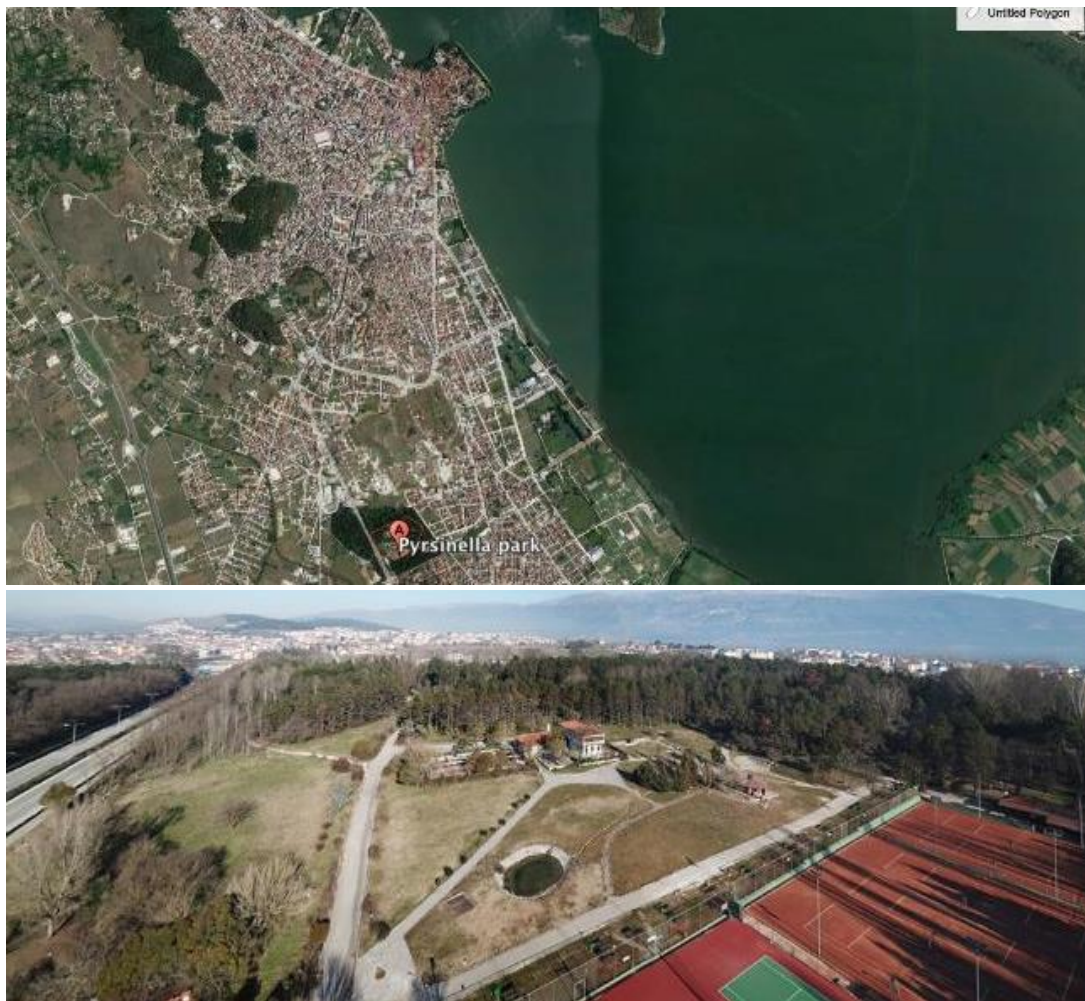
Step 3. Planning the financing and business model of Connecting Nature NBS exemplars

Table 1. Draft version of Business Model Canvas for Ioannina's NBS Exemplar

Business Model for Sustainability	Key Activities: <ul style="list-style-type: none"> Improve flora Restore pathways Clean ponds Restoration of buildings and infrastructure Create sports facilities Conduct a communication campaign Choose indicators and establish an evaluation programme 	Key Resources <ul style="list-style-type: none"> Technical Department: Technical expertise Department of Green Spaces: personnel and equipment Support from the city council Funding Support from the citizens of Ioannina 	Value Proposition <ul style="list-style-type: none"> Enhance biodiversity Improve the quality of the environment Better management of the green spaces Improve the quality of life for the citizens Social cohesion through new activities Jobs creation Improve land value Revenue for the Municipality 	Key Partners <ul style="list-style-type: none"> Political leadership of the Municipality Mayor Vice Mayors Different Departments of the Municipality Technical Department Department of Finance Department of Green Spaces Department of Planning Other Agencies outside of the Municipality Prefecture Forestry Directorate Archaeological Agency) University Environmental NGOs Chambers (Technical Chamber, Chamber of Commerce) Cultural associations 	Key Beneficiaries <ul style="list-style-type: none"> Municipality of Ioannina Citizens Land owners Business and entrepreneurs
	Governance <ul style="list-style-type: none"> Traditional 				
Financing Up-front Costs	Cost Structure <ul style="list-style-type: none"> Personnel Maintenance - Materials Energy – water consumption Communication and promotion costs 		Cost Reduction <ul style="list-style-type: none"> Volunteering Philanthropy Rent from the buildings and facilities 		Capturing Value <ul style="list-style-type: none"> Increase in the value of property job creation, increase attractiveness, due to increased number of visitors
	Capital Expenditure Costs <ul style="list-style-type: none"> Delivery phase costs Reforestation and infrastructure costs Demolition costs Excavations Renovations Communication costs 		Sources of Capital Investment: <ul style="list-style-type: none"> Municipal Budget European Funding Donations 		

Brief Description of exemplar

The exemplar project for Ioannina city is the restoration of Pirsinela Park. Pirsinela Park is a neglected park located in the urban boundaries of the city. It is considered to be the largest area of existing greenspace (almost 250.000 m²). Historically, this region offered opportunities for physical activities (running, tennis) and access to nature. However, the last fifteen years the park has been totally abandoned, due to a legal dispute between the Municipality of Ioannina and the Greek State over the ownership of the land.



1. Value proposition:

In terms of environmental value our exemplar will contribute to the conservation, protection and further enhancement of the park's green space based on resilience. More precisely, it will enhance biodiversity, improve air quality and contribute to the better maintenance of the largest green space in the city. Social cohesion is going to be promoted as well through the new activities (hub of a multitude of cultural, sports and educational activities) that will take place in the park. Apart from that, the restoration of the park has historical and emotional value for the city as it used to serve as the green and entertainment hub of the city, providing an improved quality of life for the residents. Possible economic value outcome: job creation, increase in the value of the land property, revenue for the Municipality, increased number of visitors and attraction of new businesses-investment in the area.

2. Value creation:

a. Key activities and resources

Activities:

- i. Identify fund resources
- ii. Create communication plan and communicate it to the public

- iii. Organize open public consultation
- iv. Obtain political support and city council decisions
- v. Develop the Park's Management Masterplan
- vi. Implement the Masterplan
- vii. Create and develop a monitoring system with the appropriate indicators
- viii. Create a Strategy of Entrepreneurship for the promotion and enhancement of nature-based enterprises
- ix. Create a strategy for social cohesion improvement

Resources:

- i. Human resources
 - o Municipality's staff
 - o External experts
 - o Researchers – university
 - o General public
 - o Partnerships (e.g. Connecting Nature partners)
 - ii. Financial resources
 - o Municipality's budget
 - o National and European funds
 - iii. Infrastructure
- b. Key partners and beneficiaries
- i. Political leadership of the Municipality (Mayor, Vice mayors)
 - ii. Different Departments of the Municipality (Technical, Economic, Green Spaces, Planning)
 - iii. Other Agencies outside of the Municipality (Prefecture, Forestry Directorate, Archaeological Agency)
 - iv. University
 - v. Environmental NGOs
 - vi. Chambers (Technical Chamber, Chamber of Commerce)
 - vii. Cultural associations
 - viii. All citizens of Ioannina city

Regarding the governance model of the Park, The Technical Department is the main responsible authority for the planning and delivery phase of the Project, while the Department of Green Spaces will be responsible for the governance of the park during the stewardship phase. That framework is historically implemented in all the parks in the city and this model will be followed in the Pirsinela Park as well.

3. Value capture

- a. Cost structure
 - i. Maintenance
 - ii. Personnel cost
 - iii. Infrastructure

b. Are there opportunities to reduce costs e.g. through volunteers?

Due to the scale of the exemplar and its nature, its maintenance is the largest part of the ongoing costs (e.g. energy, water consumption, personnel, materials for building maintenance, promotion of the park. Costs may be reduced through volunteering, smart and bioclimatic solutions, rainwater harvesting, solar energy (eg. Solar panel on building roofs), philanthropy-donations, rents from the buildings and University's contribution as a living Lab.

c. Capturing value- what does success look like? How will you know if you have succeeded in delivering your value proposition e.g. economically – is direct revenue generated or new business supported? What are the indicators for capturing social or environmental value?

The successful delivery of the value proposition can be measured through the implementation of an indicators monitoring program. These indicators include environmental, social and economic indicators, as developed in the framework of the Connecting Nature Project. These indicators can be summarized in the following Table.

