Reflow

Co-creating Circular Resource Flows in Cities

constRuctive mEtabolic processes For materiaL fIOWs in urban and peri-urban environments across Europe

REFLOW Collaborative Governance Toolkit

(**beta** version)

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About the **toolkit**

The REFLOW Collaborative Governance Toolkit is a 'how to' resource supporting and sustaining the design and development of **collaborative governance approaches** for the transition to circular and regenerative cities. Against grand challenges of sustainable urban development, the circular economy appears as a viable alternative to our linear, extractive economic model, as it can contribute to turn cities into restorative and regenerative places by design. Yet, the transition to circular cities requires radical new levels of synergies, collaboration and strategic alliances between all actors that have a stake in the circular economy - policymakers, enterprises, social organizations, universities, citizens, etc. -, as well as new forms of ***infrastructuring*** **collaboration in ways that can unleash innovation at scale.** Inquiring and exploring collaborative governance for the circular economy in cities is therefore a foundational step for any meaningful and long-term oriented transition, and this Toolkit aims to be a practical guide for cities willing to engage in such a transition. At this stage, the Toolkit is presented as a **design concept**.

First, the document outlines the **design framework** and **overall journey** which underpin the development of collaborative governance arrangements in the six pilot cities of the REFLOW project. Furthermore, it describes the **core activities** that, along the journey, will represent the concrete ground for collaborative governance experimentation and learning, and thereby the terrain for the development of specific tools and supporting resources which will feed the Toolkit over time. Lastly, this document also explains **how the Toolkit is meant to be implemented over time** in order to crystallize our progress and make it accessible to both the REFLOW partners and other interested cities and stakeholders.
The current outlook of the Toolkit reflects a number of activities implemented in the first year of the project, including exploratory research on collaborative governance, pilot cities' policy review, mapping of existing tools and guidelines for the circular economy in cities, analysis of the Pilot Cities Action Plans developed by the REFLOW Cities, as well as scoping out of their core challenges and opportunities.

Part of this work is already captured in the REFLOW Handbook which - besides an exploration of collaborative governance approaches in European cities - also provides the initial design framework and principles that form the backbone of the Toolkit.
Cities are very diverse across Europe, and the REFLOW pilot cities are a microcosm of such a diversity. Moreover, in the context of REFLOW, the pilot cities focus on different sectors, with different articulations of partnerships and different sets of expertise, knowledge and skills. Working in diversity and acknowledging its value is the fundamental starting point for any Toolkit, and the reason why - at this stage - the REFLOW Collaborative Governance Toolkit is a '**loosely designed' resource**. Rather than proposing standardized activities and tools, it instead provides an architecture of activities that each pilot city can creatively combine and personalize according to specific needs, shaping specific journeys that in turn will generate a diversity of tools and resources for collaborative governance in the circular economy. Following this flexible and iterative approach, the Toolkit will be updated and revised over time as we progress throughout the journey, and we discover new and better ways to design for circularity in urban contexts.

The **REFLOW project**

REFLOW is an EU H2020 funded project that seeks to understand and transform urban material flows and to co-create and test circular and regenerative solutions at business, governance and citizen levels. The project builds upon the concept of 'urban metabolism', which seeks to understand urban contexts through the lens of biological systems and technical processes. In biology, the synthesis of proteins is considered a constructive metabolic process. In urban sciences, the city dynamics that make up the urban metabolism are defined by the flow of materials, information, and the distribution of activities, making cities the most complex systems ever created by humans. Under the current urban paradigm, cities consume more resources than they produce and the synthesis of energy, food and materials for urban areas degrades, discards or pollutes the environment.

In this context, REFLOW aims to provide viable practices aligning public and private actors' interests to enable an effective and meaningful transition to circular and regenerative cities, contributing in turn to the achievement of the Sustainable Development Goals (SDGs).

Six pilot cities across Europe - **Amsterdam, Berlin, Cluj-Napoca, Milan, Paris, Vejle** - will test approaches of 'circular cities', each focusing on a different resource flow. At the heart of these pilots is a productive 'making' approach that empowers citizens and engages policy makers and industry leaders.

Activities spanning design and testing of new business models, experimentation with novel technologies and data visualization tools, urban metabolism analysis, citizen engagement, capacity-building and development of collaborative governance prototypes form the backbone of the REFLOW action for the transition to circular and regenerative cities.

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Part 1

In this introductory section, you will discover:

How **Collaborative Governance** is understood **in the context of this Toolkit**

Examples of **existing Toolkits** that can inspire collaborative governance arrangements

Why new tools and guidelines for collaborative governance supporting the transition to circular cities

Setting the scene: **Collaborative Governance for Circular City transition**

Before we get into the presentation of the REFLOW Collaborative Governance Toolkit, we first attempt to briefly set the record straight on a few core terms used in this document. Our aim is not conceptual clarity or alignment with certain theoretical viewpoints, but rather to explain our position and approach towards the topic at hand.

What is Collaborative Governance?

The term Governance is broadly used to describe the **steering mechanisms** that operate in a certain political unit, at local, regional, national, or international level, involving the **interaction of agents** from the government, the economy, and civil society[1].
The concept of Governance was coined to provide a moderately neutral term to include different political objectives, economic drives and social forces that can be **mobilized** towards a certain direction. Governance is thus seen as **a process** and it differs from government, or management, in that it emphasizes **dynamic interaction,** rather than a predefined plan.
Collaborative practices generally refer to processes of people engaging in **joint and inclusive creative activity**, pooling their knowledge and skills to achieve a **shared objective.** This collaboration usually has **no predefined structure or roles**, and is **coordinated autonomously** through the participants' consensus. Think of collaborative learning, or early practices of the collaborative/sharing economy, such as car-pooling, and neighborhood sharing practices. The wide diffusion of Information and Communication Technologies (ICT) has enhanced collaborative practices, allowing them to occur effectively at greater scales and scopes.
Governance, by definition, conveys the element of collaboration expanded beyond the government sector. **Collaborative Governance is a specific form that is based on collaborative practices**. In the context of this toolkit, our approach on Collaborative Governance is also informed by ICT and the accompanying socio-economic practices. Specifically, the curation of tools **enabling capacities for self-organization**, distributed agency and legitimacy, and peer-to-peer coordination on city level and in cross-city alliances.

What is a Circular Transition?

Circular economy is a **transitional concept**. It is less a constellation of existing policies and regulations or business practices, than it is a strategic vision for a more sustainable economy. Therefore, **circular transition speaks for a bold shift in attitudes, norms and institutions towards forms that embrace circularity** in use of materials, resources, as well as immaterial capacities. Moreover, circularity entails cross-sectoral synergies and synchronization by diverse agents to get critical traction. Many of the institutional preconditions for a circular transition are not in place yet, concerning the policy outcomes and administrative capacity; the defined economic returns and viability; and social and cultural norms and legitimacy. Therefore, a Collaborative Governance approach for circular transition acknowledges this indispensable condition, and **allows for the mobilization of the necessary parties from all concerned domains**. Governance may be seen as a neutral concept, yet dynamic and context-specific. It can take different configurations in different places and different times and it is based on the institutions establishing the relations and interaction among the involved parties.
The focus of the REFLOW project is premised on the **potential of cities to adopt circular economic strategies**. The impact of the intensifying ecological and social crisis has contributed to an increasing **pursuit of viable alternatives to build resilience locally**, and simultaneously create the conditions to (re)gear the economic and social drives towards **more generative and sustainable practices globally**. This toolkit aims to guide cities on the first steps of this potential transition, providing a dynamic and iterative documentation of this process.

What is a Governance Toolkit?

A toolkit, broadly speaking, is an assembly of tools that are needed on different stages or occasions for a certain practice. A handyperson usually comes with a toolkit comprising wrenches, screwdrivers, and power tools to fix or maintain something. In software development, **toolkits consist of various components that build up an integrated system. In governance, a toolkit combines methods and practices for facilitating and steering the interaction between the government, businesses and citizens towards shared outcomes**. The structure of a toolkit as well as the tools included may vary according to the capacity and needs of each sector.
Before designing a toolkit on collaborative governance, it is helpful to provide a brief overview of some pre-existing toolkits. The Observatory of Public Sector Innovation of the Organization for Economic Co-operation and Development (OECD) has curated a large database of toolkits, playbooks and guides aimed at different topics, such as Public Policy, Social Innovation and Open Government.
Our focus here has been placed on Open Government, defined as "a culture of governance that promotes the principles of transparency, integrity, accountability and stakeholder participation in support of democracy and inclusive growth"[2]. In the following sections we provide an overview of a representative number of Open Government and Public Innovation toolkits (see Appendix 1). The reviewed toolkits

1 Drechsler, W. (2014) Governance, Good Governance, And Government: The Case For Estonian Administrative Capacity. Trames: A Journal of the Humanities and Social Sciences, 4: 388-396.

2 OECD (2017). Recommendation of the Council on Open Government. OECD/LEGAL/0438. Available at: https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0438.

aim for participatory decision-making, improved data governance and citizens' empowerment, elements that are considered key for the successful realization of a Circular Economy. Even though Collaborative Governance is a different approach, the analysis provides useful insights for the design and development of this toolkit.

The selection criteria for the toolkits were sought to include (a) different types of organizations (e.g. public institutions, NGOs, Universities, etc) involved in their development; (b) different focuses (e.g. participatory decision-making, data governance, awareness-raising, evaluation and monitoring, etc); and (c) a broad spectrum of implementation and application methodologies. This analysis unveils a deeper understanding of goals, methodology, and expected level of success of the respective toolkits. It should be highlighted that the data presented are derived from desk research, while empirical evidence concerning the actual implementation of the respective activities exceed the scope of this deliverable.

A Beginner's Guide to Enabling Open Government

The "A Beginner's Guide to Enabling Open Government" toolkit was developed by the **United Nations Development Programme** and **The Engine Room**. Its target audience is governments and civil representatives from the local, national and international level. The goal of this toolkit is to make governance procedures more transparent and participatory, while increasing accountability. The toolkit is divided in four phases, namely Research, Co-design, Review, and Engagement. Placing the focus on government, citizen involvement is limited to the last phase. Furthermore, this Guide is enhanced by a digital library where past cases of its implementation are archived to provide further insight to future users of the toolkit.

Ethics & Algorithms Toolkit

The Ethics & Algorithms Toolkit is a toolkit that focuses on government data. It was developed through the collaboration of **GovEx** (John Hopkins University), **Harvard DataSmart** (Harvard University), the **City and County of San Francisco** and the **Data Community DC**. The tools curated are mostly intended for those building or acquiring algorithms in the government sector, without excluding anybody else who could find it useful. The toolkit aims to elicit conversation, encourage risk evaluation as a team and catalyze proactive mitigation strategy planning. The toolkit focuses on risk assessment through data analysis and includes two parts: Assess Algorithm Risk and Manage Algorithm Risk. Therefore, knowledge on data science concepts and/or experience with algorithms would be necessary for its use.

Data Collaboratives

Data Collaboratives, is another data-related toolkit, that was produced when **GOVLAB** (NYU Tandon School of Engineering), **UNICEF** and **Omidyar network** joined forces. The toolkit advocates for a process comprising eight steps, namely, Demand, Supply, Collaboration, Design, Implementation, Communication, Learning and Iteration, to create a new form of collaboration beyond the public-private partnership model, in which participants from different sectors exchange data to create public value and provide input for environmental, health system and transport issues.

DemTools

DemTools was developed by the **National Democratic Institute** (non-profit organization), featuring two independent tools: Apollo and Civi. These were put together to help civil society organizations, political parties and legislatures involve citizens in government decision-making; connect elected officials with constituents; and manage election data. The Institute worked with free and open-source software projects to adapt software to the needs of critical democratic solutions. Moreover, they designed their tools in a way that advanced technological knowledge or experience is not needed.

Making Sense

Making Sense toolkit is a result of the collaboration between the **Joint Research Centre** of the European Commission, the **FabLab Network**, the **Peers Educators Network**, **Waag Society**, the **Institute for Advanced Architecture of Catalonia** and the **University of Dundee** in the context of the Making Sense project. The scope of this toolkit is to explore how open source software and hardware, digital maker practices and open design can be utilized by local communities to fabricate their own sensing tools, and address pressing environmental issues (air, water, soil, sound pollution, etc.). This is pursued through the concept of Empowerment, Co-Creation, Changemaking, and Openness. Each concept is thoroughly documented and enriched with material from the activities in pilot cities.

D-CENT

D-CENT is a set of Public Innovation tools co-funded by the European Commission and run by a consortium with ten partners all across Europe (namely **Nesta, ThoughtWorks, Dyne.org, The Citizens Foundation, Universitat Oberta de Catalunya, Forum Virium Helsinki, World Wide Web Consortium, CES, International Modern Media Institute and the Open Knowledge Foundation**). These tools are aimed at democratic organisations (such as political parties, citizens' coalitions, etc.) that want to increase involvement of their members to make consistent and fair decisions or introduce new policy in order to achieve desired outcomes. They can be used to engage citizens in writing political manifestos, determining policy priorities, deciding about the allocation of municipal budget and actively participating in

the political decision-making process.

DECODE

DECODE was a Public Innovation project that provides tools to put individuals in control of their data, allowing them to choose whether to keep their personal information private or share it for the public good. It explores how to build a data-centric digital economy where data that is generated and gathered by citizens, the Internet of Things (IoT), and sensor networks is available for broader communal use, with appropriate privacy protections. This project was realized by a group of 15 organizations (**Institut Municipal d'Informàtica de Barcelona, ThoughWorks, Nesta, Dyne.org, University College London, Stichting Katholieke Universiteit, BCMI Labs AB, City of Amsterdam,Centre d'économie de la Sorbonne, Dribia, Eurecat, Universitat Oberta de Catalunya, Politecnico di Torino, Thingful and Waag Society**). The aforementioned tools are produced as Free and Open Source Software and include a mobile app that is distributed in both Google Play and Apple Store.

Why another Toolkit?

Through the analysis of the aforementioned toolkits, some preliminary lessons can be drawn. To begin with, all toolkits assume as their ultimate goal **the increased involvement of citizens in government**. This is to be achieved by promoting inclusiveness through **community-building and participation in decision-making**, hence making progress towards (more) collaborative forms of governance. Thus, citizens seem to be always at the center. It is also important to specify that Open Government toolkits are more process-oriented while the Public Innovation ones are output-oriented without offering plenty of room for experimentation during the implementation process.
However, in most cases a **high level of technological expertise and an advanced understanding of government procedures is required**, and often assumed, on behalf of the citizens, which may reduce the overall impact and inclusivity. It is important to mention that although **no toolkit can offer universal solutions**, it should attempt to facilitate adaptability to each community's needs. A step to this direction is the **inclusion of the citizens**, not only in the implementation, but also **in the design and development of the various tools**, enabling a learning process bridging the gap between the government and civil society. Further, **transparency and access to information varies across the different toolkits** and the same goes for the **documentation** of how these toolkits plan to achieve their goals, which diminishes democratic accountability. Last, **the incentives and motivations of the respective organizations developing a toolkit should be taken into account** to assess whether and how the claimed goals meet the real societal needs. For instance, a toolkit developed by a public university or an NGO might incorporate different values than one developed by a profit-driven organization.
Hence, the motivation behind the development of the REFLOW Collaborative Governance Toolkit are reflected in the values and ethics underpinning the project, and are embedded in the particular understanding of Collaborative Governance presented earlier.
As there are many dimensions that Collaborative Governance may entail[3], this toolkit aims to foster forms that are:

- **bridging the divide** between the government and the other domains, thus aligning public and private interests;
- encouraging **collaboration initiated and driven by citizens** and other non-government agents, individuals, informal groups or organizations;
- aiming for **long-term arrangements** supporting this interaction; and
- outcome-oriented, towards a **qualitative change in public affairs** and the administration of life.

Thus, the methods and activities documented in the Reflow Collaborative Governance Toolkit are premised on **collaborative practices on city level that enable and support above elements**, which include specific iterations such as **commons-based peer production, urban regeneration, urban sharing, critical making**, and **grassroots and solidarity movements**.
The motivation of this toolkit is to **unleash the potential** of such radical alternative social forms to **foster circular transition**.

3 Batory, A., and Svensson, S. (2019) The fuzzy concept of collaborative governance: A systematic review of the state of the art. Central European Journal of Public Policy, 13(2): 28-39.