CODE	NAME	City selection	NBS expected result (previous sub-building block)	Selection reasoning
PRIMARY INDICATORS				
PI1	Type of interaction with NBS	X	The renewed park will host more leisure activities, provide environmental education, and in addition will be oriented at cultural activities	Measure what type of activities the citizens more often do in the Pak
PI2	Frequency of interaction with NBS	X	The renewed park will host more leisure activities, provide environmental education, and in addition will be oriented at cultural activities	Measure how frequently the citizens visit the Park
PI3	Duration of interaction with NBS	X	The renewed park will host more leisure activities, provide environmental education, and in addition will be oriented at cultural activities	Measure how much time the citizens spend in the Park
ENVIRONMENTAL INDICATORS				
CORE				
Env23	Public green space distribution	X	Increase and improve green spaces	Measure how the Pak affected the green space

				distribution in the city fabric
Env89	Community garden area per capita and in a defined distance	X	Sustainable economic development through the integration of commercial and social actions in the site, job creation, increase in the value of the land property	Measure how the Pak affected the green space distribution in the city fabric
FEATURE				
Env26	Community accessibility	X	The renewed park will host more leisure activities, provide environmental education, and in addition will be oriented at cultural activities	Measure the ease of access to the Pak
Env38	Urban green space	X	Increase and improve green spaces	Measure how the Pak affected the green space distribution in the city fabric
HEALTH AND WELLBEING INDICATORS				
CORE				
HW12	Enhanced Physical Activity	X	Improved physical activity	Establish the amount of physical activity that the residents of the park do
SOCIAL COHESION INDICATORS				
CORE				
SC1	Bonding social capital	X	The renewed park will host more leisure activities, provide environmental education, and in addition will be oriented at cultural activities	Know how are the social relations between the same social groups
SC5.1	Perceived safety	X	Sustainable economic development through the integration of commercial and social actions in the site, job creation, increase in the value of the land property	Know how the restoration of the Pak affected the feeling of safety in the area
SC11.1	Positive environmental attitudes motivated by contact with NBS	X	The renewed park will host more leisure activities, provide environmental education, and in addition will be	Know how the Park changed the citizens' relationship with nature

			oriented at cultural activities	
FEATURE				
SC10	Environmental education opportunities	X	The renewed park will host more leisure activities, provide environmental education, and in addition will be oriented at cultural activities	Measure the new education activities conducted in the Park
ECONOMIC INDICATORS				
CORE				
ECO1	New Businesses 'attracted' or started and additional rates received	X	Sustainable economic development through the integration of commercial and social actions in the site, job creation, increase in the value of the land property	Establish if there are new businesses since the implementation of the park
FEATURE				
ECO2	New customers attracted to businesses in the area	X	Sustainable economic development through the integration of commercial and social actions in the site, job creation, increase in the value of the land property	Establish how the rest of the businesses in the area affected since the implementation of the park
PARTICIPATORY PLANNING AND GOVERNANCE INDICATORS				
CORE				
PPG3	Transparency of co-production	X	open public consultation and incorporating the results of the Public Consultation in the final design	Know the public perception of whether the park implementation process was transparent

Step 4. Implementation of financing and business model plans for specific NBS exemplar

Name of NBS exemplar	Action to be undertaken (arising from BMC & financing plan)	Responsible person	Timeframe for implementation
Restoration of Pirsinela Park	Determining the legal framework governing the Park and the different types of land uses and activities allowed in it	CN Project Team	Done
	Internal meetings with the different Departments of the Municipality and its political actors	CN Project Team	Done
	Osmos workshop with external stakeholders	CN Project Team	Done
	Completion of studies and procurement plans in order to secure the budget of 10M € from National Recovery Fund	CN Project Team	31/12/2021
	Engagement with investors and other stakeholders for alternative sources of financing the operation of the Park	CN Project Team	31/03/2022
	Continued engagement of all stakeholders in preparation for implementation of business model.	CN Project Team	31/03/2022

Financing & Business Model Implementation Plan

5 Nature-based enterprises

Step 1. Awareness and strategic alignment

- *What are the priorities for economic development in your city? E.g. priority sectors for development, priority geographical areas for economic development, other economic priorities?*

According to the Strategic Plan for Sustainable Urban Development, the priorities for economic development in Ioannina can be summarized as follows:

- long-term and structural upgrade of the tourism product that will create sustainability and development with a perspective of decades.
- Internationalization and European integration - formulating a strategy for attracting investment and endogenous development
- Mobilization of EU resources
- Emerging neighboring markets
- Business development programs and the development law

- *How can the planned NBS contribute to these economic development priorities?*

Ioannina's exemplar, the restoration of Pirsinela Park, is in liaison with the above economic development priorities, as it will:

- ✓ Contribute to the improvement of the city's attractiveness and touristic development
- ✓ Mobilize EU resources, through the Connecting Nature Project
- ✓ Contribute to the business development of the area and the city in general, due to its size, importance and budget

- *For each NBS exemplar please consider, how could NBEs contribute to the planning, delivery, maintenance and sustainability of these solutions?*

The involvement of NBEs in the exemplar could be initiated in the delivery phase of the project and expanded to the stewardship phase as well. Currently NBEs are planned to be contracted in the construction work of the Park. Different alternatives are investigating regarding the way to promote the contract of NBEs without conflicts with Greek and European legislation. In accordance, the same is planned for the stewardship phase of the project, with the companies that will be contracted in the maintenance of the park.

- *What are the challenges and enablers from a city perspective in involving NBEs in the implementation of NBS?*

For the municipality of Ioannina, the main challenge in involving NBEs in the implementation of the NBS is the novelty of the concept of NBEs. Even local companies that are identified from Ioannina CN team as NBEs had difficulties in answering if they can be considered themselves NBEs. As a result the Connecting Nature Project, its Framework and the city's exemplar can act as a mean to introduce and enhance the concept of NBEs in the area.

Step 2. Building alliances

- *From an NBE perspective what are the challenges and enablers to start-up and growth of NBEs? Do NBEs face specific challenges or enablers?*

As described in the previous chapter, the main challenge that NBEs face in the area is the novelty of the term, that is not recognized by local stakeholders and the general public. In some cases, even the companies involved in the environmental sector, are not familiar with the term.

- *Who are the main actors in the innovation ecosystem in each city (see figure)?*

During the planning phase of the exemplar the Ioannina CN team contacted the Chamber of Commerce, due to the institutional role of both. During these meetings the concept of NBEs were discussed and a number of local companies were identified. These meetings will continued and an open infoday will be planned in the Park in order to present the concept of NBEs to the public and to different stakeholders in the area.

- *How can these actors be engaged to stimulate a culture of nature-based entrepreneurship and support the emergence and growth of nature-based enterprises?*

The municipality has the will to support the growth of these businesses through contracts for various works during the delivery and stewardship phases of the project. This could set an example and trigger the further involvement and collaboration of NBEs with the municipality. Moreover, the municipality could promote the concept of NBEs through open infodays and through the allocation of spaces in the park for their promotion.

- *What is the level of knowledge and skills of the Connecting Nature team in your city in terms of supporting the emergence and growth of NBE? If skills gaps have been identified, how do you plan to address them*

The concept of NBEs is new for the team, nevertheless there is the willingness to promote their participation in the city works and the Connecting Nature exemplar is a way to showcase their importance.

Step 3: Planning NBE strategy

What are the primary objectives of your NBE strategy?

The primary objective of our NBE strategy is to introduce these enterprises in the works of the municipality through the tenders in the implementation of the exemplar.

How will NBE contribute to the implementation of your NBS?

NBEs could be utilized in the delivery and stewardship phases of the exemplar, during the construction of the park and later on during the maintenance work of it.

What measures are you putting in place to stimulate the emergence of a culture of nature-based entrepreneurship

and to support the emergence and growth of NBEs?

The municipality has the will to support the growth of these businesses through contracts for various works during the delivery and stewardship phases of the project. This could set an example and trigger the further involvement and collaboration of NBEs with the municipality. Moreover, the municipality could promote the concept of NBEs through open infodays and through the allocation of spaces in the park for their promotion.

What innovation ecosystem actors have been engaged in the development of your NBE strategy and what actors are engaged in the implementation of the strategy?

How will you know if your NBE objectives have been achieved? How will impact be measured?

The achievement of the goals and objectives will be determined with the monitoring of appropriate indicators, like the number of contracts in the municipality with NBEs and number of jobs created and related to NBEs.

Step 4: Implementation

Name of NBS exemplar	Action to be undertaken relating to NBE	Responsible person	Timeframe for implementation
Restoration of Pirsinela Park	Initial meeting with Chamber of Commerce	CN Project Team	Done
	Procurements with NBEs during the construction works in the Park	CN Project Team	31/12/2021
	Open Infodays for public awareness in NBEs	CN Project Team	31/03/2022

NBE Implementation Plan

City	Ioannina City	
Capital Financing required for NBS Exemplar	10M €	
Capital financing applications submitted /secured	10M € national recovery fund part of the Next Generation EU project Small budget from city - to be checked 50,000 approx. (minor restoration work)	
Unsuccessful capital financing	None	
Sources of capital	1. 50k	

investment (1) City budget (public) (2) Regional / national / EU other public sources (3) Private/third sector (4) Financial Institutions	2. 10M € 3. / 4. /	
New financing partnerships <ul style="list-style-type: none"> • Capital • Stewardship 	Capital: National & EU Fund Stewardship: Public Sector alternative models to be explored - income from leasing out buildings; Cultural events and activities – Rent of buildings	
Key Innovations	Public private cooperation in terms of generating income	

NBE Strategy Summary Table

NBS	NBS Phase	Type of NBE Involved	Challenge	Goal of NBE Programme	How will this be achieved?	Partner	What does success look like and how will you measure it?
Restoration of Pirsimela Park	Planning	None	Lack of knowledge about NBEs. Lack of NBEs in the region	Build knowledge of NBEs in the region, create a database of NBEs	Meetings with stakeholders	None at the moment	No. of companies in the database,
	Delivery	NBEs in the construction works in the Park	Lack of knowledge about NBEs. Lack of NBEs in the region	Utilization of NBEs in the works to be done during the restoration of the park	Contracting NBEs in the construction works	To be determined	no. of tenders with the municipality
	Stewardship	NBEs in the maintenance works in the Park	Lack of knowledge about NBEs. Lack of NBEs in the region	Utilization of NBEs in the works to be done during the maintenance of the park	Contracting NBEs in the maintenance works	To be determined	no. of tenders with the municipality

6 Co-production

Step 1. Define the goals of the co-production process

One of the main goals of Ioannina's Exemplar, the Restoration of Pirsinela Park, is to restore the Park in line with the needs of its multiple groups of users. In order to achieve that goal, it is really important to involve as many actors and citizens as possible in all phases of the Project. Beginning from the design phase of the Project, a number of different actors were identified and included in the co-production process, including:

- Political leadership of the Municipality (Mayor, Vice mayors)
- Different Departments of the Municipality (Technical, Economic, Green Spaces, Planning)
- Other Agencies outside of the Municipality (Prefecture, Forestry Directorate, Archaeological Agency)
- University
- Environmental NGOs
- Chambers (Technical Chamber, Chamber of Commerce)
- Cultural associations
- All citizens of Ioannina city

Step 2. Use the design principles to flesh out the coproduction goals and structure

Regarding the Co-production Principles, we tried to address them during the Design Phase of the Project, that is currently ongoing. More specifically:

- Inclusivity: the open consultation conducted in the Design Phase led to responses from all relevant stakeholders ranging from individual citizens to institutions and organizations. As a result, the process covered all the different actors involved in it.
- Openness: the process and mainly the open consultation was open to anyone willing to participate and advertised and communicated through various channels, like newsletters, municipality's website and social media, local media. The results of the open consultation were communicated through the same channels, as well.
- Legitimacy: The participation of well-established and respected actors in the process (like the University, Chamber of Commerce and Technical Chamber) helped to make the process legitimate.
- Actionable knowledge: The public had the opportunity to express its opinion directly and improve the design of a project according to its actual needs.
- Usable knowledge: The Project provided an example of an alternative way of designing and implementing a project in the city with the actual participation of the public, a

methodology that can be used in other projects as well.

- Extending institutions: The Project presented the CN Framework to different Departments of the Municipality providing an alternative methodology for working and collaboration.

Step 3. Plan the co-production steps and activities / Co-production tools used

During the Design Phase of the Project, the co-production activities were conducted both internally (within the municipal Departments) and externally (open consultation process) in 5 discreet steps, as highlighted below:

A/A	Step	Goal	Actors Involved	Tools used
1.	Preparation of Draft Design of the Restoration	Preparation of the 1 st Draft Design to be used as a base for further development	Municipality's Technical Department	Internal meetings
2	Presentation of the Draft Design to the Mayor, Vice Mayors and rest of the Departments	Feedback, remarks and approval of the Draft Design to be presented to the Public during the Open Consultation	Mayor, Vice Mayors, municipal Departments	Presentations, meetings, open discussions
3	Open Public Consultation	Sharing the draft design to the local community to seek their suggested amendments / Collect opinions on the different suggested uses in the Park	Citizens, University, NGOs, Technical Chamber, Chamber of Commerce, Cultural associations	Public participation platform
4	Preparation of the Final Park Design	Collection of the results of the public consultation and production of the Final Park Design	Municipality's Departments	Internal Meetings
5	Approval of the Final Park Design – Masterplan	Approval of the Final Park Design – Masterplan from the City Council	City Council	Presentation, discussion and final decision made

Step 4. Reflect on the co-production process and results

From the beginning of the Project, its main goal was to restore the Park in line with the needs of the multiple groups of users. After the completion of its Design Phase and the co-production process described in the above section, this goal was achieved taking into consideration the

participation of the Public in the Open Public Consultation process and the feedback that this process provided.

Regarding the main opportunities faced in the co-production process during the Design Phase of the Project, the process has a positive impact both internally in the municipality and externally in the communication and interaction of the municipality with the public. Internally, the process provided an opportunity for various Departments of the municipality to work together and more closely in the implementation of a project, bypassing barriers of bureaucracy and responsibilities. Externally, the Project, through its Open Consultation Process, provided a mean and a place for the citizens to express their opinion for a project that will have a positive impact in their everyday life. Moreover, the inclusion of many suggestions of the open consultation to the Final Design of the Park strengthens the relationship and trust between the citizens and municipality.

The main barriers faced during the co-production process in the Design Phase derived mainly from the restrictions imposed by the implications of the recent pandemic in the operation of the municipality and in the limitations of social gathering. Additionally, a lack of previous examples of co-production in the municipality made both the public and the municipality initially reluctant in the process, but the final result proved that such a process has a great value in the implementation of a Project in the city.

7 Reflexive monitoring

Step 1. Rethink what learning process you need to achieve the goals of the nature-based solution

• What are the (different) goals of your nature-based solution? • What are the main learning questions that need to be addressed to achieve these goals? Think what needs to change for a successful implementation of the naturebased solution compared to a regular planning process. Which barriers or challenges are expected? Can these be translated into things your team or other actors in the process need to learn? • Which actors have a role in this process and how can they be activated to contribute to answer your learning questions? • How to create a learning environment and plan for additional time to get acquainted with the reflexive monitoring method for the reflexive monitor and the team members involved?

The goals of the NBS are: a) restore the experiential relationship of residents with the largest green park in the city. b) Turning the park into a hub of a multitude of cultural, sports and educational activities. c) promote social cohesion through a variety of opportunities that will arise from the different uses of the park. d) Conserve, protect and further enhance the park's green space based on resilience. e) Sustainable economic development through the integration of commercial and social actions in the site. f) Upgrade the quality of city's life, by providing a neglected park with historical significance to the citizens.

The main learning questions that identified, up until now, in the implementation of the project are summarized below:

- How can the CN team in Ioannina identify which community projects should get prioritized in order to scale-up NBS as quickly as possible under the Open Space Strategy and Local Contexts?
- How do we determine the key design elements to include in the restoration of the Park
- How do we finance the Project
- How to implement the construction of the Project
- How do we develop a viable, sustainable way for financing the operation of the Park
- What will be the governing model of the Park

The main barrier / challenge that the CN team in Ioannina faced in implementing the reflexive monitoring was the whole innovation of the process for the team and the personnel of the municipality. But eventually, in adopting the reflexive monitoring in the design and implementation of the Project, we learn to utilize it and understanding it in practice and eventually the reflexive monitoring became a valuable tool that helps the team to stay I focus and be informed on all the aspects of the Project in any given time.

The team was introduced to the reflexive monitoring methodology through the knowledge transfer workshop in Nicosia, while the various reflexive monitoring webinars helped us further understand its philosophy. The knowledge transfer workshop in Malaga was an opportunity to put all the theoretical knowledge of the reflexive monitoring in practice. Finally, the frequent meetings with the team in Poznan (as our 'mentor' city) provided valuable insights and guidance in the implementation of reflexive monitoring in our city and exemplar.

Step 2. Define the roles within the project team

• Who is involved in the reflexive monitoring process? • How are the roles divided over the team? It is possible to divide the different tasks of the reflexive monitor over multiple team members but important to explicate who is responsible for what. In case the project manager takes the (or parts) of the role as reflexive monitor: How do you ensure there is no conflict between these two roles? • How do you ensure there will be enough space for the reflexive monitor to familiarize his-/herself with the reflexive monitoring tools and the capacities required for this role?

All members of the CN team in Ioannina are involved in the implementation of the reflexive monitoring process and while all members could contribute to its development, one member of the team (different than the Project manager) was designated as monitor and has the responsibility to update the process.

Step 3. Recording important events and analysing critical turning points

• How do you track the important events in time? When do you discuss what happened with your team and formulate to critical turning points? Is it connected to 'regular' project meetings? Do you organize an additional meeting for this step and if yes, who is involved in this 'timeline meeting'?

• Who is involved in updating the dynamic learning agenda? How often are the updates made? With whom is this agenda shared?

• How to you keep track on the follow-up actions, especially when they are executed by colleagues who are not (closely) involved in the reflexive monitoring process?

• Can you give 2-3 example(s) of follow-up actions and describe who was responsible for them and how they relate to the critical turning points and learning questions?

Depending on your team parts of the process can be done together or alone. The reflexive monitor is responsible to produce the dynamic learning agenda and the other team members can be involved at different levels. However, the different responsibilities and the planning needs to be transparent and clear for all people involved in order to ensure everybody is contributing in time and follow-up actions are implemented in practice. This to avoid parallel processes between 'regular' project meetings and the reflexive monitoring process.

In Ioannina regular bi-weekly project meetings are held with the participation of all the members of the city's CN team, where the status of the project is discussed and the critical turning points are formulated.

Responsible for updating the dynamic learning agenda is the monitor with contributions of all the members of the team. Updates are made when a significant event happened. The dynamic learning agenda is shared with all the members of the CN team.

Because of the fact that the CN team consists of members from almost all Departments of the municipality, all the follow-up actions in the project are known to a member of the team and are communicated to the rest of the team in the scheduled meetings.

Some examples of follow up actions are those related to one of the most important Critical Turning Point, which was "Designing the key elements of the Exemplar" and its Learning Question "How do we determine the key design elements to include in the restoration of the

Park”. The follow up actions in essence reveal all the methodology that was followed and involved internal and external meetings, city board decisions and public participation. Particularly, the follow up actions in this LQ and CTP were:

- Prepare a draft design with the key proposed features of the park
- Present the draft design to the Mayor, Vice Mayors and Technical Department for remarks and approval
- Present the project to the local community - open public consultation.
- Incorporating the results of the Public Consultation and finalizing the design
- Presenting the final Park Design to the City Council for approval
- Approval of the Park's Master Plan from the City Council

Step 4. Use learning sessions to identify learning outcomes

- *What are the main opportunities and barriers you experienced throughout your reflexive monitoring process (including working with the reflexive monitoring tools)?*
- *How did you include the reflexive monitoring process into your daily activities?*
- *What came up during the learning sessions that influenced the planning, co-production and/or implementation of your nature-based solution?*

The main barrier was the innovation of the process for the CN team, as the reflexive monitoring process was a new approach on managing a project. As a result, in the beginning, every member and stakeholder involved in the Project had to be persuaded in participating in the process. Eventually, with everyone on board, we find the methodology of reflexive monitoring to help us be more focused in the targets of the project and every member of the team be constantly aware of all the critical points of the project.