Part 2

In this section, you will discover the three foundational elements of the Toolkit:

The REFLOW **Collaborative Governance Framework**

The **Collaborative Governance Transition Journey**

The **Portfolio Approach**

The **REFLOW Collaborative Governance Toolkit**: **Foundational elements**

The backbone of the REFLOW Collaborative Governance Toolkit consists of three different yet integrated elements (Figure 1) that all together form our overall methodology to the development of collaborative governance arrangements in the REFLOW cities, namely:

1. The **REFLOW Collaborative Governance Framework**: which stands as an overall framing and design map for infrastructuring creative and collaborative urban environments oriented to the circular transition;

2. The **Collaborative Governance Transition Journey**: which sets out the core design phases that inform a collaborative governance transition journey;

3. The **Portfolio Approach**: which outlines the core approach to the design and implementation of the journey.

In the following pages, you will discover how these three elements are conceived, as well as how they relate to and work with each other.

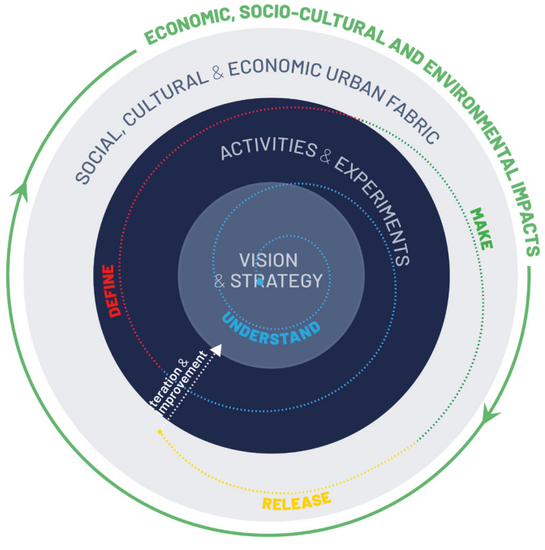


Figure 1: The three foundational elements.
Source: P2P Lab

The **Reflow Collaborative Governance Framework**

Our design framework looks at governance as a process of *infrastructuring*, understood as 'the **socio-technical scaffolding** around which organizational and personal collaborative networks and relationships are built, including the ways of working, structures, artifacts, activities and attitudes that contribute to creating a supportive framework for both present and future collaboration' (Manzini and Thorpe, 2018)[4].

The framework (Figure 2) is visualized as a pie chart where the segments reflect three core areas of impact, while the three concentric circles describe three core layers of the *infrastructuring* process:

- **Strategic infrastructuring**: articulating a long term strategic vision and roadmap towards meaningful impacts across social, economic and environmental sustainability;

- **Operational infrastructuring**: defining and developing a full-stack portfolio of experiments - i.e. across regulation, economic case, finance, capacity-building, engagement, tech, etc. - that form a holistic and systemic plan for the transition to circular and regenerative cities
- **Relational infrastructuring**: defining the relational ecosystem and governance arrangements that sustain co-creative and collaborative transition pathways to circular and regenerative cities.

Therefore, this framework goes towards the definition of a **loose coordination model that organizes collaboration across three main dimensions of infrastructuring, i.e. strategic, operational and relational, these interacting continuously with each other and contributing to forming the actual shape of the social, cultural and economic fabric of the city**.
Moreover, as we will see in the Design Journey, the framework acknowledges the processual dimension of urban governance, concentrating not only on how the three layers interact with and mutually reinforce each other, but also depicting an open-ended design process that embeds learning by doing as a means to improve scale and scope of collaboration over time.
So conceived, the framework is essentially a 'thinking' map that - especially in early phases - may help frame collaborative governance arrangements that leave space for both pre-identified goals and activities, as well as for new goals and activities to emerge and plug in the system over time.

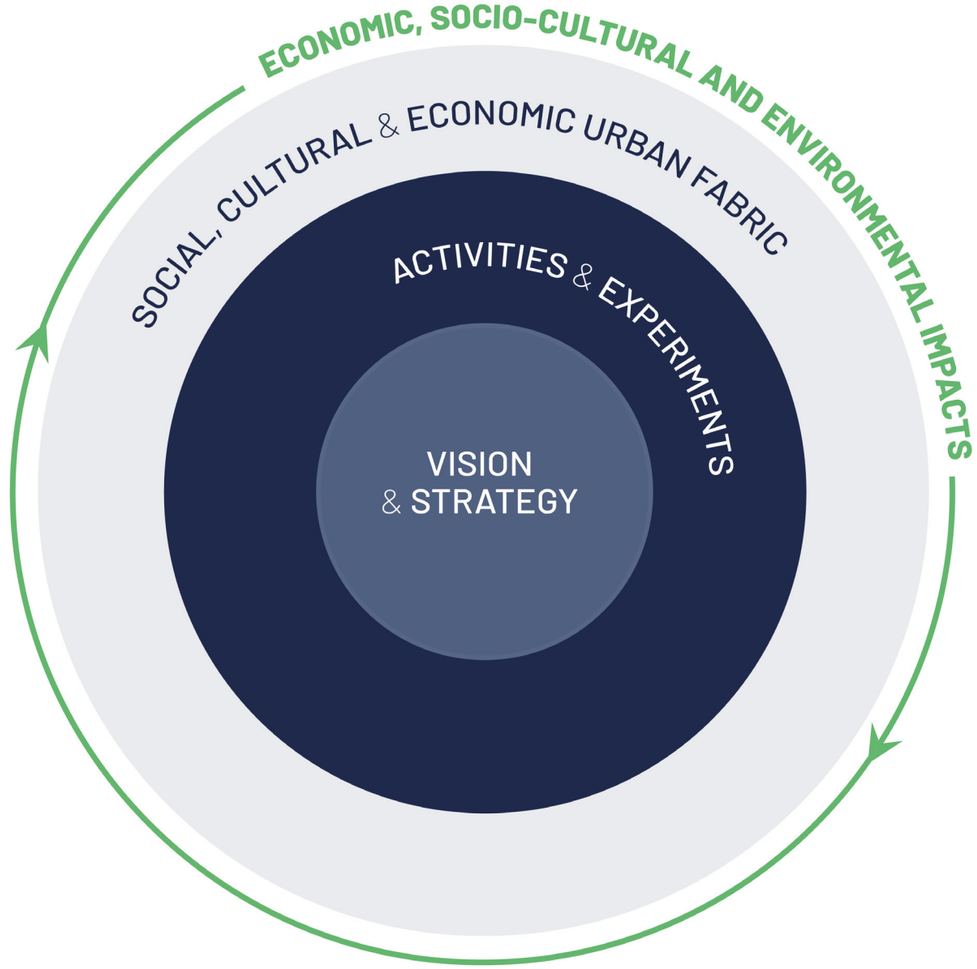


Figure 2: The Reflow Collaborative Governance Framework
Source: P2P Lab

4 https://www.sciencedirect.com/science/article/pii/S2405872618300376

Part 2 The **REFLOW** **Collaborative Governance Framework**

In the transition towards circular and regenerative cities, this framework can be used as an inception tool that helps organize, activate and coordinate not only those levers that are deemed essential to kickstart the transition, and which are often under the domain of public entities; more than that, it can account for the constellation of all those projects and initiatives, often distributed in cities and grassroots-led, that can meaningfully contribute to the transition.

The **Collaborative Governance Transition Journey**

Our Collaborative Governance transition journey is based upon the Circular Design process developed by Ellen MacArthur Foundation and IDEO[5]. Accordingly, our own journey frames and develops governance-related activities and experiments across four main design stages:

Understand: inquiring and interrogating the status quo and opening up to new possibilities.

Define: scoping out core challenges and opportunities and identifying core principles and rationale for a portfolio-based intervention strategy.

Make: developing a set of possibilities and experiments across a circular and regenerative city transition plan.

Release: implementing solutions to test viability and gathering learning for further development and scaling up.

The journey is articulated based on the REFLOW Governance Framework. It starts with investigating and interrogating the local contexts and exploring opportunities and drivers for circularity, as a fundamental step to develop a collaborative vision (**Understand**); it continues with scoping out key challenges and opportunities and with the identification of core levers that may be addressed and that may form the constituents of a first portfolio (**Define**); it further develops the portfolio (**Make**), defining and designing a core set of activities and experiments (operations), and then enters in an implementation phase during which such activities and experiments are concretely tested and observed in terms of first results and outcomes (**Release**).

Activities and experiments may reflect different levers (see Section Portfolio Approach), and not governance per se; the intent behind this journey is to foster reflection and learning on possible ways to govern the transition at scale on the one hand, while also allowing the development of small-scale governance experiments on the other hand.

The spiral in the diagram (Figure 3) essentially describes the process of **going through the three infrastructuring layers as an open-ended process**, adopting an iterative approach that enriches and improves the portfolio of activities and experiments at every iteration, also expanding the level and scope of collaboration over time - onboarding new actors, deploying

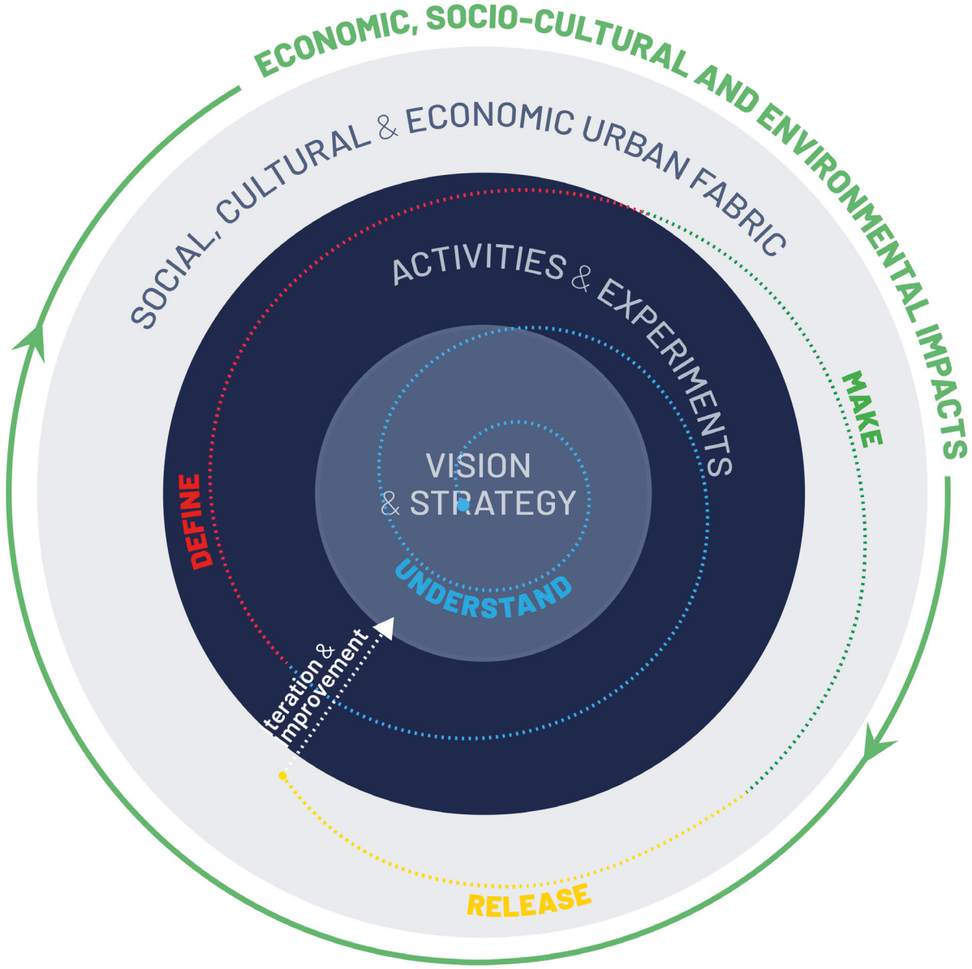


Figure 3: The Collaborative Governance Transition Journey
Source: P2P Lab

5 See: https://www.ellenmacarthurfoundation.org/explore/circular-design

new activities for different audiences and allowing new initiatives to emerge from the bottom and contribute to a holistic transition. There are no strict boundaries between phases, nor are they strictly linear: as an iterative process, it consists of many loops, in order to testing and iteratively improving interventions to meet complex, changing needs.

As we will see in Part 3 of this document, every phase is intended to be supported via specific activities and realization of specific tools and resources to accommodate different knowledge and learning needs; yet, activities and tools in a specific phase may also fit in other phases. In this perspective, the actual journey will be the result of a **co-design process** that will actively call the REFLOW pilot partners in giving full shape and content to the activities envisaged in this Toolkit.

The **Portfolio Approach**

The transition to circular and regenerative cities is a systemic and complex process in nature. In a global context of uncertainty and rapid change, no one knows the detailed pathway of innovations that are needed to achieve sustainable cities that are circular and regenerative by design. In this perspective, the transition is essentially a **discovery and learning process** that requires multiple experimentations across a wide range of domains, including regulation and legislation, business case, finance, capacity-building, engagement, and more.

In this Toolkit - and within the design process that underpins it - we adopt a **portfolio logic**[6] **as an approach to trigger experimentation and learning** across a full-stack designed transition. The intent is to support the pilot cities (and cities beyond the REFLOW ones) in articulating their circular action plans with a more systemic perspective, defining a set of **strategically connected and mutually reinforcing activities and experiments** that create new value, guide strategic investments, and offer the highest potential of learning. Moreover, the approach articulates activities and experiments across three horizons of reference - short, medium and long term - as a way to foster strategic and long term visioning and planning. The Portfolio Canvas is shown in Figure 4:

- The vertical axis on the right essentially captures the **long term vision** for a circular and regenerative city, and therefore sets out the **core sustainability impacts** that are to be achieved across society, economy and environment. In the language of our Collaborative Governance Framework, it describes the social, economic and cultural fabric that unlocks such vision and impacts;

- The vertical axis on the left indicates the **core levers** that inform 'operational infrastructuring'. These levers are built on preliminary research work developed within REFLOW; however, **they are not strictly set, and may evolve as the project makes progress.** These intial levers are:

finance, business case, data, tech & urban metabolism, regulation & legislation, engagement, capacity building;

- The horizontal axis captures **activities and experiments** across the levers throughout three horizons of reference - short, medium and long term. This axis essentially reflects the strategic infrastructuring layer of our Collaborative Governance Framework, in that it supports the pilot cities in defining connected and mutually reinforcing activities and experiments from the short term towards enduring change and impact.

The unique feature of the REFLOW cities is in that they address different challenges and articulate activities and experiments across different combinations of domains; while they may not cover the full spectrum of the portfolio, the overall approach we aim to follow in the implementation of the Toolkit is to harvest city-based experiments and **create a whole REFLOW's portfolio for circular and regenerative cities**, thereby creating an overall **inspirational and practical tool supporting transferability beyond the REFLOW cities**.

Why **EXPERIMENTS** beyond **ACTIVITIES**

In order to better understand what works and what does not, we need to define activities that are highly contextualized and place-based, tangible, rapidly implementable, observable and flexible enough to evolve and change. Framing activities as experiments may help introduce these core design criteria as key touchpoints for better capturing learning and improve design and deployment at every iteration.

PORTFOLIO logic

'In a complex and uncertain world, no one single solution can unlock the innovation we need to solve pressing societal challenges. Instead, we need to cultivate and unleash multiple innovation initiatives that, all together, can form an enabling ecosystem for change, rooted in continuous learning and distributed agency. In the words of OECD-OPSI (2020) an innovation portfolio is an 'innovation sense-making activity that connects your (and sometimes your partners') innovation practise – specific projects, initiatives and programmes – to the intent and purpose behind those activities as well as the strategic goal of the organisation.

It should connect problem framing to operations and continuous learning; and allow and organisation to sufficiently resource and support innovation towards defined aims. Effective innovation portfolio management does not only look at the composition of the portfolio (list of innovation projects, initiatives, or investments) and problems that they connect to, but it analyses what in the system and the organisational structures allows an innovation portfolio to be successful in the long term."