Step 5. Share your findings with others

What lessons on reflexive monitoring did you learn from the other cities? And what lessons did you share with other cities?

- *Did you organize an eye-opener workshop and what did you and the participants gain from it?*
- *How was it to write a learning history narrative? Did the learning history narratives from other cities inspire or surprise you and in what way?*
- *What are the main take ways from the peer-to-peer learning sessions you participated in (these are the knowledge transfer workshops and learning platform webinars)?*

The one-to-one reflexive monitoring sessions with Poznan provided valuable and very productive insights in the implementation of the methodology by our team. We had the opportunity to discuss questions arose in the actual use of the process and gain from their experience. For instance, their experience in turning the reflexive monitoring process from a theoretical concept to an actual tool that they used in their everyday work was an inspiration for us to try and implement it more actively in our exemplar.

Writing a learning history narrative helped us to have a clearer perspective of our Project and been able to communicate it more effectively both to the municipality, in order to gain political

support, and to the public, to the citizens of Ioannina, in order to ensure their participation in the planning phase of the Project. In addition, the learning history narrative proved to be a very useful tool in our effort to prepare the proposal for securing the budget for our Project through national funds.

Step 6. Reflecting on the method and peer-to-peer sharing

- *How is reflexive monitoring new/different from your usual way of working?*
- *How does this method help you in the process of co-producing and scaling nature-based solutions?*
- *Did it influence your change existing relations, rules, social practices and discourses for the co-production and scaling of nature-based solutions (reflect upon why or why not)?*
- *What are the main lessons learned for the internal organization of the exemplar?*
- *Did the applied reflexive monitoring tools help you with the analysis of key barriers and opportunities for the co-production and scaling of nature-based solutions (if yes, explain how)?*
- *Did the applied reflexive monitoring tools help you with enabling third party learning, i.e. transferring the lessons learned in the project to project outsiders (if yes, explain how)?*

Reflexive monitoring is a new methodology for the municipality, quite different from the usual way of managing a project. Through the identification of critical turning points and the formulation of learning questions, the team can be more proactive and anticipate possible problems, in contrast to the traditional way of managing a project, where a substantial amount of time is dedicated in dealing with problems after their appearance.

Ioannina city Dynamic Learning Agenda

Critical Turning Points (CTPs)	Dynamic Learning Agenda (DLA) - Learning Questions (LQ)		C. Follow Up Action (FUA)		Status
	Nr.	description	Nr.	description	
Determining the NBS exemplar for Ioannina City	LQ1	How can the CN team in Ioannina identify which community projects should get prioritized in order to scale-up NBS as quickly as possible under the Open Space Strategy and Local Contexts?	FUA1	Schedule official meeting with the new municipal authority in order to present the four projects and get the final approval for the exemplar project. Share a canvas model for the exemplar with Municipality of Ioannina and see how it will us move forward	Done
Designing the key elements of the Exemplar					
	LQ2	How do we determine the key design elements to include in the restoration of the Park	FUA2.1	Prepare a draft design with the key proposed features of the park	Done
			FUA2.2	Present the draft design to the Mayor, Vice Mayors and Technical Department for remarks and approval	Done
			FUA2.3	Present the project to the local community - open public consultation.	Done

Implementing the restoration of the Park (Financing, construction)				FUA2.4	Incorporating the results of the Public Consultation and finalising the design	Done
				FUA2.5	Presenting the final Park Design to the City Council for approval	Done
				FUA2.6	Approval of the Park's Master Plan from the City Council	Done
Implementing the restoration of the Park (Financing, construction)	LQ3.1	How do we finance the Project		FUA3.1.1	Schedule meetings with Financial Department and Vice Mayor in order to determine possible funding opportunities	Done
				FUA3.1.2	Preparing funding proposal to be submitted under Recovery Fund (NextGenerationEU)	Done
	LQ3.2	How to implement the construction of the Project		FUA3.2.1	Determine the work to be done in-house or contracted	Done
				FUA3.2.2	Prepare Open Tender Contests	Ongoing
Financing the operation of the Park						
	LQ4	How do we develop a viable, sustainable way for financing the operation of the Park		FUA4.1	Prepare a proposal with different financing alternatives, according to CN guidebooks	Ongoing
				FUA4.2	Schedule meetings with Financial Department and Vice Mayor in order to determine possible funding tools	To Be Done
				FUA4.3	Schedule meetings with various stakeholders and businesses	To Be Done

Governing of the Park	LQ5	What will be the governing model of the Park	FUA5.1	Prepare a proposal with different governing alternatives, according to CN guidebooks	Ongoing
			FUA5.2	Schedule meetings with different Departments and Vice Mayors in order to determine possible governing models tools	To Be Done

8 Impact assessment

The following Figure 7.1 presents the relationships between objectives, actions and results, Table 1 presents the strategic objectives of the city related to the United Nations Sustainable Development Goals, Table 2 presents the characteristics of the NBS and expected impact and Table 3 the expected results. Table 4 presents the possible synergies or trade-offs between the expected results:

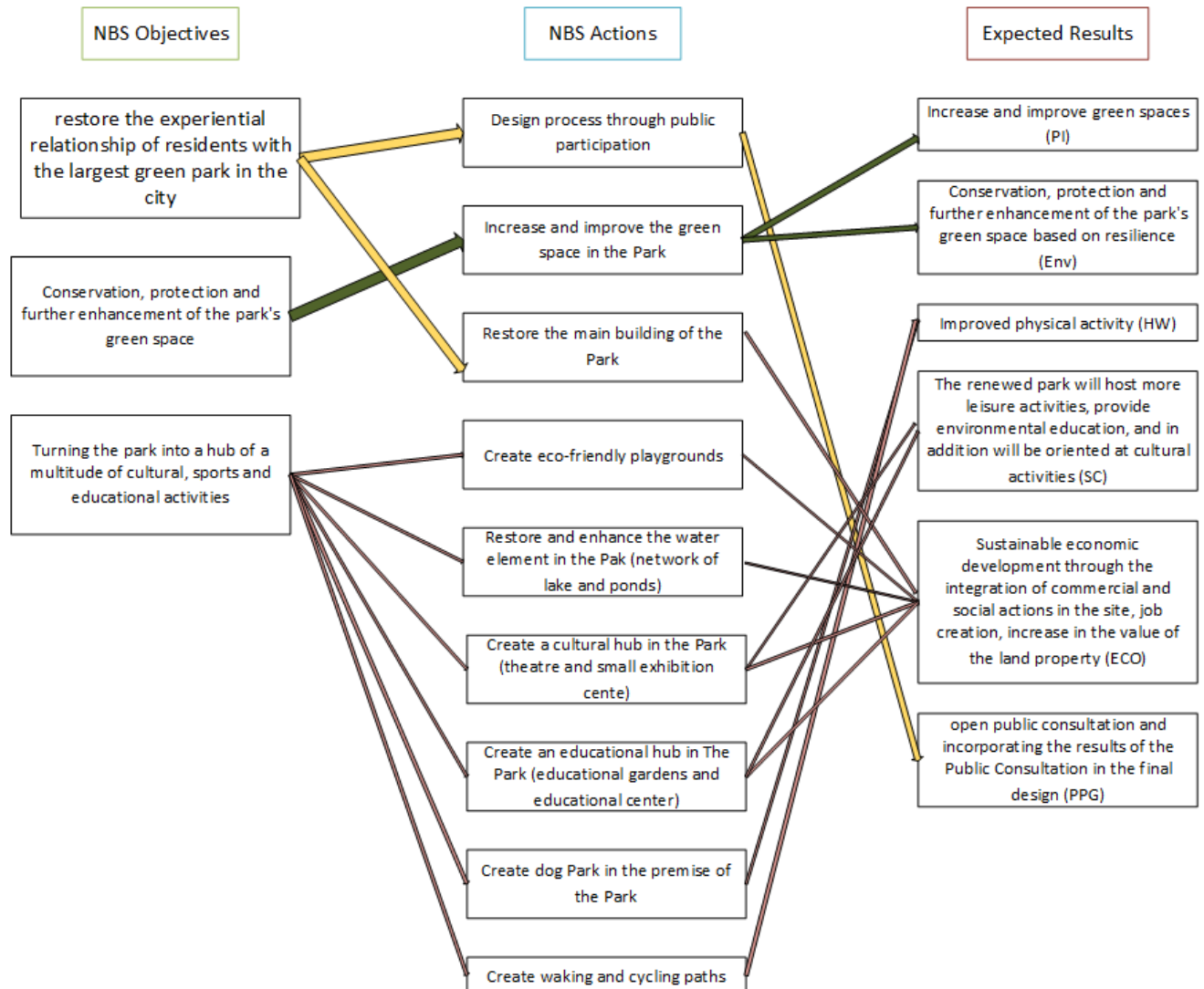


Table 1. Strategic objectives of the city related to the United Nations Sustainable Development Goals

City's strategic goals	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Increase and improve green spaces			X								X		X		X		
Increase cultural, sports and educational activities			X	X							X						
Upgrade the quality of city's life			X														
Improve citizens' wellbeing			X														

Table 2. Characteristics of the NBS and expected impact

Description of the NBS	
Type	Urban park
Context description	Restoration of Pirsinela Park, the biggest park in the city and the largest area of existing greenspace (25 ha)
Scale	25 hectares
Location (Geographical coordinates)	39°38'25"N - 20°51'17"E
Process of design and implementation	1. Prepare a draft design with the key proposed features of the park, 2. Present the draft design to the Mayor, Vice Mayors and Technical Department for remarks and approval, 3. Present the project to the local community - open public consultation, Incorporating the results of the Public Consultation and finalising the design 4. Presenting the final Park Design to the City Council for approval 5. Approval of the Park's Master Plan from the City Council
NBS objectives	restore the experiential relationship of residents with the largest green park in the city, Turning the park into a hub of a multitude of cultural, sports and educational activities, Conservation, protection and further enhancement of the park's green space based on resilience, Sustainable economic development through the integration of commercial and social actions in the site