See: https://oecd-opsi.org/prototype-distributed-innovation-portfolio-exploration/

6 We took inspiration from the Transformation, in Time Strategy of EIT Climate-KIC, who adopts the portfolio logic in its own work with a cohort of European cities committed to ambitious climate action by 2030. The Portfolio canvas upon which we built our own canvas for this Toolkit has been elaborated by Dark Matter Laboratories in the context of the Healthy, Clean Cities Deep Demonstration of EIT Climate-KIC.
See: https://www.climate-kic.org/wp-content/uploads/2018/12/Transformation-in-time.pdf

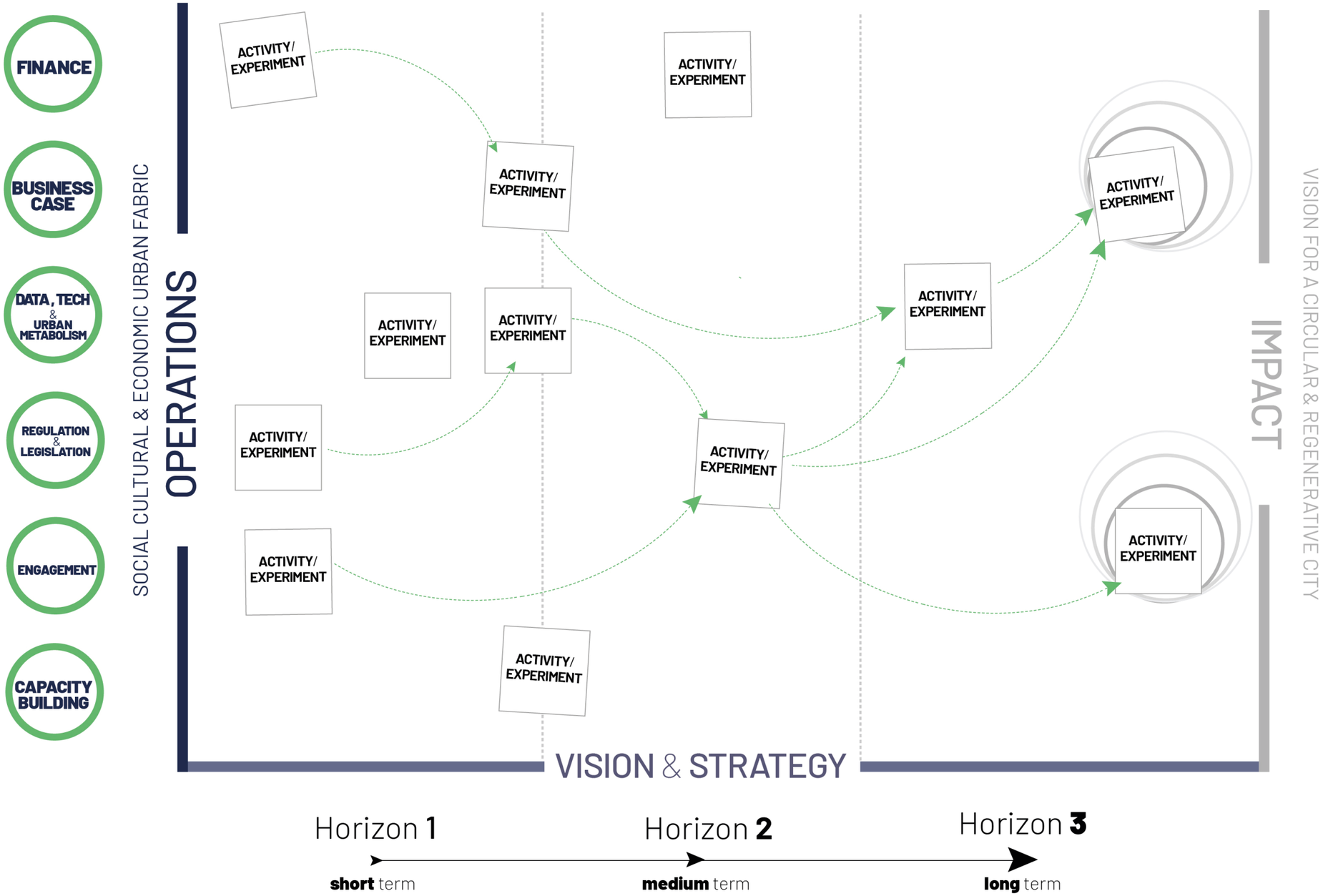


Figure 4: The Portfolio Approach
Source: P2P Lab

Part 3

In this section, you will discover:

The **Activity Matrix** supporting the design and development of Collaborative Governance activities and experiments

The **Activity Menu**

Toolkit **Activity Matrix**

In order to be useful and fit for purpose, every (design) tool needs to be positioned and understood in a broader context of meaning and action. A toolkit becomes effective not only when it provides well curated tools and resources, but rather when it also allows its audience to easily access and grasp its broader system of sense. At the same time, an effective toolkit needs to acknowledge diversity, recognizing different levels of previous knowledge and skills that in turn may lead to different ways to interpret and use the tools and resources provided, making the latter flexible and adaptable.

For this reason, rather than providing a set of selected tools, at this stage the Toolkit concentrates on building **the broader system of *collaborative governance sense*** that underpins the Toolkit itself - captured in Part 2 -, as well as on **defining a core set of activities that will represent the ground for co-creating tools and resources**. These activities are indicated in the Activity Matrix (Figure 5).

The Matrix has been built based on the analysis of the Pilot Cities Action Plans developed by the REFLOW cities, as well as on follow up conversations with each of them to better scope out core challenges and opportunities addressed.

The activities are defined at this stage **to accommodate different needs**, but also to recognize **different starting points** in the transition to circular and regenerative cities. There are cities that are already frontrunners, owning a rich capital of 'circular' experience and knowledge that makes them able to operate in REFLOW at great scale and scope. Other cities may instead be at earlier stages, with the need to better size and explore different scenarios of circular transition, and to build a solid approach and intervention strategy.

In this perspective, the Matrix offers **a set of activities** of different nature (research, design, coaching, etc.), **which in some cases are addressing 'governance' directly, while in others are more preliminary or complementary to it**.

As governance is a broad concept that entails multiple 'soft' and 'hard' aspects - systems of values, social norms, dynamics of power but also regulation, legislation, etc., no one single activity allows us to fully set in place meaningful governance arrangements for REFLOW; instead, we need to tackle the topic from multiple perspectives, and via creative combinations of expertise, disciplinary domains and know-how. Moreover, the activities presented here are not set in stone; they may change or adapt in the collaboration with the pilot cities, and be further enriched, especially for the phases of the Journey which are yet to be better scoped out (i.e. Make and Release phases).

How the Matrix is connected with the Portfolio and the Journey

The Activity Matrix is essentially a 'mirror' of the Portfolio - i.e. the way in which the various activities defined in the Matrix can support activities and experiments envisaged by the REFLOW cities across the core levers they address, over an horizon from the short towards the long term. Moreover, activities are associated with the different phases of the Journey (Figure 6) - i.e. Understand, Define, Make, Release; as the latter can apply to the individual activities or experiments, and/or to a combination of activities/experiments within one horizon level, as well as to the full stack of activities/experiments across the three horizons, the approach to this preliminary definition of activities follows the need to operate at different scales - from the micro-level of a single and highly place-based experiment, up to the definition of a full-spectrum set of activities/experiments sustaining transition paths at scale and scope. Again, this goes back to pilot cities' needs and starting points: for some cities we may limit to few activities in a short term horizon, while others may be ready to work effectively with greater complexity and systemic approaches.

Therefore, each city will work based on its own activity matrix, unleashing in turn different journeys (Figure 7,8). By doing so, outcomes, outputs and tools elaborated will differ from case to case; yet, taken together, they will form a comprehensive set of tools and resources that will shape the REFLOW knowledge and experience capital for transition journeys rooted in collaborative governance.

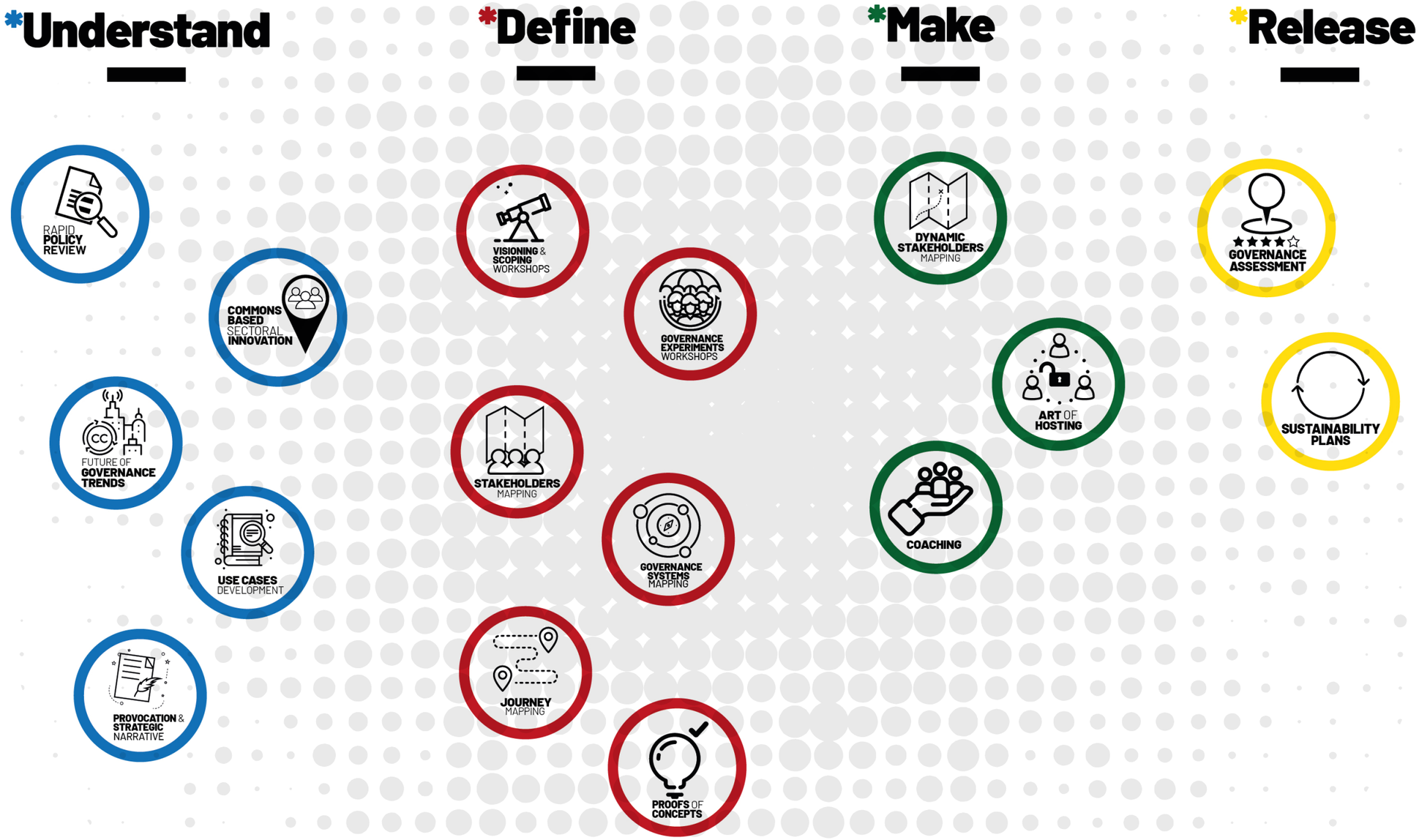


Figure 5: The Activity Matrix
Source: P2P Lab

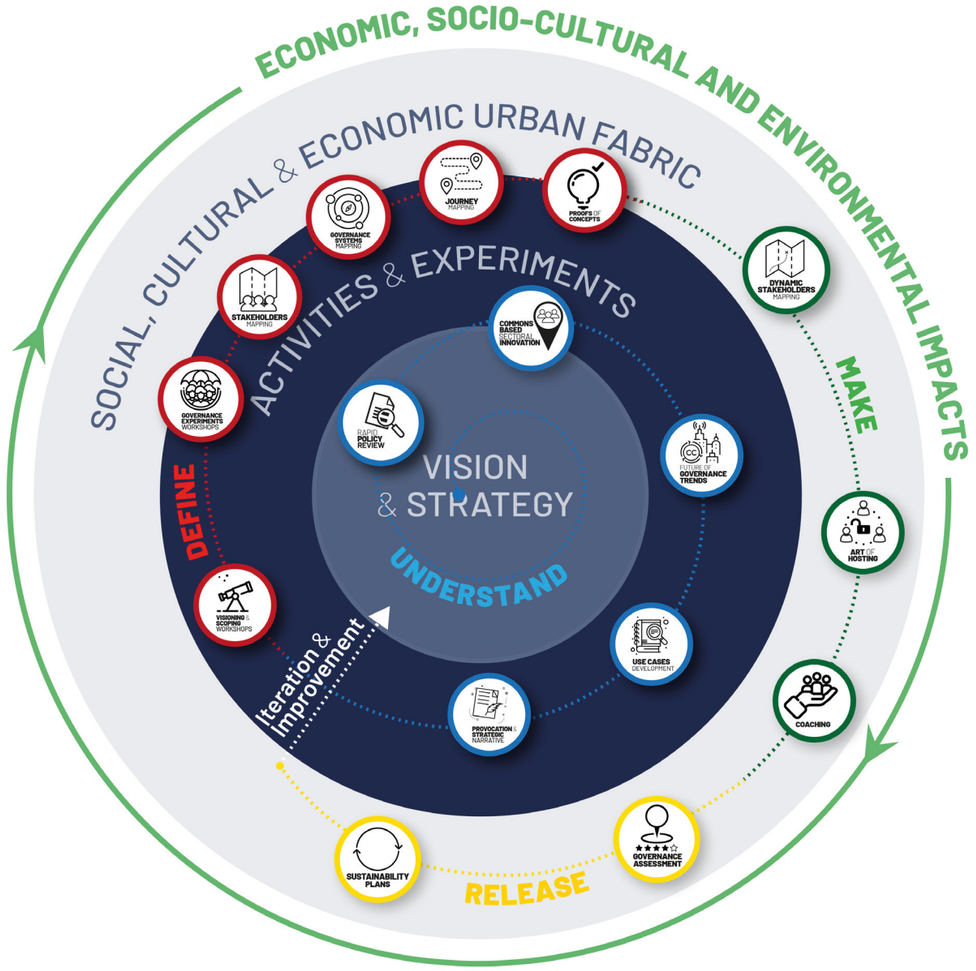


Figure 6: The Journey for Collaborative governance experiments **matching the RCG* framework**
Source: P2P Lab