Table 3. NBS Expected Results

NBS Expected Results

Primary (PI)¹	Increase and improve green spaces
Environmental (Env)	Conservation, protection and further enhancement of the park's green space based on resilience
Health and Wellbeing (HW)	Improved physical activity
Social Cohesion (SC)	The renewed park will host more leisure activities, provide environmental education, and in addition will be oriented at cultural activities
Economic (ECO)	Sustainable economic development through the integration of commercial and social actions in the site, job creation, increase in the value of the land property
Participatory planning and governance (PPG)²	open public consultation and incorporating the results of the Public Consultation in the final design

Table 4. Possible synergies or trade-offs between the expected results

NBS Actions	Expected results	Assumptions	Synergies	Trade-offs
Design process through public participation	open public consultation and incorporating the results of the Public Consultation in the final design	If citizens participate in the co-design of the park they will like the final result more	If citizens like the park they will use it more for social activities and exercise	None
Increase and improve the green space in the Park	Increase and improve green spaces	Citizens will like to see the park with dense vegetation, many trees and shady places	If citizens like the park they will use it more for social activities and exercise	Depending on the species it can increase allergies
Restore the main building of the Park	The renewed park will host more leisure activities, provide environmental education, and in addition will be oriented at cultural activities	Citizens will like a place which could host educational and cultural activities	If citizens like the park they will use it more for social activities and exercise	None
Create eco-friendly	Sustainable economic	Citizens will like to see a safe	If citizens like the park they	None

¹ Results related to the use of the exemplar, for example, that the NBS is visited 3 times a week by neighbours, or that the average visit lasts 20 minutes

² Results related to the implementation process of the exemplar, for example, that citizens have confidence in decision-makers

playgrounds	development through the integration of commercial and social actions in the site, job creation, increase in the value of the land property	and eco-friendly place for their kids to play	will use it more for social activities and exercise	
Restore and enhance the water element in the Pak (network of lake and ponds)	Sustainable economic development through the integration of commercial and social actions in the site, job creation, increase in the value of the land property	Citizens will appreciate a more versatile environment combining green and blue elements	If citizens like the park they will use it more for social activities and exercise	None
Create a cultural hub in the Park (theatre and small exhibition centre)	The renewed park will host more leisure activities, provide environmental education, and in addition will be oriented at cultural activities	Citizens will like a place which could host educational and cultural activities	More opportunities for social interaction between citizens	None
Create an educational hub in The Park (educational gardens and educational center)	The renewed park will host more leisure activities, provide environmental education, and in addition will be oriented at cultural activities	Citizens will like a place which could host educational and cultural activities	More opportunities for social interaction between citizens	None
Create dog Park in the premise of the Park	Improved physical activity	Citizens will like a safer and more organised place for them and their pets	If group physical activity is favoured, social interaction will increase	It may increase noise in the Park
Create walking and cycling paths	Improved physical activity	Citizens will like a greener place for physical activities in the city	If group physical activity is favoured, social interaction will increase	None

The following Table 5 presents the selection of indicators based on the NBS expected results

CODE	NAME	City selection	NBS expected result (previous sub-building block)	Selection reasoning
PRIMARY INDICATORS				
P11	Type of interaction with NBS	X	The renewed park will host more leisure activities, provide environmental education, and in addition will be oriented at cultural activities	Measure what type of activities the citizens more often do in the Pak
P12	Frequency of interaction with NBS	X	The renewed park will host more leisure activities, provide environmental education, and in addition will be oriented at cultural activities	Measure how frequently the citizens visit the Park
P13	Duration of interaction with NBS	X	The renewed park will host more leisure activities, provide environmental education, and in addition will be oriented at cultural activities	Measure how much time the citizens spend in the Park
ENVIRONMENTAL INDICATORS				
CORE				
Env23	Public green space distribution	X	Increase and improve green spaces	Measure how the Pak affected the green space distribution in the city fabric
Env89	Community garden area per capita and in a defined distance	X	Sustainable development through the integration of commercial and social actions in the site, job creation, increase in the value of the land property	Measure how the Pak affected the green space distribution in the city fabric

FEATURE				
Env26	Community accessibility	X	The renewed park will host more leisure activities, provide environmental education, and in addition will be oriented at cultural activities	Measure the ease of access to the Pak
Env38	Urban green space	X	Increase and improve green spaces	Measure how the Pak affected the green space distribution in the city fabric
HEALTH AND WELLBEING INDICATORS				
CORE				
HW12	Enhanced Physical Activity	X	Improved physical activity	Establish the amount of physical activity that the residents of the park do
SOCIAL COHESION INDICATORS				
CORE				
SC1	Bonding social capital	X	The renewed park will host more leisure activities, provide environmental education, and in addition will be oriented at cultural activities	Know how are the social relations between the same social groups
SC5.1	Perceived safety	X	Sustainable development through the integration of commercial and social actions in the site, job creation, increase in the value of the land property	Know how the restoration of the Pak affected the feeling of safety in the area
SC11.1	Positive environmental attitudes motivated by contact with NBS	X	The renewed park will host more leisure activities, provide environmental education, and in	Know how the Park changed the citizens' relationship with nature

			addition will be oriented at cultural activities	
FEATURE				
SC10	Environmental education opportunities	X	The renewed park will host more leisure activities, provide environmental education, and in addition will be oriented at cultural activities	Measure the new education activities conducted in the Park
ECONOMIC INDICATORS				
CORE				
ECO1	New Businesses 'attracted' or started and additional rates received	X	Sustainable development through the integration of commercial and social actions in the site, job creation, increase in the value of the land property	Establish if there are new businesses since the implementation of the park
FEATURE				
ECO2	New customers attracted to businesses in the area	X	Sustainable development through the integration of commercial and social actions in the site, job creation, increase in the value of the land property	Establish how the rest of the businesses in the area affected since the implementation of the park
PARTICIPATORY PLANNING AND GOVERNANCE INDICATORS				
CORE				
PPG3	Transparency of co-production	X	open public consultation and incorporating the results of the Public Consultation in the final design	Know the public perception of whether the park implementation process was transparent

Table 6 depicts the data collection moments for the indicators:

Code	Indicator	Connecting Nature Method	Available data before exemplar implementation	Implemented exemplar	Causality analysis	Season
P11	Type of interaction with NBS	survey procedure, paper-and-pencil administration, computer-based administration)				It is indifferent for this indicator
P12	Frequency of interaction with NBS	survey procedure, paper-and-pencil administration, computer-based administration				It is indifferent for this indicator
P13	Duration of interaction with NBS	survey procedure, paper-and-pencil administration, computer-based administration				It is indifferent for this indicator
Env23	Public green space distribution	GIS analysis				It is indifferent for this indicator
Env89	Community garden area per capita and in a defined distance	GIS analysis				It is indifferent for this indicator
Env26	Community accessibility	GIS analysis				It is indifferent for this indicator
Env38	Urban green space	GIS analysis				It is indifferent for this indicator

							indicator
HW12	Enhanced Physical Activity	survey procedure, paper-and-pencil administration, computer-based administration					It is indifferent for this indicator
SC1	Bonding social capital	survey procedure, paper-and-pencil administration, computer-based administration					It is indifferent for this indicator
SC5.1	Perceived safety	survey procedure, paper-and-pencil administration, computer-based administration					It is indifferent for this indicator
SC11.1	Positive environmental attitudes motivated by contact with NBS	survey procedure, paper-and-pencil administration, computer-based administration					It is indifferent for this indicator
SC10	Environmental education opportunities	survey procedure, paper-and-pencil administration, computer-based administration					It is indifferent for this indicator
ECO1	New Businesses 'attracted' or started and additional rates received	survey procedure, paper-and-pencil administration, computer-based administration					It is indifferent for this indicator
ECO2	New customers attracted to businesses in	survey procedure, paper-and-pencil administration, computer-based					It is indifferent for this indicator

	the area	administration				
PPG3	Transparency of co-production	survey procedure, paper-and-pencil administration, computer-based administration				It is indifferent for this indicator

The following Table 7 presents the Fieldwork planning for the collection of data for the indicators:

Code	Indicator	Procedure	Sample	Data management	Budget
P11	Type of interaction with NBS	Questionnaire to be distributed in the Park	200 citizens, aged between 18-80	The data will be collected by external expert	3,000,00€ to hire an external expert for all indicators analysis
P12	Frequency of interaction with NBS	Questionnaire to be distributed in the Park	200 citizens, aged between 18-80	The data will be collected by external expert	3,000,00€ to hire an external expert for all indicators analysis
P13	Duration of interaction with NBS	Questionnaire to be distributed in the Park	200 citizens, aged between 18-80	The data will be collected by external expert	3,000,00€ to hire an external expert for all indicators analysis
Env23	Public green space distribution	GIS analysis of existing data	Available data	Analysis will be conducted by the municipality's Technical Department	

Env89	Community garden area per capita and in a defined distance	GIS analysis of existing data	Available data	Analysis will be conducted by the municipality's Technical Department	
Env26	Community accessibility	GIS analysis of existing data	Available data	Analysis will be conducted by the municipality's Technical Department	
Env38	Urban green space	GIS analysis of existing data	Available data	Analysis will be conducted by the municipality's Technical Department	
HW12	Enhanced Physical Activity	Questionnaire to be distributed in the Park	200 citizens, aged between 18-80	The data will be collected by external expert	3,000,00€ to hire an external expert for all indicators analysis
SC1	Bonding social capital	Questionnaire to be distributed in the Park	200 citizens, aged between 18-80	The data will be collected by external expert	3,000,00€ to hire an external expert for all indicators analysis
SC5.1	Perceived safety	Questionnaire to be distributed in the Park	200 citizens, aged between 18-80	The data will be collected by external expert	3,000,00€ to hire an external expert for all indicators analysis
SC11.1	Positive environmental attitudes motivated by contact with NBS	Questionnaire to be distributed in the Park	200 citizens, aged between 18-80	The data will be collected by external expert	3,000,00€ to hire an external expert for all indicators analysis
SC10	Environmental education opportunities	Questionnaire to be distributed in the Park	200 citizens, aged between 18-80	The data will be collected by external expert	3,000,00€ to hire an external expert for all indicators analysis

ECO1	New Businesses 'attracted' or started and additional rates received	Questionnaire to be distributed in the Park	200 citizens, aged between 18-80	The data will be collected by external expert	expert for all indicators analysis
ECO2	New customers attracted to businesses in the area	Questionnaire to be distributed in the Park	200 citizens, aged between 18-80	The data will be collected by external expert	3,000,00€ to hire an external expert for all indicators analysis
PPG3	Transparency of co- production	Questionnaire to be distributed in the Park	200 citizens, aged between 18-80	The data will be collected by external expert	3,000,00€ to hire an external expert for all indicators analysis

Table 8 presents the type of data analysis

Code	Indicator	CN Method	Quantitative	Qualitative	Geolocation
P11	Type of interaction with NBS	survey procedure, paper-and-pencil administration, computer-based administration)	X		
P12	Frequency of interaction with NBS	survey procedure, paper-and-pencil administration, computer-based administration	X		
P13	Duration of interaction	survey procedure, paper-and-pencil	X		

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	with NBS	administration, administration	computer-based			
Env23	Public green space distribution	GIS analysis		X	X	X
Env89	Community garden area per capita and in a defined distance	GIS analysis		X	X	X
Env26	Community accessibility	GIS analysis		X	X	X
Env38	Urban green space	GIS analysis		X	X	X
HW12	Enhanced Physical Activity	survey procedure, administration, administration	paper-and-pencil computer-based	X		
SC1	Bonding social capital	survey procedure, administration, administration	paper-and-pencil computer-based	X		
SC5.1	Perceived safety	survey procedure, administration, administration	paper-and-pencil computer-based	X		
SC11.1	Positive environmental attitudes motivated by contact with NBS	survey procedure, administration, administration	paper-and-pencil computer-based	X		
SC10	Environmental education opportunities	survey procedure, administration, administration	paper-and-pencil computer-based	X		
ECO1	New Businesses 'attracted' or started and additional rates received	survey procedure, administration, administration	paper-and-pencil computer-based	X		
ECO2	New customers	survey procedure, paper-and-pencil		X		

	attracted to businesses in the area	administration, administration	computer-based			
PPG3	Transparency of co-production	survey procedure, administration, administration	paper-and-pencil computer-based	X		

Table 9 describes how we are planning to represent the evaluation results of the indicators to stakeholders:

Code	Indicator	Results presentation			Disclosure to stakeholders				
		Documentary report	Visual charts	Spatial Dashboard	Scientific partners	Economic sector	Higher political levels	Media	Citizens
P11	Type of interaction with NBS	X							
P12	Frequency of interaction with NBS	X							
P13	Duration of interaction with NBS	X							
Env23	Public green space distribution	X	X	X					
Env89	Community garden area per capita and in a defined distance	X	X	X					
Env26	Community accessibility	X	X	X					
Env38	Urban green space	X	X	X					
HW12	Enhanced Physical Activity	X							
SC1	Bonding social capital	X							
SC5.1	Perceived safety	X							
SC11.1	Positive environmental attitudes motivated by contact with NBS	X							
SC10	Environmental education opportunities	X							
ECO1	New Businesses 'attracted' or started and additional rates received	X							
ECO2	New customers attracted to businesses	X							



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	in the area												
PPG3	Transparency of co-production	X											

Appendix C:

Overview of workshops and activities

When	What	Participating partners	Participating Frontrunner cities	Participating Fast follower cities
Webinars and workshops on the Connectign nature Framework				
21-4-2020	PSC call - first ideas on figure & terminology	DRIFT, TDC, UEL, Horizon Nua, ICLEI, UDC	Genk, Poznan, Glasgow	
14-5-2020	Working group session #1 - First ideas on figure & terminology	Stuart Connop (UEL), Isobel Fletcher (Horizon Nua), Marleen Lodder (DRIFT), Kato Allaert (DRIFT), Dimitra Xidous (TDC), Graphic designer	Poznan, Glasgow	Pavlos melas, A Coruna
26-5-2020	Working group session #2 - evaluate first designs for figure & terminology	Stuart Connop (UEL), Isobel Fletcher (Horizon Nua), Marleen Lodder (DRIFT), Kato Allaert (DRIFT), Dimitra Xidous (TDC), Graphic designer	Poznan, Glasgow	Pavlos melas, A Coruna
2-6-2020	Working group session #3 - finalize figure & terminology	Stuart Connop (UEL), Isobel Fletcher (Horizon Nua), Marleen Lodder (DRIFT), Kato Allaert (DRIFT), Dimitra Xidous (TDC), Graphic designer	Poznan, Glasgow	Pavlos melas, A Coruna
9-6-2020	PSC call – present proposed Framework figure	TDC, UEL, Horizon Nua, ICLEI, DRIFT, UDC	Genk, Poznan, Glasgow	Pavlos Melas, Burgas, Malaga, A coruna, Sarajevo, Ioannina, Nicosia
15-7-2020	Webinar: Re-introduction to Connecting nature framework	DRIFT	Genk, Poznan, Glasgow	Pavlos Melas, Burgas, Malaga, A coruna, Sarajevo, Ioannina, Nicosia
5-5-2021	CN Framework narrative workshop	Kato and Shibeal (DRIFT), Svenja (Climate Alliance), Gerardo (BioAzul), Dimitra (TDC), Paulina (UEL)	Glasgow	Malaga, Sarajevo & A Coruna

11-5-2021	CN Framework narrative workshop	Kato and Shibeal (DRIFT), Svenja (Climate Alliance), Gerardo (BioAzul), Dimitra (TDC), Paulina (UEL)	Genk	Burgas & Pavlos Melas
12-5-2021	CN Framework narrative workshop	Marleen and Shibeal (DRIFT), Svenja (Climate Alliance), Gerardo (BioAzul), Dimitra (TDC), Paulina (UEL)	Poznan	Nicosia & Ioannina
Co- production workshops and webinars				
26-2-2018	Frontrunner city workshops - Assessment of (a) organisational conditions, barriers and strategies, (b) policy needs and (c) experiences with co-production, to identify good practices for co-production and tailor the co-production methodology	DRIFT	Genk	
11-4-2018	Frontrunner city workshop - Assessment of (a) organisational conditions, barriers and strategies, (b) policy needs and (c) experiences with co-production, to identify good practices for co-production and tailor the co-production methodology	DRIFT	Glasgow	
26-4-2018	Frontrunner city workshop - Assessment of (a) organisational conditions, barriers and strategies, (b) policy needs and (c) experiences with co-production, to identify good practices for co-production and tailor the co-production methodology	DRIFT	Poznan	
June 2018	Co-production workshop at General Assembly meeting of the Connecting Nature project held in Ioannina, Greece	DRIFT	Glasgow, Genk, Poznan	Pavlos Melas, Burgas, Malaga, A coruna, Sarajevo, Ioannina, Nicosia
02.11.2018	Co-production guidebook webinar - to discuss the first draft of the guidebook on co-production	DRIFT	Glasgow, Genk, Poznan	
21.11.2018	Co-production focus group in Rotterdam, the Netherlands - presentation of co-production processes the frontrunner cities put in place	DRIFT	Glasgow, Genk, Poznan	
14.01.2019	Co-production Webinar #0 <i>with all the FFC's together</i>	DRIFT		Pavlos Melas, Burgas, Malaga, A coruna, Sarajevo, Ioannina, Nicosia
23.01.2019	Workshop on co-production during the 'Learning Transfer Workshop' in Nicosia - Peer-to-peer learning on co-production principles and good practices	DRIFT		Pavlos Melas, Burgas, Malaga, A coruna, Sarajevo, Ioannina, Nicosia
14-3-2019 18-3-2019 10-4-2019	Co-production workshop #1 <i>with each of the FFC's separately</i>	DRIFT		Pavlos Melas, Burgas, Malaga, A

2-5-2019 29-5-2019 18-6-2019 21-6-2019 27-6-2019	2019			coruna, Sarajevo, Ioannina, Nicosia
31-01-2020 3-2-2020 5-2-2020	Co-production webinar #1 <i>- with each of the FRC's separately</i>	DRIFT	Katrien, Peter (Genk) Agnieszka D, Natalia and Dominika (Poznan) Sean, Gilian, Rania (Glasgow)	
25-9-2020 24-9-2020 21-9-2020 28-9-2020 4-10-2020 29-9-2020 1-10-2020	Co-production workshop #2 <i>with each of the FRC's separately 2020</i>	DRIFT		Pavlos Melas, Burgas, Malaga, A coruna, Sarajevo, Ioannina, Nicosia
20-10-2020	Co-production webinar #2 <i>with all the FRC's, 2020</i>	DRIFT	Glasgow, Genk, Poznan	
8-10-2021	Co-production webinar #3 <i>with all the FRC's, 2021</i>	DRIFT	Rania Sermpezi, Sean Kelly (Glasgow), Natalia Madajczyk, Agnieszka D. (Poznan), Mien Quartier (Genk)	
7-6-2021 8-6-2021 31-2021 28-6-2021 26-5-2021 4-6-2021 27-5-2021	Co-production workshop #3 <i>with each of the FRC's separately 2021</i>	DRIFT		Pavlos Melas, Burgas, Malaga, A Coruna, Sarajevo, Ioannina, Nicosia
8-3-2021	Knowledge hub session: Peer 2 peer sharing - Genks Co - production governance model	UEL, DRIFT	Genk	all invited
11-5-2021	Knowledge hub session: Webinar 0 -Stakeholder mapping Webinar	OSMOS, DRIFT	all invited	all invited
13-5-2021	Knowledge hub session: Webinar 1_ Organizational coaching program: Stress management during Covid	UVT, UEL, DRIFT		Malaga, Sarajevo, pavlos melas, A Coruna
20-5-2021	Knowledge hub session: Webinar 2 - Organizational coaching program: Understanding how to foster interpersonal skills	UVT, UEL, DRIFT	Poznan	A Coruna, Malaga, , Burgas
27-5-2021	Knowledge hub session: Webinar 3 - Organizational coaching program: Collaboration & Teambuilding	UVT, UEL, DRIFT	Poznan	A Coruna, Sarajevo, Malaga, Nicosia
Reflexive monitoring workshops and webinars				
10.09.2018	Webinar reflexive monitoring - to introduce reflexive monitoring to the FRC's	DRIFT	Genk, Poznan & Glasgow	
20.11.2018	Workshop on the reflexive monitoring methodology in Rotterdam - to introduce Reflexive monitoring and facilitate peer-2-peer learning	DRIFT	Genk, Poznan & Glasgow	
12.12.2018	Webinar reflexive monitoring - to introduce reflexive monitoring	DRIFT		Pavlos Melas, Burgas, Malaga, A