Reflo

***Reflow Collaborative Governance**

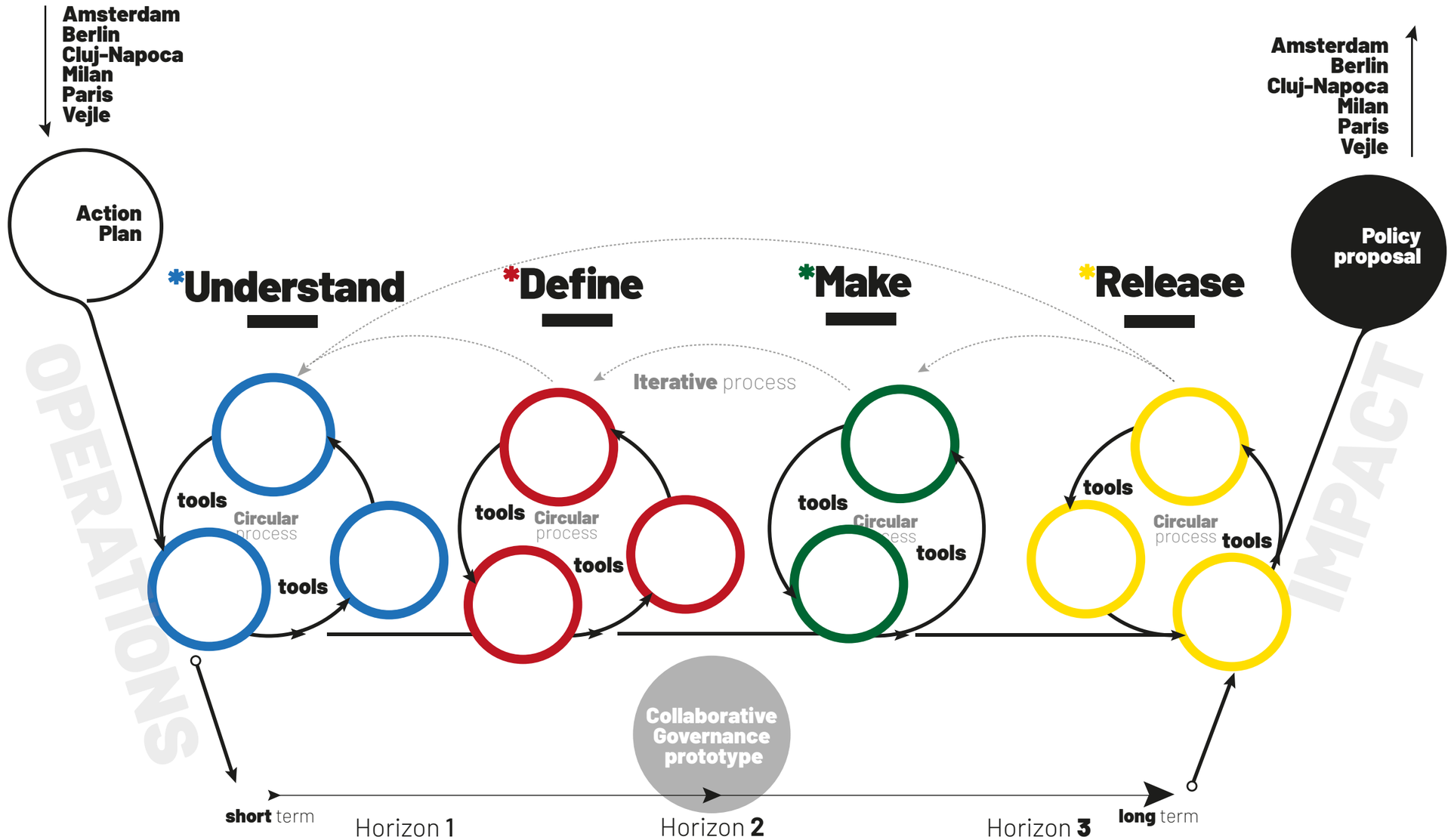


Figure 7: The Pilots journey for Collaborative governance experiments **matching the Portfolio Approach**
Source: P2P Lab

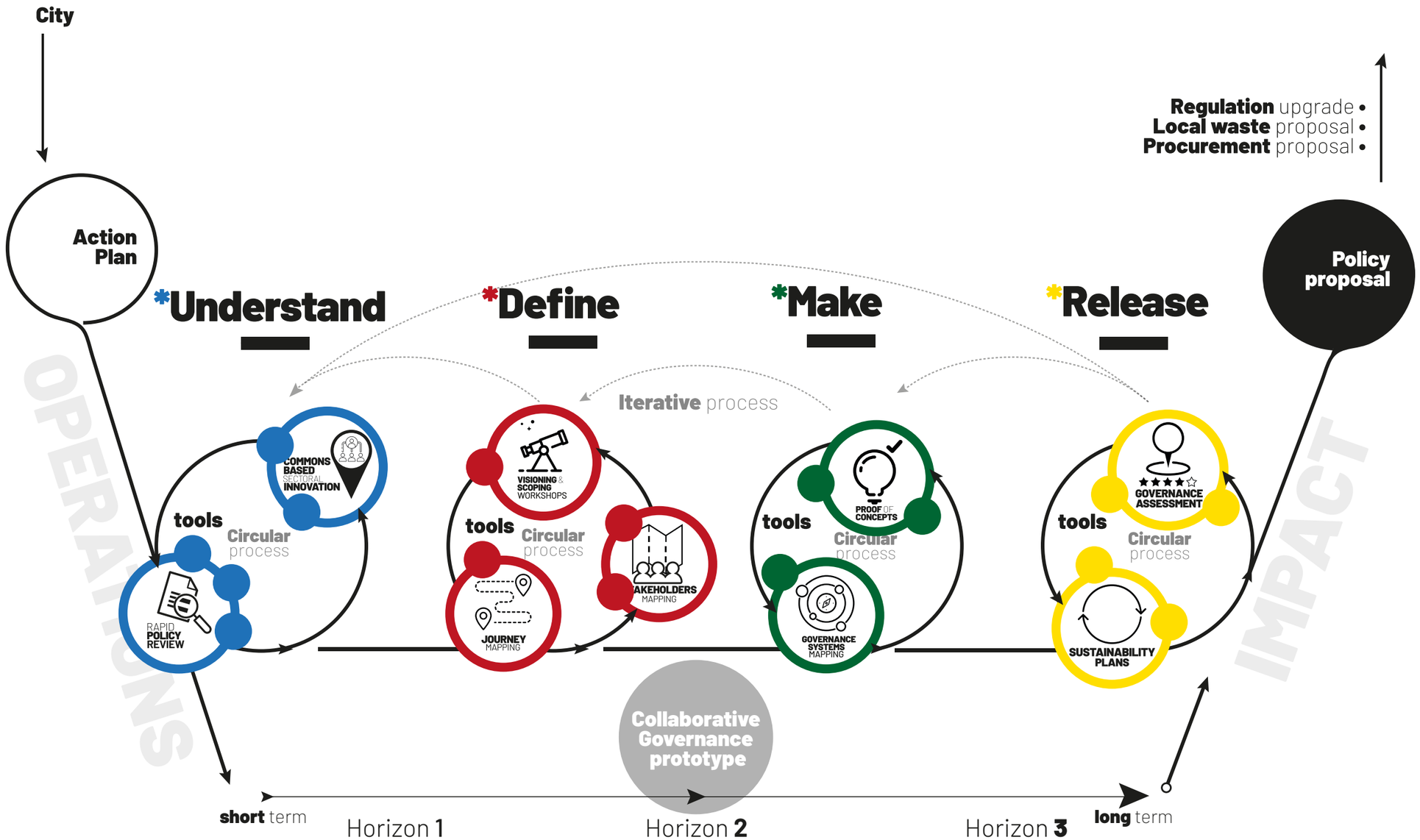


Figure 8: An example of a city tailored journey
Source: P2P Lab

Toolkit **Activity Menu**

Understand

An effective design and planning process requires an in-depth understanding and deep diving into the status quo of the system(s) and context(s) affected by intervention.

When it comes to governance, it requires exploring and investigating core aspects such as the relational system, structures of power, forms and tools of decision-making, values, perceived motivations and barriers to collaboration, etc.

At the same time, this phase is dedicated to gather knowledge and inspiration around multi-stakeholder and collaborative governance arrangements that can sustain co-creative transition paths to circular and regenerative cities, looking in particular at the emerging trends that harness novel technologies to foster participation, engagement and, ultimately, peer production.

Keywords in this phase

Open mind
Divergence
Inspiration
Research and discovery

Activity Menu

* Rapid Policy Preview

Description

Research activity that aims to **depict the starting policy context** in which a city is going to develop a circular pilot action. The activity maps out insights and information including:

- Nature and scope of circular economy actions plans and policies when present, and/or nature and scope of connected policies and strategies (i.e. Smart City strategies, Resilient City strategies, Sharing City strategies, etc.);

- Core characteristics of policies mapped out, particularly in terms of sectors addressed, actions envisaged, actors involved, governance arrangements set in place, impact envisaged.

Purpose within the Reflow journey

Set the baseline of the policy context, outlining strategic linkages between the circular pilot action and broader policy objectives.

Core output(s)

Policy sheet
Mini-report

Main tools

Policy sheet template
Database of relevant document
Case studies

Commons-based sectoral innovations

Description

Deep dive analysis of the sector(s) targeted by the circular pilot action (i.e. textile, energy, food, etc.), covering aspects such as:

Innovation trends and emerging circular business models, with key focus on distributed and decentralized business models that set alternative ways to extractive approaches of urban development;
Innovation levers explored by public bodies to shape new circular markets that embrace peer production approaches;
Novel technologies such as smart contracts and digital registries to allow "many to many business models";
Barriers and opportunities for circular innovation.

Purpose within the Reflow journey

Provide the pilot partners with evidence and insights about trends, drivers and barriers to circular, commons-based innovation in the sector targeted, in order to sustain informed dialogue and engagement with relevant stakeholders.

Core output(s)

Sectoral deep dive reports

Main tools

Database of relevant documents
Case studies

Future of Governance trends

Description

Research sprint aimed at outlining emerging governance and organizational arrangements as 'city as a platform', looking in particular at governance forms that sustain commons-based peer production for the circular economy.

Purpose within the Reflow journey

Providing the pilot partners with initial inspiration and insights to explore and experiment with forms of distributed and decentralized governance.

Core output(s)

Mini-reports

Main tools

Case studies
Sectoral maps

Use cases development

Description

Research/benchmarking sprint that harvests a set of case studies targeted for the specific circular pilot actions, with key focus on the governance dimension.

Set of targeted case studies aiming at inspiring the pilot cities and providing them with a number of possible, concrete lines of work. This activity also aims to spot lessons learnt that the pilot cities may be willing to consider when designing and implementing their own core activities.

Purpose within the Reflow journey

Providing the pilot partners with insights and inspirations to further enrich and improve the design and implementation of their circular pilot actions.

Core output(s)

Use case reportso

Main tools

Case studies

Provocation & strategic narrative

Description

A strategic narrative work exploring the multiple benefits that the circular economy may unlock at city level, and how co-creation and co-production can help achieve systemic goals of circular urban development. It entails exploration of city-targeted arguments and harvesting of evidence across, for example, creation of new jobs, enterprises and lead markets, better management of urban assets, enhanced health and well-being, reduced climate impact, better governance, strengthened agency and legitimacy for change.

Purpose within the Reflow journey

Providing the pilot partners with a 'talking document' to sustain engagement and dialogue with diverse stakeholders.

Core output(s)

Strategic Narrative paper

Main tools

Database of relevant documents
Case studies
Visual templates

Toolkit **Activity Menu**

Define

The ‘define’ phase is essentially about scoping out the core challenge(s) that are to be addressed and identifying core principles and rationale for a portfolio-based intervention strategy. In order to define possible governance experiments, in this phase it is important to outline possible, ‘overall transition’ scenarios, and map out core actors and sectors that may be addressed, as well as specific levers that may be taken into account - e.g. regulation, financial incentives, citizen engagement, etc.

Keywords in this phase

Scenario-ing and Visioning
Challenge(s) scoping
Convergence
Sense making
Project development and management

Activity Menu

* Visioning & Scoping Workshops

Description

On-site workshop(s) that support systemic approaches to the design and development of circular pilot actions, exploring interlinkages and connections of activities across core dimensions such as governance, place-based experiments, citizen engagement, tech innovation, regulatory innovation, business case development, etc.

Purpose within the Reflow journey

Supporting the pilot partners to develop a more holistic and integrated framing of their circular pilot actions towards the achievement of the expected impacts.

Core output(s)

Workshop maps and canvases

Main tools

Value Canvas
Vision Canvas
Portfolio Canvas

Governance experiments Workshops

Description

On-site workshop(s) that support creative and collaborative definition of governance experiments sustaining the circular pilot actions.

Purpose within the Reflow journey

Supporting the pilot partners in a clear and comprehensive definition of governance experiments, as initial probes that help map out the key characteristics of the experiments (where, with whom, how, when, with what ambitions, etc.), and their interlinkages with the set of activities already envisaged as part of the circular pilot actions.

Core output(s)

Governance Experiment Probe(s)

Main tools

Governance Experiment Canvas

Stakeholders Mapping

Description

Mapping and action research activities that aim to identify relevant stakeholders in the city, including those already involved in circular economy action as well as more unusual suspects.

Purpose within the Reflow journey

Improving and enhancing the definition of Circular Cities Pilot Actions with insights related to the relational ecosystem at the outset of pilot cities' transition plan. It includes mapping of actors across sectors, core values, interests, motivations and perceived barriers to collaboration.

Core output(s)

Stakeholder Maps (beta)

Main tools

Stakeholder canvases
Guidelines

Governance systems Mapping

Description

Exploring, through backcasting and mapping, the connectivity and leverage points in the relational network involved in the implementation of the circular pilot action, in order to spot pathways for action and decision-making.

Purpose within the Reflow journey

Supporting the pilot partners in a clear and comprehensive definition of governance experiments, as initial probes that help map out the key characteristics of the experiments (where, with whom, how, when, with what ambitions, etc.), and their interlinkages with the set of activities already envisaged as part of the circular pilot actions.

Core output(s)

Governance Experiment Probe(s)

Main tools

Governance Experiment Canvas

Journey Mapping

Description

Design and Planning activity which maps out governance-related activities, milestones and touch points across three main "Horizons" of reference (short, mid and long term).

Purpose within the Reflow journey

Supporting the pilot partners in a clear definition and elaboration of an ambitious roadmap that goes beyond the end of the Reflow project. This activity also helps pilots in relying upon a visual roadmap, to facilitate dialogue and conversation with local partners and stakeholders.

Core output(s)

Journey Map(s)

Main tools

Journey Diagrams
Visuals

Part **3**

Proofs of concept

Description

Design activity that develops specific design probes capturing the core principles and functioning mechanisms underpinning governance experiments.

Purpose within the Reflow journey

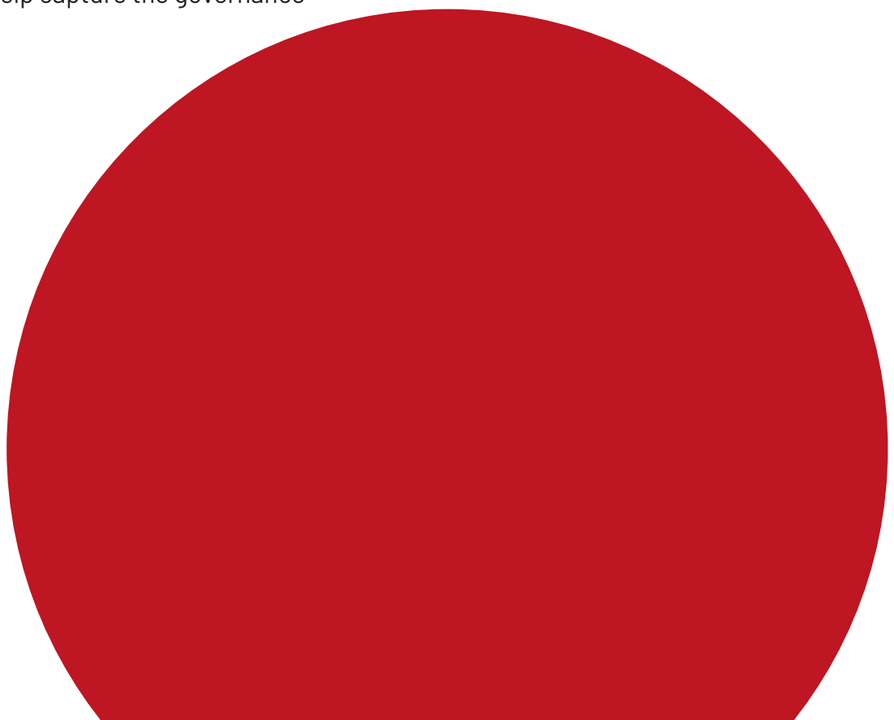
Supporting the pilot cities with ‘easy to grasp’ visualizations that help capture the governance experiments.

Core output(s)

Design Probe(s)

Main tools

Sketches
Diagrams
Design canvases



Toolkit **Activity Menu**

Make

In this phase, evidence and insights from the previous phases are brought together to start creating the governance prototype(s) that support the selected scenario(s). Prototypes will be iterated and tested in the next phase. In this phase, it will be fundamental to keep in mind some key points, including whether the shape of the experiments envisaged form an incremental or radical innovation landscape.

Keywords in this phase

Open mind
Divergence
Inspiration
Research and discovery

Activity Menu

* Dynamic Stakeholders Mapping

Description

Mapping and action research activities that explore the expansion and evolution of the relational network over time, hand in hand with the evolution of the pilot activities.

Purpose within the Reflow journey

Supporting the evolution of pilots with understanding of how the relational fabric impacted by the pilot action takes shape over time. This in turn may help seize the effectiveness of actions undertaken and provide inputs for improvement throughout iterations.