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	to the FFC's			Coruna, Sarajevo, Ioannina, Nicosia
23.01.2019	Workshop on reflexive monitoring during the 'Learning Transfer Workshop' in Nicosia	DRIFT,	Genk, Poznan & Glasgow	Pavlos Melas, Burgas, Malaga, A Coruna, Sarajevo, Ioannina, Nicosia
10-6-2019	FFC RM in practice 1-on-1 webinars	Igno Notermans and Daan Sillen (DRIFT)		Ioannina
13-6-2019	FFC RM in practice 1-on-1 webinars	Igno Notermans and Daan Sillen (DRIFT)		Nicosia
14-6-2019	FFC RM in practice 1-on-1 webinars	Igno Notermans and Daan Sillen (DRIFT)		A Coruna
16-7-2019	FFC RM in practice 1-on-1 webinars	Igno Notermans and Daan Sillen (DRIFT)		Bologna
17-6-2019	FFC RM in practice 1-on-1 webinars	Igno Notermans and Daan Sillen (DRIFT)		Sarajevo
18-6-2019	FFC RM in practice 1-on-1 webinars	Igno Notermans and Daan Sillen (DRIFT)		Malaga
19-6-2019	FFC RM in practice 1-on-1 webinars	Igno Notermans and Daan Sillen (DRIFT)		Pavlos Melas
25-9-2019	FFC RM in practice 1-on-1 webinars	Igno Notermans and Daan Sillen (DRIFT)		Burgas
6-5-2021	1-On-1 Support – for FFCs, to support development of RM Chapter of CN Framework report	Shibeal Mc Cann, Kato Allaert, Marleen Lodder (DRIFT)		Ioannina
14-4-2021	1-On-1 Support – for FFCs, to support development of RM Chapter of CN Framework report	Shibeal Mc Cann, Kato Allaert, Marleen Lodder (DRIFT)		Nicosia
15-4-2021	1-On-1 Support – for FFCs, to support development of RM Chapter of CN Framework report	Shibeal Mc Cann, Kato Allaert, Marleen Lodder (DRIFT)		A Coruna
16-4-2021	1-On-1 Support – for FFCs, to support development of RM Chapter of CN Framework report	Shibeal Mc Cann, Kato Allaert, Marleen Lodder (DRIFT)		Sarajevo
22-4-2021 6-5-2021	1-On-1 Support – for FFCs, to support development of RM Chapter of CN Framework report	Shibeal Mc Cann, Kato Allaert, Marleen Lodder (DRIFT)		Malaga
22-4-2021	1-On-1 Support – for FFCs, to support development of RM Chapter of CN Framework report	Shibeal Mc Cann, Kato Allaert, Marleen Lodder (DRIFT)		Pavlos Melas
15-4-2021	1-On-1 Support – for FFCs, to support development of RM Chapter of CN Framework report	Shibeal Mc Cann, Kato Allaert, Marleen Lodder (DRIFT)		Burgas
Learning experience webinars frontrunner cities				
20-6-2019 23-3-2020 21-9-2020 9-6-2021	Learning Experience Webinars - to Identify lessons about co-production that are captured	Different element leads	The Reflexive monitors of Genk, Glasgow, Pozan,	



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	through reflexive monitoring (input for co-production analysis) - to reflect and facilitate peer-to-peer learning on the method of reflexive monitoring, introduction of learning outcomes structure		and some of their teammates	
Learning sessions frontrunner cities				
1-10-2018 9-10-2018 6-11-2018 6-12-2018	Learning session Genk 2018 -[4x]	DRIFT as Reflexive monitoring coach, elements leads for Co-production, technical solutions, impact assessment, governance e.a.	Peter Vos, (the Reflexive monitor of Genk) and teammates (e.g. Mien Quartier, Katrien van de Sijpe)	
8-1-2019 14-2-2019 2-4-2019 5-6-2019 22-10-2019 16-12-2019 6-1-2020	Learning session Genk 2019 -[7x]	DRIFT as Reflexive monitoring coach, elements leads for Co-production, technical solutions, impact assessment, governance e.a.	Peter Vos, (the Reflexive monitor of Genk) and teammates (e.g. Mien Quartier, Katrien van de Sijpe)	
4-3-2020 15-6-2020 3-9-2020 10-11-2020	Learning session Genk 2020 [4x]	DRIFT as Reflexive monitoring coach	Peter Vos, (the Reflexive monitor of Genk) and teammates (e.g. Mien Quartier, Katrien van de Sijpe)	
15-2-2021 29-3-2021 1-6-2021	Learning session Genk 2021 -[3x]	DRIFT as Reflexive monitoring coach	Peter Vos, (the Reflexive monitor of Genk) and teammates (e.g. Mien Quartier, Katrien van de Sijpe)	
3-10-2018 16-10-2018 13-11-2018 18-12-2018	Learning session Glasgow 2018 - [4x]	DRIFT as Reflexive monitoring coach, elements leads for Co-production, technical solutions, impact assessment, governance e.a.	the Reflexive monitors of Glasgow (Gilian Dick, Sean Kelly) and teammates	
15-1-2019 22-1-2019 19-2-2019 19-3-2019 18-4-2019 21-5-2019 18-6-2019 9-2019 10-2019 12-2019	Learning session Glasgow 2019 - [9x]	DRIFT as Reflexive monitoring coach, elements leads for Co-production, technical solutions, impact assessment, governance e.a.	the Reflexive monitors of Glasgow (Gilian Dick, Sean Kelly) and teammates	
30-1-2020 5-3-2020 1-4-2020 28-4-2020 23-6-2020 22-9-2020 17-12-2020	Learning session Glasgow 2020 - [7x]	DRIFT as Reflexive monitoring coach, elements leads for Co-production, technical solutions, impact assessment, governance e.a.	the Reflexive monitors of Glasgow (Gilian Dick, Sean Kelly) and teammates (laura, Rania)	
14-4-2021 8-6-2021	Learning session Glasgow 2021 - [2x]	DRIFT as Reflexive monitoring coach, elements leads for Co-production, technical solutions,	the Reflexive monitors of Glasgow (Gilian Dick, Sean Kelly) and teammates	

		impact assessment, governance e.a.	(laura, Rania)	
5-10-2018 15-11-2018 5-12-2018	Learning session Poznan 2018 - [3x]	DRIFT as Reflexive monitoring coach, elements leads for Co-production, technical solutions, impact assessment, governance e.a.	the reflexive monitor of Poznan and teammembers (Agnieszka D. & Natalia)	
8-1-2019 12-2-2019 15-03-2019 26-3-2019 10-4-2019 17-5-2019 11-6-2019 19-10-2019 11-12-2019	Learning session Poznan 2019 - [9x]	DRIFT as Reflexive monitoring coach, elements leads for Co-production, technical solutions, impact assessment, governance e.a.	the reflexive monitor of Poznan and teammembers (Agnieszka D. & Natalia)	
28-1-2020 18-2-2020 17-3-2020 30-4-2020 18-6-2020 3-9-2020 5-11-2020	Learning session Poznan 2020 - [7x]	DRIFT as Reflexive monitoring coach, elements leads for Co-production, technical solutions, impact assessment, governance e.a.	the reflexive monitor of Poznan and teammembers (Agnieszka D. & Natalia)	
8-2-2021; 30-3-2021; 10-6-2021	Learning session Poznan 2021 - [3x]	DRIFT as Reflexive monitoring coach, elements leads for Co-production, technical solutions, impact assessment, governance e.a.	the reflexive monitor of Pzanan (Natalia)	
Learning platform webinars				
5-10-2020	Learning Platform webinar #0 - to set up the structure for Knowledge transfer – phase 2 and 1-on-1 learning sessions FRC & FFC	Leads of WP 2 and WP4, Knowledge hub leads [DRIFT, TCD, Green space schotland, Climate alliance, Horizon NUA, ICLEI, OPPLA]	Genk, Glasgow, Poznan	
7-12-2020	Learning Platform webinar #1 - to identify learning question sfor the knowledge hubs	Leads of WP 2 and WP4, Knowledge hub leads [DRIFT, OSMOS, UVT, ICLEI, Climate Alliance, TDC, UIRS, UBER, UDC, UEL, AMU, GeoGraphic, CENS, Bioazul, UBER, OPPLA, Green space schotland, Horizon NUA]	Genk, Glasgow, Poznan	Pavlos Melas, Burgas, Malaga, A coruna, Sarajevo, Ioannina, Nicosia
26-5-2021	Learning Platform webinar #2 - to validate findings from the learning objectives analysis and identify learning question sfor the knowledge hubs	Leads of WP 2 and WP4, Knowledge hub leads [DRIFT, OSMOS, UVT, ICLEI, Climate Alliance, TDC, UIRS, UBER, UDC, UEL, AMU, GeoGraphic, CENS, Bioazul, UBER, OPPLA,	Genk, Glasgow, Poznan	Pavlos Melas, Burgas, Malaga, A coruna, Sarajevo, Nicosia



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		Green space schotland, Horizon NUA		
20-10-2020	Learning Platform webinar #3 - to validate findings from the (extended) learning objectives analysis and look ahead with the knowledge hubs	OSMOS, UVT, ICLEI, Climate Alliance, TDC, UIRS, UBER, UDC, UEL, AMU, GeoGraphic, CENS, Bioazul, UBER, OPPLA, Green space schotland	Genk, Glasgow, Poznan	Pavlos Melas, Burgas, Malaga, A coruna, Sarajevo, Ioannina, Nicosia
1-on-1 Learning sessions frontrunner cities and fast follower cities				
30-11-2020 03-2021 07-2021	1-on-1 learning sessions FRC & FFC: [3x]	Dimitra Xidous (TCD)	Genk	Burgas
17-11-2020 03-2021 07-2021	1-on-1 learning sessions FRC & FFC: [3x]	Dimitra Xidous (TCD)	Genk	Pavlos melas
5-11-2020 03-2021 07-2021	1-on-1 learning sessions FRC & FFC: [3x]	Dimitra Xidous (TCD)	Glasgow	A Coruna
3-12-2020 03-2021 07-2021	1-on-1 learning sessions FRC & FFC: [3x]	Dimitra Xidous (TCD)	Glasgow	Malaga
3-12-2020 03-2021 07-2021	1-on-1 learning sessions FRC & FFC: [3x]	Dimitra Xidous (TCD)	Glasgow	Sarajevo
2-12-2020 03-2021 07-2021	1-on-1 learning sessions FRC & FFC: [3x]	Dimitra Xidous (TCD)	Poznan	Ioannina
30-11-2020 03-2021 07-2021	1-on-1 learning sessions FRC & FFC: [3x]	Dimitra Xidous (TCD)	Poznan	Nicosia



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Appendix D: Learning objectives FFCs and FRCs

Learning objectives	Cities with the questions	Response (by which cities)
<i>Connecting Nature Framework</i>		
1. How to use the Connecting Nature Framework as a communication tool?	A Coruña, Nicosia, Pavlos Melas	Genk, Ioannina
2. How to work with the Connecting Nature Framework to scale-out from project level to city strategy level?	A Coruña, Burgas, Málaga, Nicosia, Pavlos Melas, Sarajevo	
3. How to create space/time to use the Connecting Nature Framework?	A Coruña, Málaga, Nicosia, Sarajevo	
4. How to balance the different elements of the Connecting Nature Framework	Poznań, Nicosia	
<i>Technical solutions</i>		
1. How to identify spaces for nature-based solutions (cities need more space)?	A Coruña, Burgas, Ioannina, Málaga, Nicosia	Glasgow
2. How to deal with trade-offs (e.g. between biodiversity versus recreation)?	Burgas, Ioannina, Pavlos Melas	Genk
3. How to design nature-based solutions to enhance biodiversity?	Sarajevo, Burgas	Glasgow
4. How to boost awareness of environmental/ health benefits of the nature-based solution?	A Coruña, Málaga, Nicosia, Pavlos Melas, Sarajevo	
5. How to efficiently update existing infrastructure?	Burgas, Ioannina, Nicosia	
6. How to cooperate with external bodies/ expertise to design and/or implement the nature-based solution?	A Coruña, Burgas, Ioannina, Nicosia, Pavlos Melas, Sarajevo	
7. How to satisfy the criteria / definition for nature-based solution?	Sarajevo	
8. How to combat vandalism/ protect NBS ?	Pavlos Melas	Genk
<i>Governance</i>		
1. How to engage with other departments ? / break silos	A Coruña, Burgas, Ioannina, Málaga, Pavlos Melas, Glasgow	A Coruña, Genk
2. How to continue cross-departmental collaboration in COVID times ?	Ioannina, Málaga, Nicosia	
3. How to wage political support ?	Sarajevo	Glasgow
4. How to shift the existing governance model	A Coruña, Ioannina	A Coruña
5. How to get experience in organising a strategic adaptive governance process to oversee complex large scale NBS?	A Coruña, Málaga, Nicosia, Pavlos Melas	A Coruña
6. How to design and implement bottom-up governance models?	A Coruña, Ioannina, Nicosia	

7. How to organise continued support for the NBS ?	A Coruña, Burgas, Málaga, Nicosia, Pavlos Melas	
8. How to align the goals of the NBS with the wider goals of the city in order to build the case for delivering multiple benefits ?	Burgas, Málaga, Nicosia, Pavlos Melas	
<i>Financing and business models</i>		
1. How to increase the prioritisation of the NBS on funding agendas ?	A Coruña, Burgas, Nicosia, Pavlos Melas	Ioannina Glasgow
2. How to strategically link the NBS to other departments in order to raise more funding ?	A Coruña, Ioannina, Nicosia, Pavlos Melas, Sarajevo	
3. How to deal with CSR ? What is the protocol ?	Poznań	Nicosia
4. How to fund / create revenue for the stewardship phase of the project ?	A Coruña, Burgas, Ioannina, Málaga, Nicosia, Pavlos Melas, Sarajevo	Genk
5. How to find collaborating parties that are funded elsewhere ?	Málaga, Pavlos Melas, Sarajevo	
6. How to engage the private sector /raise awareness and interest in projects among the private sector to attract funding ?	A Coruña, Burgas, Málaga, Nicosia, Pavlos Melas, Sarajevo	
<i>Nature-based entrepreneurship</i>		
1. How to find potential entrepreneurs ?	Nicosia, Pavlos Melas	Nicosia
2. How to find maintenance entrepreneurs for the maintenance of the gardens ?	A Coruña, Málaga, Nicosia, Pavlos Melas, Sarajevo	
3. How to establish an NBE pilot /incubator programme ?	Glasgow	Málaga
4. How to deal with the logistics of an incubator programme ? e.g. economic evaluation, physical space.	Málaga	Glasgow
5. How to use accelerator/ incubator to promote NBS in locality ?	A Coruña, Málaga, Nicosia	
6. How to manage expectations of participants / outcomes in NBE pilot programmes - incubator and/ or accelerator ?	Málaga	Glasgow
7. How to successfully market the pilot / incubator programme to attract the right participants ?	Nicosia, Glasgow	Málaga
8. How to create economic opportunities, specifically for the maintenance phase of the NBS ?	Burgas, Málaga, Nicosia, Pavlos Melas, Sarajevo	
<i>Co-production</i>		
1. How to encourage/ motivate stakeholders to join the initiative, engaging "outsiders" or when people are not committed ?	Burgas, Málaga, Nicosia, Pavlos Melas, Sarajevo	Nicosia Glasgow
2. How to encourage and support other organisations to organise co-	A Coruña, Málaga, Sarajevo	



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production activities?		
3. How to engage organisations through co-production activities?	A Coruña, Burgas, Ioannina, Pavlos Melas, Sarajevo	Glasgow, Genk
4. How to carry out effective co-production with stakeholders in COVID times?	A Coruña, Burgas, Málaga, Nicosia, Pavlos Melas, Sarajevo	Glasgow
5. How to manage conflict among NBS users ?	A Coruña, Pavlos Melas	Glasgow
6. How to manage the expectations of collaborators in Co-production processes ?	Burgas, Nicosia	
7. How to prevent gentrification through co-production?	Málaga	
8. How to/ when to use co-production tools ?	A Coruña, Burgas, Málaga, Nicosia, Sarajevo	
9. How to engage large stakeholder groups through co-production (instead of consultation)	Málaga, Nicosia, Pavlos Melas, Sarajevo	
10. How to carry out public consultation regarding draft design of NBS	Sarajevo	Glasgow
11. How to engage private sector stakeholders?	A Coruña, Burgas, Málaga, Nicosia, Pavlos Melas, Sarajevo	Poznań
12. How to engage organisations through co-production activities?	A Coruña, Ioannina,	
13. How to facilitate knowledge exchange between different groups?	Pavlos Melas, Sarajevo	
14. How to decide to engage specific stakeholder groups at what stage of the project?	Burgas, Nicosia, Pavlos Melas, Sarajevo	
15. Who are the required partners and how can we bring them together ?	Málaga, Nicosia, Pavlos Melas, Sarajevo	
16. How to bring plot owners/ managers together, communicate interest in the plot and possibly arrive at a shared vision ?	A Coruña, Málaga	
17. How to support cultural and sport activities to increase social cohesion?	Ioannina, Pavlos Melas	
18. How to decide on next steps after a co-production activity ?	Burgas, Ioannina, Málaga, Nicosia, Pavlos Melas, Sarajevo	
19. How to encourage a changed approach to the way land is managed ?	Málaga	Glasgow
<i>Reflexive monitoring</i>		
1. How to integrate Reflexive monitoring into daily practice ?	Burgas, Ioannina, Málaga, Nicosia, Sarajevo	Glasgow
2. How can we move from using Reflexive monitoring from officer to senior level ?	A Coruña, Sarajevo	
3. How to elaborate upon items on the Dynamic Learning Agenda ?	Ioannina	



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4. How to efficiently/ effectively use Reflexive monitoring ? i.e. internal use versus attempting to use RM with external stakeholders	Málaga	
<i>Impact assessment</i>		
1. How to find impact assessment expertise within the city ?	A Coruña, Málaga, Pavlos Melas	Glasgow
2. How to evaluate the (indirect) benefits ?	Nicosia, Pavlos Melas, Sarajevo	
3. How to narrow down/ select appropriate indicators ?	Pavlos Melas	Genk
4. How to find expertise outside the city ? e.g. universities	Ioannina, Málaga, Nicosia, Pavlos Melas, Sarajevo, Poznań	Nicosia
5. How to budget monitoring?	A Coruña, Málaga, Nicosia, Pavlos Melas	
6. How to do surveys during COVID ?	A Coruña, Sarajevo	