Core output(s)

Stakeholder Maps 2.0

Main tools

Stakeholder canvases
Guidelines

Art of Hosting

Description

Design and facilitation of co-creation and co-production workshops at the pilot sites, tailored and personalized according to the specific stage of the pilot development and objectives to be achieved.

Core output(s)

Workshop mini-reports

Main tools

Workshop canvases
Guidelines

Purpose within the Reflow journey

Supporting the pilot partners with design-driven techniques and approaches to trigger meaningful conversations with their own local partners and stakeholders.

Coaching

Description

This activity is closely connected to Activity "Governance Experiments" (Define phase), as it supports the actual implementation of governance prototypes as well as their further development through progressive iterations.

Core output(s)

Storyboards

Main tools

Canvases for storyboards
Mini 'learning' posts

Purpose within the Reflow journey

Supporting the pilot cities with a 'critical friend' action, creating proper knowledge exchange milestones that foster collective reflection and learning.

Toolkit **Activity Menu**

Release

Release phase is about delivering prototypes. About the REFLOW Coolaborative Governance Toolkit, this means testing the tailor governance prototype (keeping on improving) and proposing upgrade/innovation for related policies.

At the end of the release phase, common understanding among Pilot cities will be collected in order to share knowledge with other cities, towards replicability. This is the phase where the sense system should strengthen and allow Pilot cities to be aware and independent from the REFLOW project (in order to keep on improving also after the end of REFLOW).

Keywords in this phase

Learning for meaningful impact
Convergence
Iteration
Final testing
Evaluation
Feedback loops

Activity Menu

Governance Assessment

Description

Monitoring, learning and evaluation activities that assess the effectiveness and relevance of the governance prototypes set in place.

Purpose within the Reflow journey

Providing the pilot cities with evidence and insights around strengths and weaknesses of the governance prototypes and identifying rooms for improvement and scalability.

Core output(s)

Assessment reports

Main tools

Assessment tools
Guidelines

Sustainability plans

Description

Speculative design activities that set possible pathways of sustainability for the pilot cities, focussed in particular on ways to further evolve governance prototypes.

Purpose within the Reflow journey

Supporting the pilot cities in the definition of viable sustainability plans for the transition to circular and regenerative cities.

Core output(s)

Sustainability Plans

Main tools

Sustainability Plans templates
Visuals

An example of a Pilot journey

A first draft of the **Vejle city journey** - according to its scenario

A focus on the possible Vejle **Define phase**, with the **specific activities and tools**

The **portfolio canvas** as an example of the **Define phase** tools collection

The **Vejle journey**

As explained in Part 3, the actual Activity Matrix is likely to be unique for each REFLOW pilot city, as it will reflect different strategic choices to unlock the transition towards circular and regenerative cities, and thereby different approaches and activities to do so via collaborative governance arrangements.

In the next pages, we present an example of an hypothetical collaborative governance transition journey in Vejle, in order to show how the activities in the Menu can be creatively articulated in connection with the**Portfolio Approach** (Figure 9) and the **Activity Matrix** (Figure 10). This example is based upon Vejle's Action Plan and follow up conversations with the City. Vejle already shows a well defined governance structure for the transition to circularity, articulated into:

A **Local Steering Committee** participated by different City Departments as well as by external stakeholders, including Universities, Social Organizations and Environmental Protection Agencies. This Committee coordinates and steers the local REFLOW's activities, making decisions and monitoring progress towards the achievement of the set Key Performance Indicators (KPIs).

An **Advisory Board**, yet to be fully defined, in charge to provide key knowledge in support to the implementation of the prototyping activities and their further scalability.

Five Working Groups, each dedicated to a specific scenario (being each scenario, in turn, place-based) consisting of different stakeholders and in charge of implementing the planned activities.

According to Vejle's vision and Action Plan for the transition to circular cities, the **collaborative governance transition journey** (Figure 11, 12) is sketched in three (simplified) horizons:

- A **short term horizon** where the governance structure is fully tested according to the activities envisaged in the Action Plan;
- A **medium term horizon** that introduces practices of circular public procurement and circular local waste plan that are coherent and integrated with national plans;
- A **long term horizon** that integrates the learning and lessons learnt throughout the previous horizons to build a holistic resilience strategy for the City that embeds the circular economy as a strategic means to unlock multiple spillover benefits across society, economy and environment.

Lastly in Figure 13 we present the Portfolio canvas tool as an example of the suggested tools collection according to the specific journey.

The **Vejle Portfolio Approach**

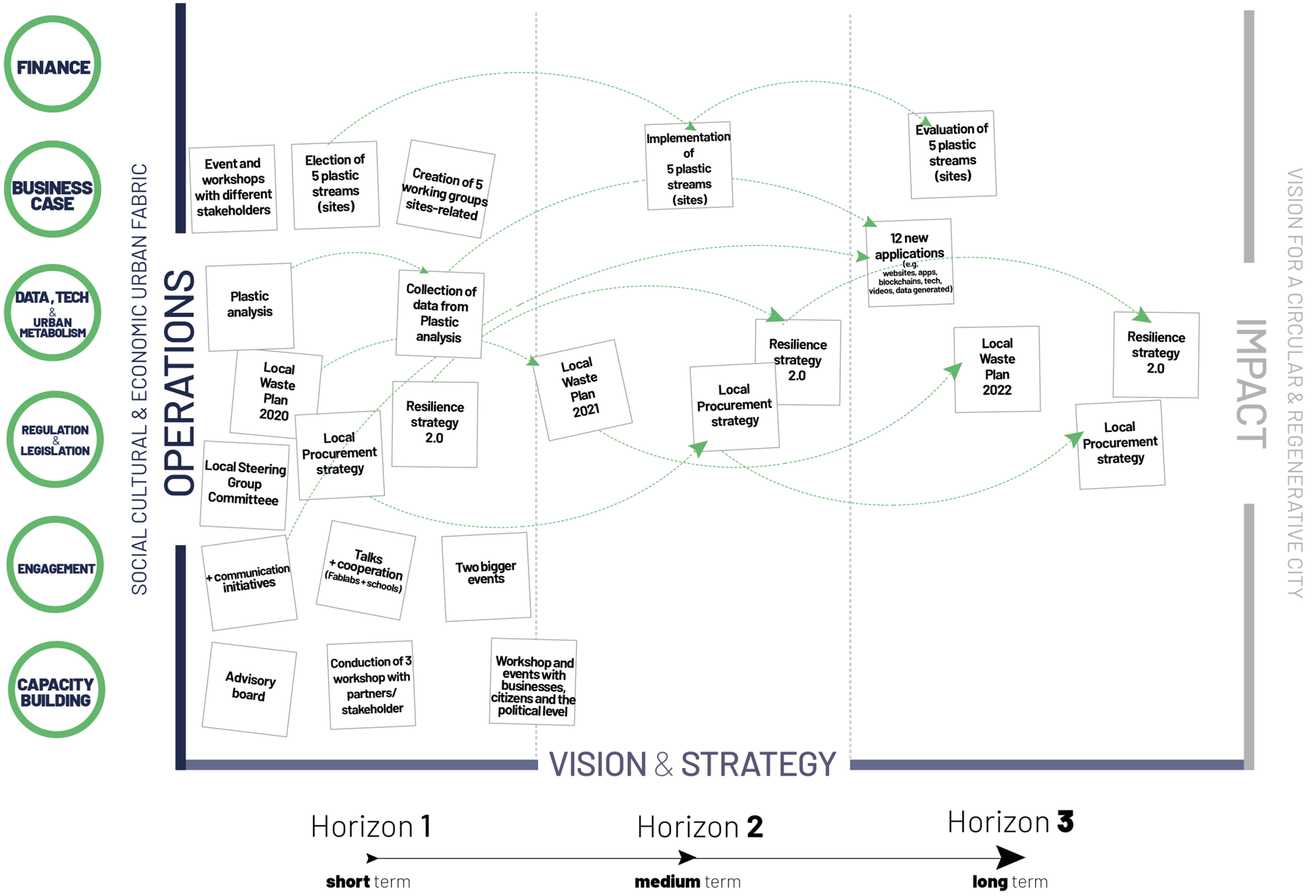


Figure 9: Vejle Portofolio Approach
Source: P2P Lab

The **Vejle Activity Matrix**

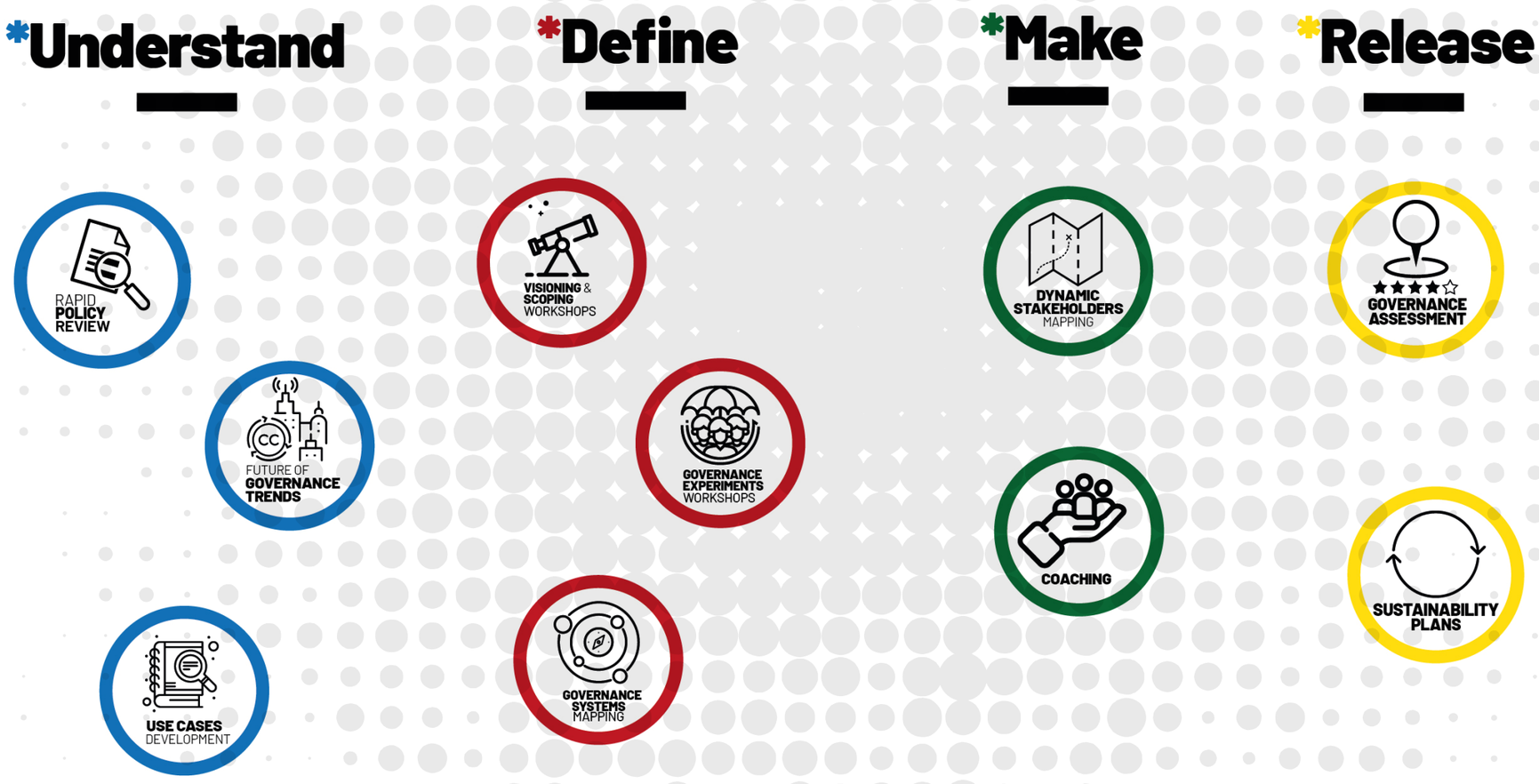


Figure 10: Vejle Activity Matrix
Source: P2P Lab

The **Vejle journey**

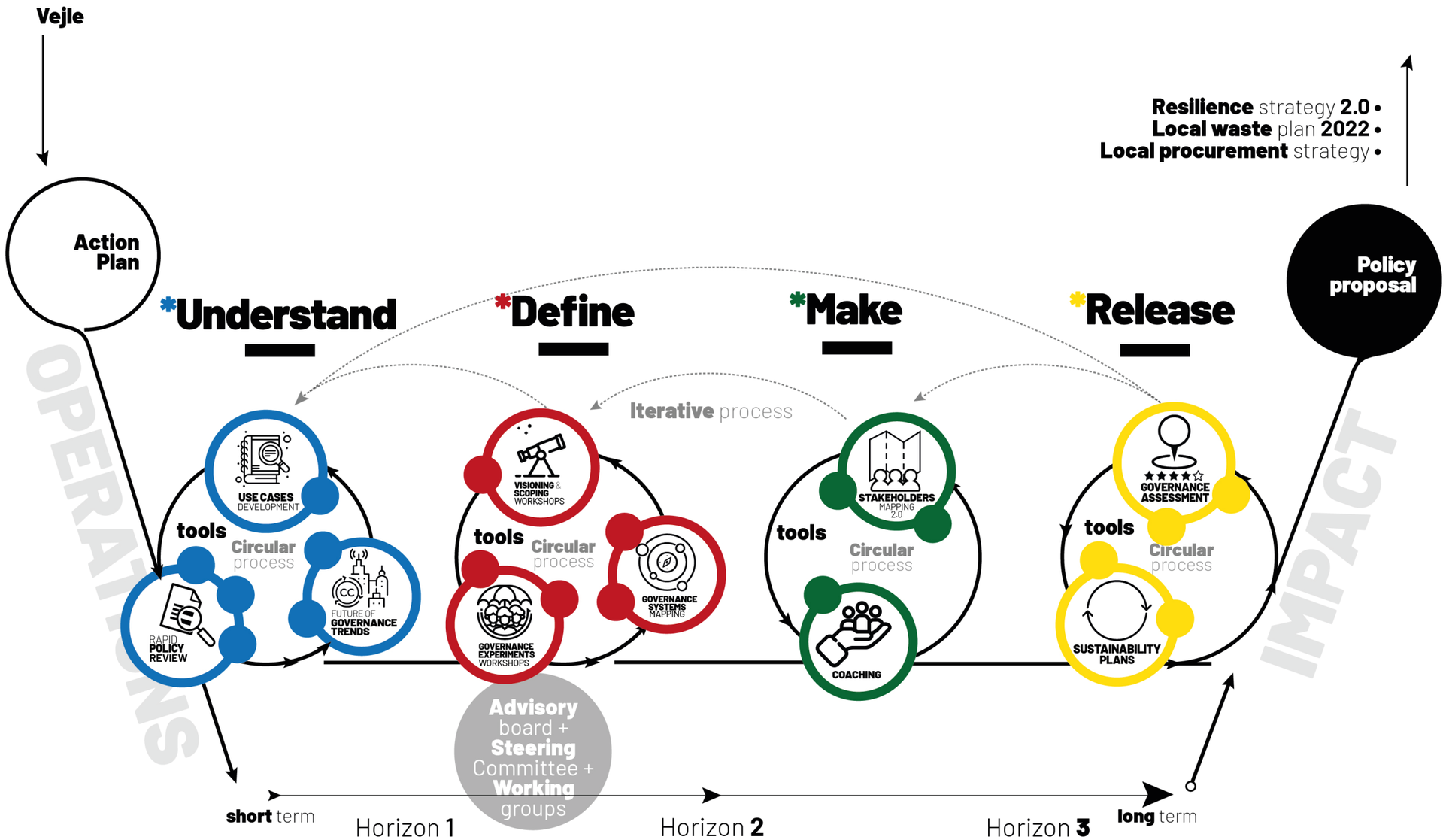


Figure 11: Draft of the Vejle journey
Source: P2P Lab

The **Vejle Define** phase

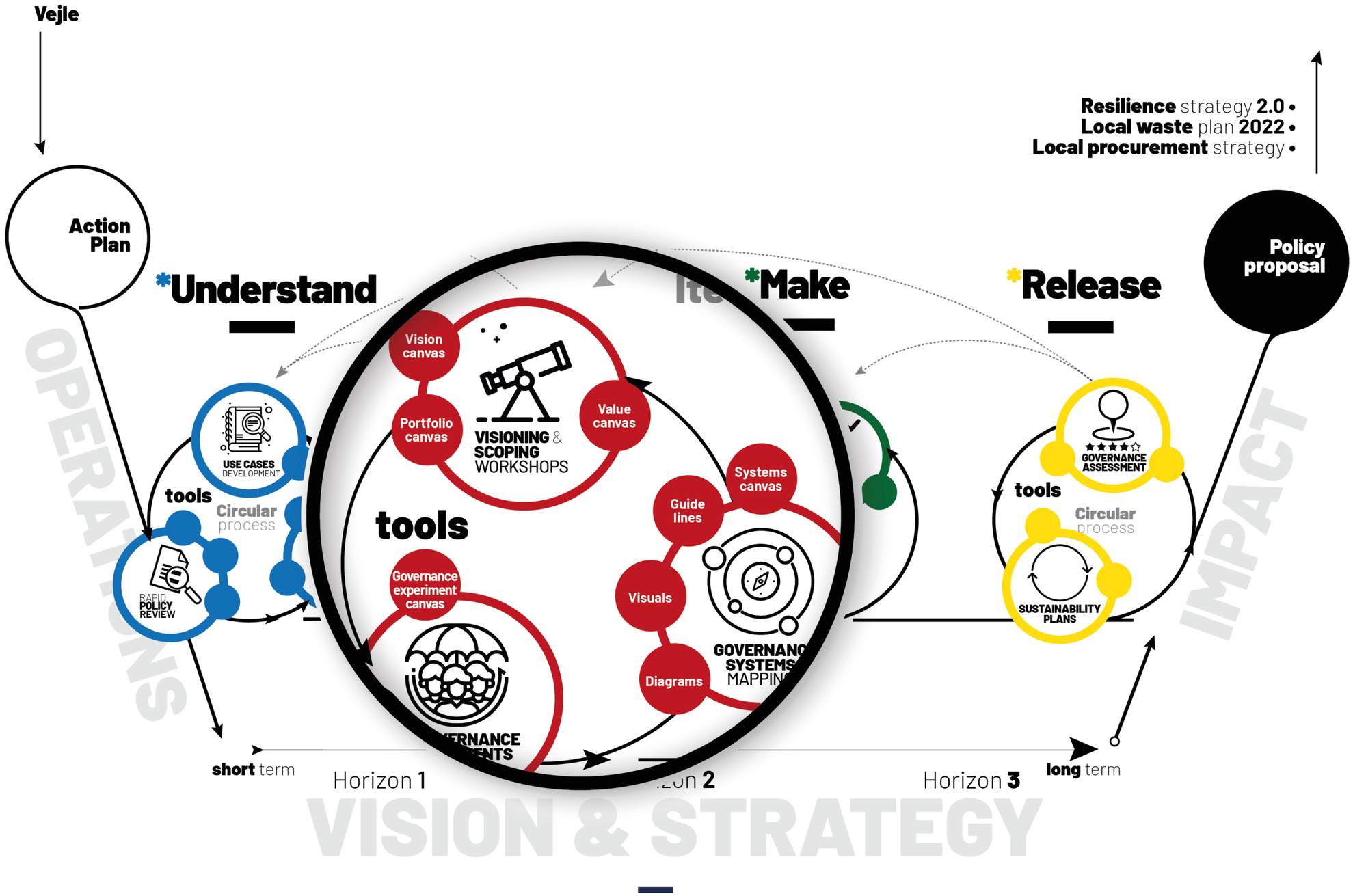
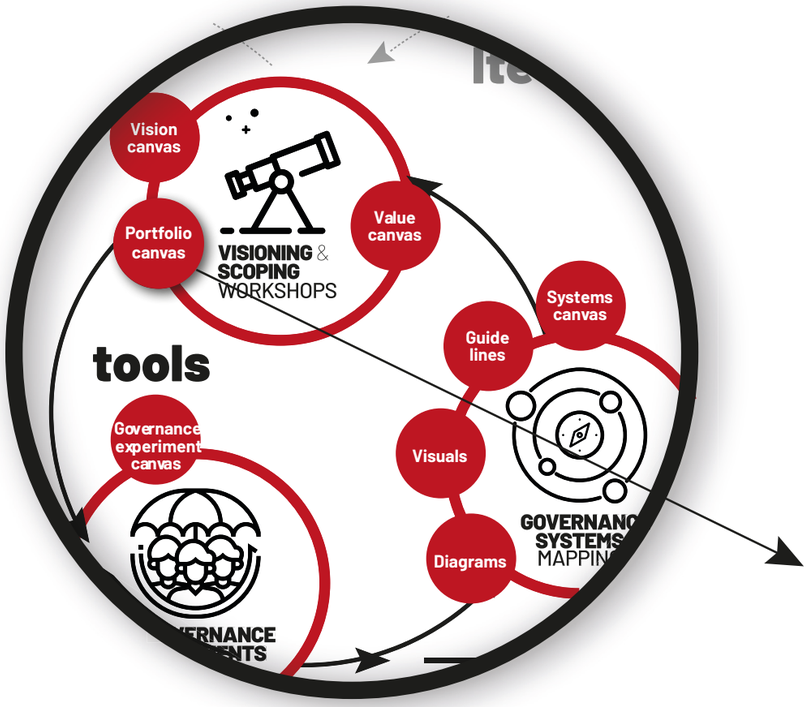


Figure 12: Zoom on the possible Vejle Define phase
Source: P2P Lab

The **Vejle Define** phase



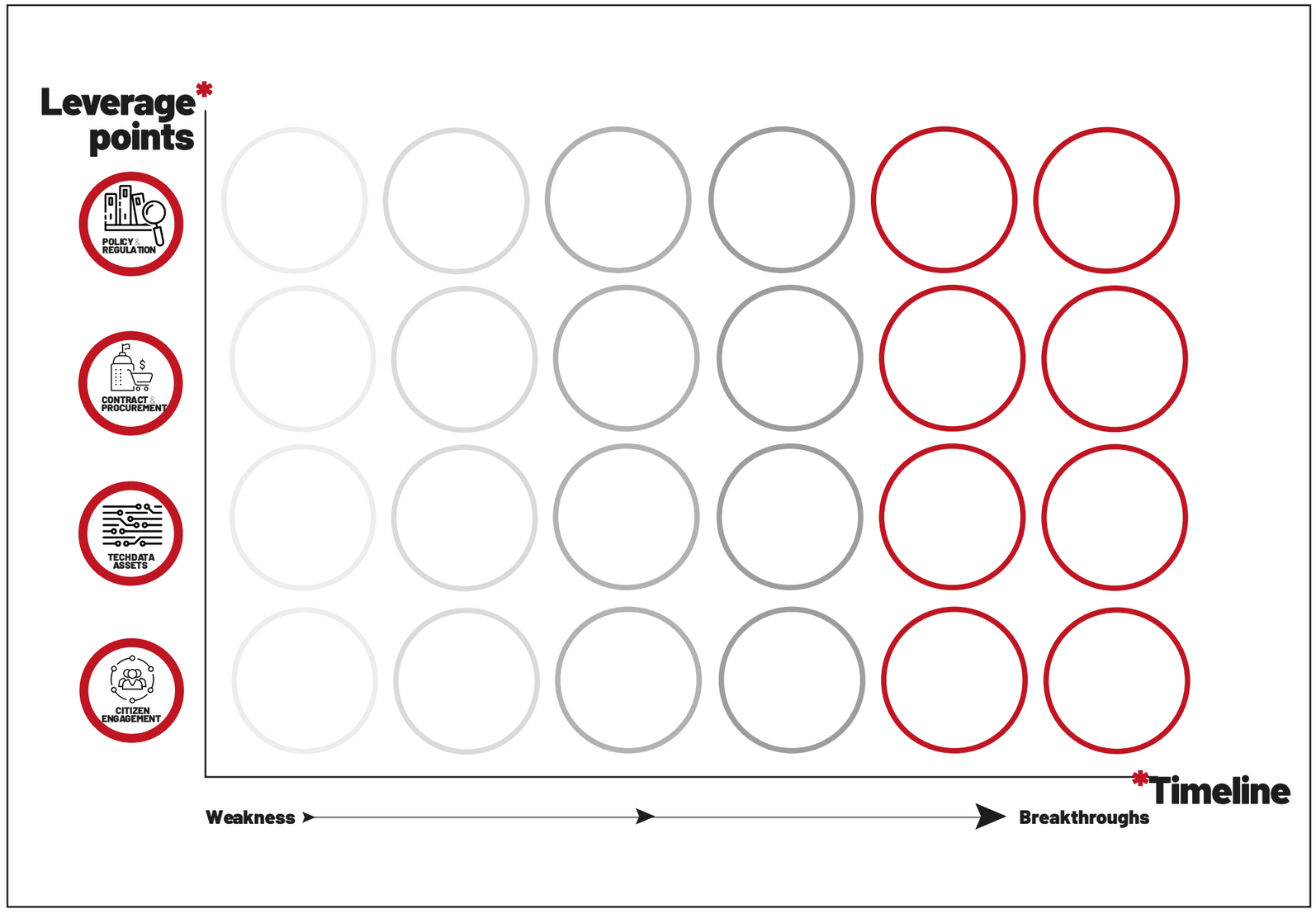


Figure 13: The Portfolio canvas tool
Source: P2P Lab

Part 4

In this section, you will discover:

How the Toolkit will be **implemented**

How the Toolkit will **change** in time

Key **technica**l aspects

REFLOW **Collaborative Governance Toolkit Implementation and next iterations**

REFLOW Collaborative Governance Toolkit as a living resource

As an online and living resource, the REFLOW Collaborative Governance Toolkit provides both the pilot cities and other interested cities with a rich and updated repository of tools and resources to develop collaborative governance transitions approaches in urban contexts. The REFLOW project offers an opportunity to experiment and explore the suitability of this repository for specific circular transition processes in pilot cities. In this sense, the REFLOW Collaborative Governance Toolkit works in two directions. On the one hand, pilot cities will access tools and methods, as well as practical approaches and case studies that may support them in their transition. On the other hand, the tools presented in this first version will be tested and explored by the REFLOW pilot cities, whose feedback will allow the deployment of the next iteration of resources.

Short-term outcomes

As explained previously, the REFLOW Collaborative Governance Toolkit is based on preliminary work with pilot cities, which took place in the course of the first year of the REFLOW project during their design and planning phase. Hence, it finishes a work cycle. Therefore, this document crystallizes some of the learning achieved in the first year, proposing an overall approach, and summarizing knowledge and resources gathered so far, curated according to pilots' needs and their inputs. Nevertheless, as a tangible resource, it also kickstarts the first iterative round of the next cycle. The RGT tools and methods will be tested by pilot cities, whose feedback will be later used to readjust and reorganize the resources of the toolkit.

Long-lasting social impact

The REFLOW Collaborative Governance Toolkit is, along with the REFLOW Handbook and the Policy Proposals for Flexible Urbanism, the main outcome of the project within the building block Governance and Urban Strategies on Circular Economy. As such, it should be readily accessible and able to be implemented across European cities and beyond.

In order to fulfil both RGT's short- and long-term objectives, the content of this deliverable will necessarily have to evolve. First, it must be easily accessed and navigated by the pilot cities during the REFLOW project. Second, it must stand as an online resource after the project ends, remaining accessible to cities who want to explore collaborative governance frameworks for a circular transition process.
For these two reasons, this complementary version of the toolkit must be:

- **Openly accessible online**: So it can be used by different cities and users from inside and outside the REFLOW project.

- **Customizable**: So it can be adapted and tailored to pilot cities needs during the REFLOW project

- **Replicable**: So it can be adopted and adapted by cities in the future.

- **Inter-relatable**: Connections between its content and other resources must be possible. It should be possible to establish links between RGT and other REFLOW resources, such as the REFLOW Handbook, but also other European Projects and international initiatives that are using online platforms as knowledge dissemination tools.

As an online and open source platform, **Gitbook** is used as a testbed to adapt the content of this deliverable and make it accessible to the pilot cities. This platform fulfills the aforementioned requirements: It is accessible online, customizable and open source, it can be co-edited by different users and is already used in other REFLOW resources and EU projects. Nevertheless, it also has a number of disadvantages. Despite allowing for collaborative content edition, it does not allow comments from non-contributors.

Therefore, within REFLOW, it should be aligned with a complementary channel to collect feedback from the pilot cities. The Pilot Framework developed by Waag offers a good opportunity for it, as the platform is already in place and pilot cities are continuously using it for exchange of information between the REFLOW consortium members. In Gitbook, different users can co-edit the content of the resources, seeing and approving changes by other users. The platform allows for direct formatting of the resources, using direct text formatting with predefined styles. This helps save time in editing and layout. Through its menu toolbar, Gitbook offers the possibility to organize content in an easy and visually attractive way (Figure 14).

Gitbook also offers the possibility to include different types of resources: text, video, diagrams, downloads, etc.; therefore, the pilot cities will be able not only to access individual resources but also to grasp the broader 'sense system' in which such resources are positioned (Figure 15). The combination of Gitbook and WP5 Pilot Framework will be tested in the next iteration between pilot cities and RGT.

The suitability of the Gitbook platform will be assessed and reflected upon before the

next version of the REFLOW Collaborative Governance Toolkit is deployed.

Updating and Replicability

New content will be uploaded to the toolkit throughout the course of the project in a continuous and iterative process. However two specific editions will be released, respectively in M24, including the feedback of a panel of experts on the implementation of the toolkit, and in M36, aligning with a final assessment of the validation and evaluation process of the pilot cities.
In order to keep the RGT as a useful resource for cities in transition to circularity, the content and tools previously described will remain in the platform beyond the project end date.

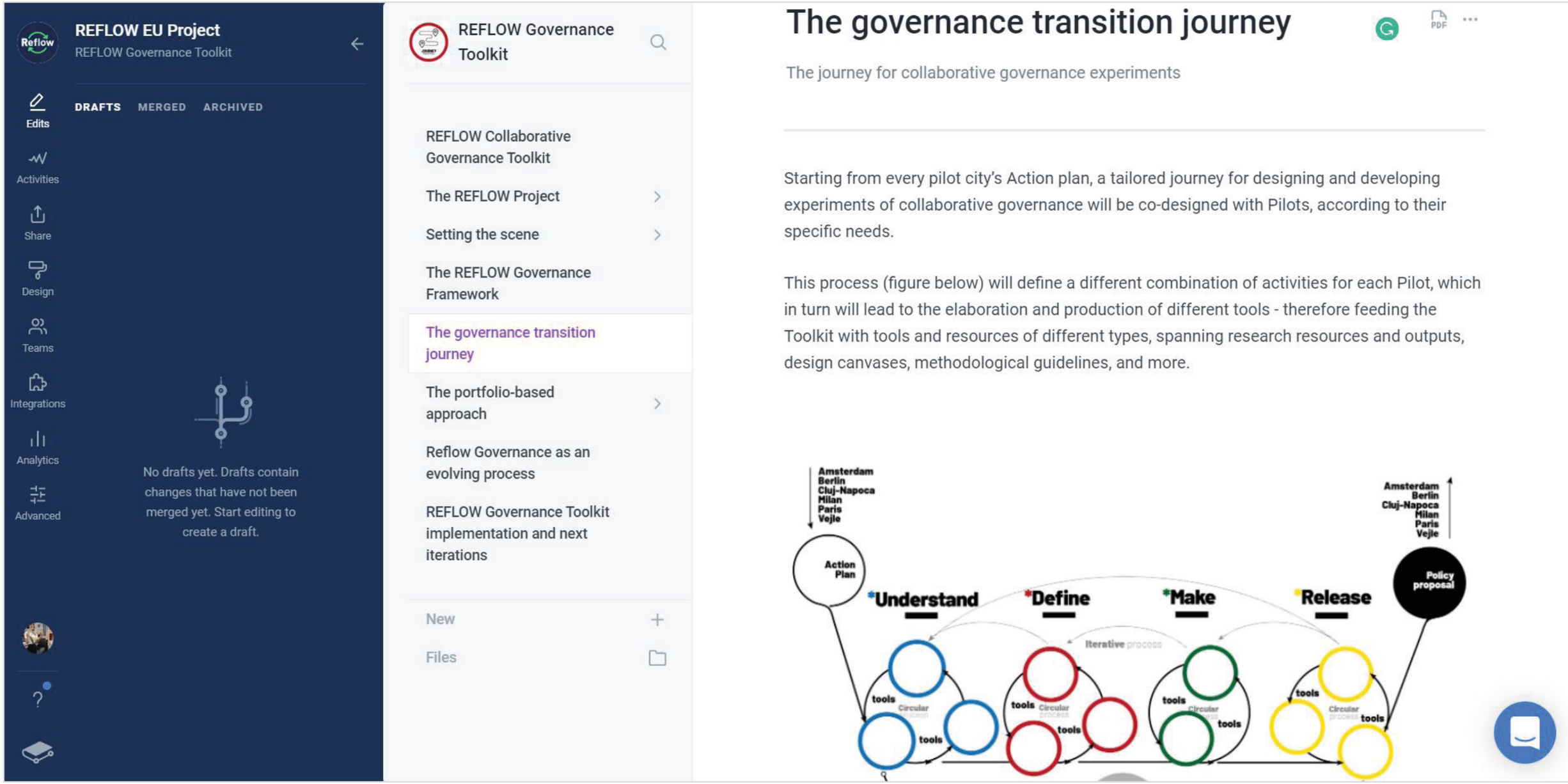


Figure 14: Gitbook collaborative editing settings and menu toolbar
Source: Screenshot by IAAC at https://app.gitbook.com/

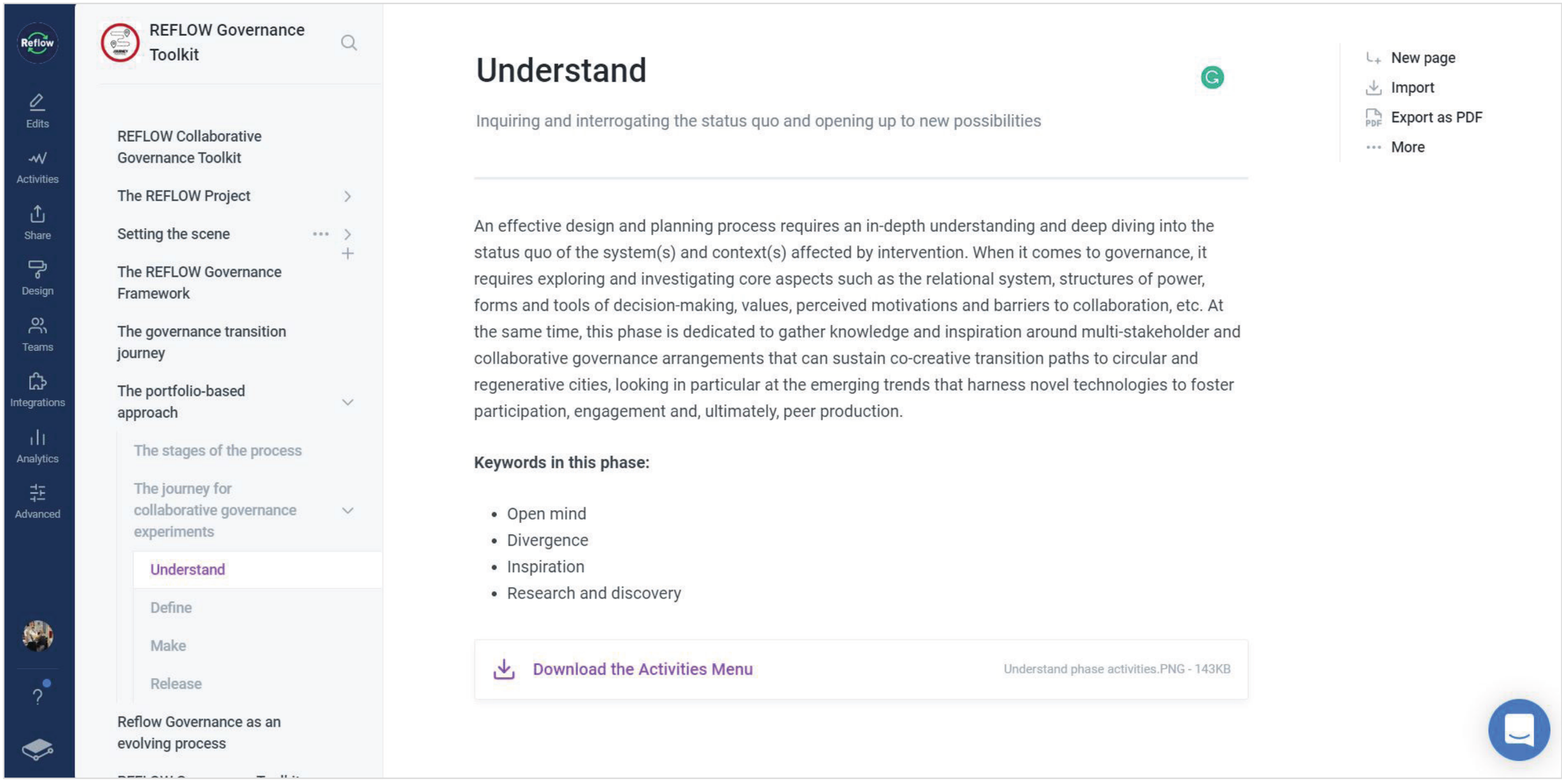


Figure 15: Gitbook download button to get files and documentation
Source: Screenshot by IAAC at https://app.gitbook.com/

Appendix 1

Main **existing Toolkits** on **Open Government** and **Public innovation**

Open Government and **Public Innovation**

1. **A Beginner's Guide to Enabling Open Government** (United Nations Development Programme,The Engine room)
2. **Agile Evaluation Kit** (Kit de Evaluación)(Argentinian Ministerio de Modernización)
3. **Algorithmic Impact Assessment** (Canadian Government)
4. **A to Z of Engagement Techniques** (Tasmanian Department of Health and Human Services)
5. **Citizen Sensing: A Toolkit** (Making Sense)
6. **Collective Action Toolkit** (Frog Design)
7. **Data Collaboratives Canvas** (GovLab)
8. **Dcent** (Nesta, ThoughtWorks, Dyne.org, The Citizens Foundation, Universitat Oberta de Catalunya, Forum Virium Helsinki, World Wide Web Consortium, CES, International Modern Media Institute and the Open Knowledge Foundation)
9. **Decode** (Institut Municipal d'Informàtica de Barcelona, ThoughWorks, Nesta, Dyne.org, University College London, Stichting Katholieke Universiteit, BCMI Labs AB, City of Amsterdam,Centre d'économie de la Sorbonne, Dribia, Eurecat, Universitat Oberta de Catalunya, Politecnico di Torino, Thingful and Waag Society)
10. **DemTools** (National Democratic Institute)
11. **Design Jam Toolkit** (TTC Labs)
12. **Do-it-Yourself Open Data Toolkit** (Canada Government)
13. **Ethics & Algorithms Toolkit** (Ethics & Algorithms Toolkit)
14. **Federal Crowdsourcing and Citizen Science Toolkit** (United States Government)
15. **How to Run a Civic Lottery** (MASS LBP)
16. **Implementing Innovation: A User's Manual for Open Government Programs** (Reboot)
17. **Inclusion Toolkit** (Danish Design Centre)
18. **Kit de Innovación** (Innovation Kit - practical tools to impulse public innovation)(Argentinian Ministerio de Modernización)
19. **Legal Leaks Toolkit – A Guide for Journalists on How to Access Government Information** (Access info Europe)
20. **Neighbourhood Ideas Exchange Toolkit** (Proboscis)
21. **OGP Toolbox** (Etalab)
22. **OGP's Participation and Co-creation Toolkit: From usual suspects to business as usual** (Open Government Partnership)
23. **Open Data Board Game** (Open Data Institute)
24. **Open Data Innovation Week tools** (Open Data Labs)
25. **Open Data Swiss Handbook** (Switzerland Government)
26. **Open Data Toolkit** (Government of South Australia)
27. **Open Governance Research Exchange** (Govlab)
28. **Open Government Costing Tool** (Results for Development (R4D)
29. **Open Government Data Toolkit** (World Bank)
30. **Open Government Kit - Transparency** (Kit de Gobierno Abierto, Transparencia)(Argentinian Ministerio de Modernización)
31. **Open Policy Making Toolkit** (United Kingdom Government)
32. **Participatory Budgeting Scoping Toolkit** (Participatory Budgeting Project)
33. **Points of Contact Communications Toolkit** (Open Government Partnership)
34. **Project Open Data** (United States Government)
35. **Recursero de Evaluación** (Argentinian Ministerio de Modernización)
36. **Smarter Crowdsourcing for Anti-corruption** (Govlab)
37. **The Digital Engagement Guide** (Helpful Technology)
38. **The Reference Panel Playbook: Eight moves for designing a deliberative process** (MASS LBP)
39. **Toolkit for Advancing Legislative Openness** (Open Government Partnership)
40. **US Public Participation Playbook** (United States Government)

Appendix 2

Main **existing Tools** on **Circular Economy**

Understand

Name toolkit & Author(s)	Tools	Scope
[Circular Design Guide](#) (Ellen MacArthur Foundation + IDEO)	Circular Flows Worksheet	Understand how to design for circular economy
	Regenerative thinking	Explore opportunities for social, cultural, natural and human capital
	Service flip Worksheet	Shift your thinking from products to services through underlying needs
	Insides out	Understand the implication of materials that go into everyday products
	Inspiration: Digital Systems	Be inspired by agile processes in software development
	Learn from nature	Be inspired by how nature might solve your design challenge
[DIY, Development Impact & You](#) (Nesta)	Innovation Flowchart	I want to look ahead to understand what I need to do to bring my idea to life.
	Evidence planning	I want to look ahead by defining the outcomes from my work.
[SYSTEMIC DESIGN TOOLKIT](#) (Namahn + Shiftn)	Rich context template	Setting the boundaries of your system in space and time, identifying the hypothetical parts and relationships.
	Actants	Listening to the experiences of people and discovering how the interactions lead to the system's behaviour. Verifying the initial hypotheses.
	System Map	Seeing how the variables and interactions influence the dynamics and emergent behaviour. Identifying the leverage points to work with.
[SERVICE DESIGN TOOLKIT](#) (Namahn)	Context & Objective	Objective of the service
	Research questions	What do you already know? What do you want to know?
	Interview: user experience	Interviewee & context of the interview
	Interview: actors map	Interviewee & context of the interview. Ask who was involved in the various experience phases. List actors with whom the user has a close connection in the middle and the other actors in the outermost circle.
[MAKING SENSE TOOLKIT](#) (Fab Lab Barcelona, WAAG Society, NL Dundee University, UK EC Joint Research Center, BE PEN Educational Network, KS)	Characteristics of the users	Decide on the most important characteristics that have an influence on your service
	Persona	"Describe your persona. Describe who he or she is in the context of the (future) service. What are his or her objectives,
	Design challenge	Rework your initial objective based on the insights from the previous steps. Which service do you want to design or improve? For whom?
	Design requirements	From the design challenge, determine what the high-level requirements are for the users. Try to come up with at least 3 requirements for each.
	Geographical mapping	The key with geographical mapping is to make it a hands-on affair, with participants discussing and mapping the issues themselves,so that they too can fully understand the magnitude of the issue at hand.
	Commons mapping	Allows people to log contributions that they are willing to make to the campaign, such as resources, time, or even specific skills
	Collaboration pilot schedule	You can design a campaign that takes into account the needs and aspirations of the community, as well as the availability of individual members.
	Onboarding kit	Include information and tools not only relating to the issue at hand and community building, but also to technological issues and ways to contribute.
	Empathy timeline	An empathy timeline facilitates community building by bringing people together to discuss issues and consider them in a new way.
	Recruitment	To save time and recruit more efficiently.
[PRODUCT-SERVICE SYSTEMS TOOLKIT (PSS TOOLKIT)](#) (• Brussels Environment, Ecores, Groupe One, Strategic Design Scenarios and Egerie Research)	The Regional Sustainable Development Plan	Top down assessment
	The Employment-Environment Alliances	Bottom up assessment
[CIRCULAR ECONOMY PLAYBOOK](#) (Sitra, Technology Industries of Finland and Accenture)	Business model development toolkit	For identifying inefficiencies and customer pain points, assessing relevance of circular business models, and prioritising them.
	Value case tool	For calculating high-level business case for circular business models.

Define

Name toolkit & Author(s)	Tools	Scope
[Circular Design Guide] (Ellen MacArthur Foundation + IDEO)	**Define your challenge**	Clearly articulate the circularity challenge you are looking to solve
	Find circular opportunities	Start with an achievable small initiative that can scale over time
	Building Teams	Building multidisciplinary teams with collaboration in mind
	Circular Buy-in	Understand your stakeholders and develop strategies for engagement
	Circular Business Model	Develop your business model from a circular design perspective
	Create Brand promise	Build circular proposition that reinforce your brand promise
[DIY, Development Impact & You] (Nesta)	**Swot analysis**	I want to develop a clear plan by evaluating how I am doing and what my options are.
	Business model canvas	I want to develop a clear plan on how to grow my idea into something bigger.
	Building Partnerships map	I want to develop a clear plan for working with other groups that have the same vision as me.
	Learning loop	I want to develop a clear plan by improving upon what I've done before.
	Experience tour	I want to clarify my priorities by learning from first hand experiences
	Problem definition	I want to clarify my priorities by focusing on key critical issues.
	Causes diagram	I want to clarify my priorities by breaking down a complex issue.
	Theory of change	I want to clarify my priorities by defining my goals and the path to reach them.
	People shadowing	I want to collect inputs from others by observing and learning from everyday life.
	Interview guide	I want to collect inputs from others in a conversation that uncovers their perspective.
	Question ladder	I want to collect inputs from others by getting to the heart of what motivates people.
	Storyworld	I want to collect inputs from others to ensure my work is relevant to the people I'm working for.
	People & connections map	I want to know the people I'm working with by clarifying relationships between stakeholders.
	Target group	I want to know the people I'm working with by better defining who I am trying to reach.
	Personas	I want to know the people I'm working with by visualising their key characteristics.
	Promises & potential map	I want to know the people I'm working with by defining how my offering is new to them.
[SYSTEMIC DESIGN TOOLKIT] (Namahn + Shiftn)	**Value proposition**	Helping the stakeholders articulate the common desired future and the intended value creation.
	Intervention strategy	Exploring possible ideas for intervening on the leverage points. Empowering the ideas by working with the paradoxes in the system.
[SERVICE DESIGN TOOLKIT] (Namahn)	**Lotus blossom**	Find inspiration by looking at how others fulfil requirements.
	Idea selection - COCD BOX	Hang all the solution ideas up and let the participants vote using different colour stickers. Sort the ideas on the poster and decide together which ideas you want to further develop
	Serious play scenario	Develop the user story by means of "serious play". Keep in mind the various phases: notice, trigger, consider and decide, the use itself, help needed, relationship building after usage. Use this poster to draw out the service experience and show what is said using speech bubbles.
	Users' journeys	USERS: Needs, activities. SERVICE PROVISION: touch points, answers.
[MAKING SENSE TOOLKIT] (Fab Lab Barcelona, WAAG Society, NL Dundee University, UK EC Joint Research Center, BE PEN Educational Network, KS)	**Community lever indicators**	Encourages participants to choose collaboratively what information will be collected, and how.
	Sensing strategies canvas	Helps communities co-create plans for deploying their sensors and capturing data.
	Calibration	To ensure that the data is valid and calibrated against scientifically reliable measures. The calibration process is seen as an ongoing methodological process that is constantly checked, verified, adopted and updated.
	Targeted measurements	Allows peopole to embed themselves within a community, and become more agile and fluid by capturing data in every corner of the city.

MAKING SENSE TOOLKIT (Fab Lab Barcelona, WAAG Society, NL Dundee University, UK EC Joint Research Center, BE PEN Educational Network, KS)	**Sensing guides**	Helps everyone keep track of the sensing activities; helps with the basic operation and maintenance of the sensor, serving as a basic field guide on how to operate the technology.
	Data Journals	To hard sensor data
	Operation manuals	To helping participants get back on track should any problems occur with the technology or the process.
	Open hardware	To find and use cheap and versatile sensing equipment.
PRODUCT-SERVICE SYSTEMS TOOLKIT (PSS TOOLKIT) (• Brussels Environment, Ecores, Groupe One, Strategic Design Scenarios and Egerie Research)	**Worskhop on key themes emerged from the assessments"**	To identify a set of strategic challenges which can integrate the functional economy model in an appropriate way and facilitate the transition to a sustainable and resilient city
	Business cases	Help to start the conversation at the incubation workshops by offering a list of existing solutions to be hybridised.
CIRCULAR ECONOMY PLAYBOOK (Sitra, Technology Industries of Finland and Accenture)	**Capability maturity assessment**	For assessing your company's maturity in the circular capabilities and identifying which capabilities to develop internally and which ones to outsource for external partners.
	Technology maturity assessment	For assessing your company's maturity in the technologies enabling circular business models, and prioritising those for development.

Make

Name toolkit & Author(s)	Tools	Scope
Circular Design Guide (Ellen MacArthur Foundation + IDEO)	**User-centred Research**	Focusing in on consumers and other users across the whole system
	Circular brainstorming	Brainstorming ideas around the principles of circularity
	Embed Feedback Mechanisms	Embed feedback mechanism to allow for continuous and agile learning
	Smart material Choices	Understand the breakdown of materials that go into your product
	Concept selection	Prioritise which circular concepts to take forward
	Rapid Prototyping	Create rough and rapid prototypes to test your concept and mitigate risk
DIY, Development Impact & You (Nesta)	**Creative workshop**	I want to generate new ideas by working together with people who experience and solve problems.
	Fast idea generator	I want to generate new ideas by thinking differently.
	Thinking hats	I want to generate new ideas by framing a constructive discussion with my team.
	Value mapping	I want to generate new ideas by aligning our work based on shared values.
	Improvement triggers	I want to test and improve by understanding what is most effective in my work.
	Prototype testing plan	I want to test and improve by collecting useful feedback on my work at different phases.
	Experience map	I want to test and improve by creating an overview of how I engage with my stakeholders.
	Blueprint	I want to test and improve by crafting a detailed overview of our operations and resources.
SYSTEMIC DESIGN TOOLKIT (Namahn + Shiftn)	**Connectors**	The intervention model describes the DNA of change within a system; it contains the principles/ activities that will enable change in the system. By looking at how interventions connect and reinforce each other, you can envision an effective strategy for change.
	Paradox cards	The paradox cards stimulate paradoxical thinking: bringing together the opposite sides of a problematic situation to achieve solutions for the whole.

Make

SERVICE DESIGN TOOLKIT (Namahn)	**Test preparation**	First determine which touch points you want to test and then describe what you need for each touch point.
	Test & evaluation	For each activity, make a note of what the most positive and most negative experience is.
	Blueprint	Service front office and back office
	Roadmap	Organisational entities and KPIs
MAKING SENSE TOOLKIT (Fab Lab Barcelona, WAAG Society, NL Dundee University, UK EC Joint Research Center, BE PEN Educational Network, KS)	**Awareness sheet**	Helps people developing an understanding when they have strong views on an issue.
	Data discussion sheet	Enables participants to discuss and reflect on who owns the data, how it should be stored, managed and shared, and what we can learn from it.
	Data dashboard	Can play an important role in increasing knowledge and understanding for the whole community, and can become a catalyst for further action. The better the data visualisation, the easier it is to understand it.
	Digital presence	To document the ambition of the community of participants, the progress towards the goal, as well as the findings to date.
	Future newspaper	Helps kick-start the creative and critical process by asking participants to imagine a variety of desirable futures.
	Co-creation assemblies	Helpful in understanding the various ways in which participants perceive and address the issue, and how it fits into the community's sense of itself.
PRODUCT-SERVICE SYSTEMS TOOLKIT (PSS TOOLKIT) (• Brussels Environment, Ecores, Groupe One, Strategic Design Scenarios and Egerie Research)	**Incubation workshops for new business models**	A. FORMAT OF THE WORKSHOP step 1: warming up; step 2: generating new PSS solutions; step 3: developing the solutions (System Map, Offering diagram); step 4: identifying the levers, obstacles and players. B. RESULTS OF THE GENERATION PHASE Framework business plan. Organised by key topic, the objective of each thematic workshop is to co-construct one or more innovative PSS solutions with the participants.

CIRCULAR ECONOMY PLAYBOOK (Sitra, Technology Industries of Finland and Accenture)	**Culture gap analysis**	For analysing how circular your current company culture is and outlining activities to bridge identified culture gaps.
	Ecosystem partner identification	For identifying external partners that can help in bridging internal capability and technology gaps.
	Funding requirement analysis	For reflecting on funding requirements of your selected circular business model.
	Roadmap development	For planning your circular transformation journey, including list of activities and key milestones.
	Business model canvas	For crystallising your circular business model by reflecting on its key building blocks, including your value proposition, infrastructure, customers and financing.

Release

Name toolkit & Author(s)	Tools	Scope
Circular Design Guide (Ellen MacArthur Foundation + IDEO)	Product Journey Mapping	Ensure your product is in a useful state for as long as possible
	Launch to learn	Test the proposition with all the resources in place
	Imagine New Partnerships	Explore different partnerships that can increase system effectiveness
	Create your narrative	Develop a compelling narrative about your proposition
	Align your organisation	Apply principles of design thinking to changing your organisation
	Continuous learning loops	Explore next steps to iterate your design and continue to add value
DIY, Development Impact & You (Nesta)	Marketing mix	I want to sustain and implement by better engaging people that can benefit from my work.
	Critical tasks list	I want to sustain and implement by executing my plan without being overwhelmed.
	Business plan	I want to sustain and implement by launching or growing what I do.
	Scaling plan	I want to sustain and implement while exploring different ways of increasing the scale of my work.
SYSTEMIC DESIGN TOOLKIT (Namahn + Shiftn)	Roadmap for transition by design	Defining how the interventions will mature, grow and finally be adopted in the system.
SERVICE DESIGN TOOLKIT (Namahn)	–––	–––
MAKING SENSE TOOLKIT	Questionnaires	Helpful to go through a period of reflection to identify what worked well, and what could be improved.
	Pilot appraisal	To sense-check the collaborative efforts of both participants and organisers.
(Fab Lab Barcelona, WAAG Society, NL Dundee University, UK EC Joint Research Center, BE PEN Educational Network, KS)	Graduation ceremony	Can go a long way to creating attachment between participants, the organisation and the cause.
	Storylines	To raise awareness of the project and its aims, as well as being helpful in recruiting future collaborators.
	Training the next generation	Keep the legacy of the project alive, meaning it could potentially be scaled up in the future.
PRODUCT-SERVICE SYSTEMS TOOLKIT (PSS TOOLKIT) (• Brussels Environment, Ecores, Groupe One, Strategic Design Scenarios and Egerie Research)	Creative Debugging	A creative feasibility study of the concept whereby it is possible, via a few checks, estimates and rapid calculations, to come up with some viability (ethical, social, environmental, technical, economic, marketing, etc.) options for the solution.
	Micro-experimentation	A partial realisation of the solution with conditions similar to reality (mock-up products, benevolent users, remote operators simulating the functioning of a system, etc.) in order to reduce the risk in implementing a project without trying it out, albeit imperfectly.
	Reactor	Consists in producing a realistic presentation of the process of operating the service and portraying one or more subjects using the solution. A Reactor can take various forms (visual, object, video, web, etc.). It makes it possible to react to and to discuss/ develop the solution much more effectively with panels of potential users/stakeholders who are able to understand the solution better and project themselves into its use.
CIRCULAR ECONOMY PLAYBOOK (Sitra, Technology Industries of Finland and Accenture)	–––	–––

Appendix 3

Pilots Circular Economy Policy screening

Amsterdam | Circular Economy as 'Learning by Doing'

City/Country	Amsterdam, Netherlands
Initiative	The Building blocks for the new strategy Amsterdam Circular 2020-2025 represents the main initiative for a holistic circular economy strategy for the period 2020-2025, with a forward view to 2030. It's the result of a process, started in 2015 with the Sustainable Agenda and characterized by a learning by doing approach, supported by action perspectives and an evaluation process in order to define the main value-chains to work on.
Level	City level
Period of Implementation	2020-2025
Core vision	The municipality of Amsterdam wants to transition towards a circular economy as soon as possible. Over the last few years, the city has already completed over 70 projects (p.46) that contribute towards a circular economy. To bring the circular economy into mainstream practice as soon as possible, Amsterdam is now focused on upscaling and accelerating these existing circular projects. To do this, the municipality aims to employ all of its municipal instruments available. On top of that, the municipality lobbies on the national and European level for enabling financial, fiscal and legal frameworks.
Implementation & Governance	To realise the vision of a thriving city, the Municipality of Amsterdam has adopted the Doughnut economics model, that brings together environmental sustainability and social justice topics under the same umbrella, in an easy-to-grasp framework. To create a strategy for a Circular Amsterdam 2020-2025, Kate Raworth's Doughnut model was used as a powerful tool. A participatory trajectory was designed to bring together all involved stakeholders. Together, they formulated the directions for a circular Amsterdam (the first City Doughnut). **Over 50 officials from the various departments in the city and region, and over 100 stakeholders** (including businesses, experts and knowledge institutions) from the three value chains identified were brought together. The process comprised of four steps: 1. Mirroring the current targets of the city with the Doughnut model; 2. Developing holistic circular economy directions for the three priority value chains; 3. Enhancing the current targets to align them with the ambitions in the circular economy directions and the Doughnut model; 4. Enriching and validating the directions with knowledge from the ground. For each step, a workshop was organised with the various stakeholders. The outcome of the four workshops was **a set of seventeen directions for pursuing circularity in the 3 value-chains**: **Construction** (6 directions:1. Foster circular area development through flexible zoning, climate adaptation and regenerative urban design (such as Buiksloterham, Haven-Stad, Stadstuin Overtoom, Bajeskwartier); 2. Incorporate circular criteria into the land issuing and tendering of all construction and infrastructural projects and in the Public spaces; 3. Enable the construction of adaptable and modular buildings; 4. Scale-up circular dismantling and mono-stream collection; 5. Support the use of renewable and secondary construction materials; 6. Stimulating circular retrofitting in private and social housing); **Biomass and food** (6 directions: 7. Foster circular food production in urban and peri-urban areas; 8. Encourage healthy, sustainable and plant-based food consumption by all citizens; 9. Minimise food waste from retail, catering and households; 10. Increase separate organic waste collection from households and businesses to enable high-value treatment; 11. Scale-up high-value transformation of residual biomass and food flows; 12. Accelerate the closing of local nutrient cycles from biomass and water flows); **Consumer goods** (5 directions: 13. Prevent overconsumption and minimise the use of fast moving consumer goods; 14. Stimulate high-value recycling of complex consumer goods; 15 Encourage the shared and long-term use of products; 16. Expand Craftmanship networks in neighbourhoods to repair and restore products; 17. Promote the creation and use of standardised and modular products to enable reuse, repair and recycling). Together they form the **building blocks** for an inclusive and thriving Amsterdam. The directions are built upon existing initiatives, best practices and (inter)national policies, as well as strategies that have been pursued over the past years in Amsterdam. **Besides environmental issues, the directions cover social topics, such as social equality and employment opportunities**. These three value chains are important to the metropolitan economy and have a high environmental impact. Moreover, **there was already a lot of social energy present in these value chains to make the transition to a circular economy** and they connect closely to the priorities of the European Commission, the State and the AMA (Amsterdam Metropolitan Area).
Instruments and Levers	To give effect to the circular economy direction, a set of levers and policy instruments has been recommended. The **Levers** (digitalisation, true and fair pricing, innovation networks, system thinking, experimentation, logistics, jobs and skills) are applicable to all actors in the circular economy and to all value-chains, whereas **Policy Instruments** (regulation, legislation, fiscal frameworks, direct financial support, economic frameworks, knowledge advice and information, collaboration platforms and infrastructure, governance) are to be used by the municipality specifically.
Governance	City of Amsterdam
Partners	For everyone of the 17 directions, the strategy highlights the role of the City of Amsterdam, **based on the Policy Instruments**, and of the other stakeholders involved (Regional, National and International Governments, Businesses, Non-profit organisations and interests groups, Utility and Public service provide, Knowledge/Educational institutions, Civil society) with a collect of recommendations. Particularly, the stakeholders actions suggested are based on their main role (e.g. assessment for Knowledge/Educational institutions, check quality for Non-profit organisations and interests groups, engagement for civil society and so on).
Indicators and Monitoring system	No indicators or Monitoring systems are suggested
Budget allocated	Not specified
Results, impacts and learnings	The city of Amsterdam wants to become a circular city, and aims to use 50% fewer primary raw materials by 2030 and become 100% circular by 2050 at the latest.
Link(s)	https://circle-economy.com/amsterdam-circular-journey https://www.circle-economy.com/wp-content/uploads/2019/06/Building-blocks-Amsterdam-Circular-2019.pdf https://journey.circularamsterdam.com/circularamsterdam#174408

Berlin | Circular Economy as ‘Energy-efficient refurbishment‘

City/Country	Berlin, Germany
Initiative	The Berlin Energy and Climate Protection (BEK 2030) is the programme for the transition toward circular economy: the core of the BEK 2030 is an integrated approach which addresses **climate protection as well as climate change mitigation in Berlin**. In the programme a number of measures and strategies are collected in order to reduce CO2 emissions. It represents the guidelines for the city **towards climate neutrality**. At the national level, Germany defined a programme, The Climate Action Plan 2050, that refers to the objectives agreed upon in Paris and determines strategies for their implementation, which in turn lead to obligations for Berlin’s state government. Germany’s federal states as well as its cities and municipalities are required to contribute implementation strategies of their own.
Level	City level
Period of Implementation	2018-2030
Core vision	The main objective for Berlin is the CO2 footprint, which should no longer have a negative impact on climate and, by extension, on livelihood: that is why this target has been incorporated into law. The Berlin Energy Turnaround Act stipulates that by 2020, aims to cut carbon emissions by 40 per cent relative to the base year 1990. This figure in creases to 60 per cent by 2030 and to a minimum of 85 per cent by 2050. In addition, the aim is a total reduction of CO2 emissions by 95 per cent. These milestones are Berlin guidelines on the path towards climate neutrality and were developed on the basis of scientific expertise, as well as contributions made by the public and a number of institutions that shape life in the city and were invited to participate. The scientific expertise is documented in the final report “Draft for a Berlin Energy and Climate Protection Programme (BEK)”, published in 2015, and the concept “Adapting to the Impacts of Climate Change in Berlin (AFOK)”. Berlin can build on many years of experience in climate protection. For instance, the Berlin ImpulsE programme has been running since 1995. On top of that, Berlin has been funding practical projects for the protection of the environment and the climate for more than 20 years with the support of the European Regional Development Fund (ERDF). The current Berlin Programme for Sustainable Development (BENE) has been supporting measures for the reduction of CO2 emissions since 2015. Berlin ImpulsE programme and BENE represent **the long-term instruments of climate protection in Berlin**.
Implementation & Governance	The BEK 2030 sets forth roughly **100 measures for climate protection and climate change mitigation**. The programme adopts a comprehensive approach that is based on practical measures, such as incentive programmes and the implementation of model projects, as well as overarching strategies, such as an improved supply of information on climate protection. A range of measures that can contribute have been defined to the achievement of a substantial amount of CO2 emissions: the greatest potential for CO2 cutbacks has been identified in the “Energy Supply” and the “Buildings and Urban Development” fields of action, as well as in the transport sector.” Some examples are the reduction of the energy consumption of buildings or the promotion of roof greening, because a green roof protects buildings against heat as well as cold and in this sense the Berlin Rainwater Agency is an important partner: it helps the administration as well as individual citizens to make efficient use of rainwater where it accumulates. The “Private Households and Consumption” field of action intends to actively promote climate-friendly action in private households, when shopping for food as well as when purchasing household appliances. Further measures are required in the field of climate change mitigation in Berlin. Here below the diverse fields of action of the BEK 2030: **More rain**, greater benefit: frequent heavy rainfalls are a major challenge for climate change mitigation in Berlin. Ways have to be found to make rainwater drain away more easily in the future – or to collect it and put it to use; **Protecting health**: increasing heat and new allergens can be health hazards. Within the scope of the BEK 2030, several strategies will be implemented to protect health; **More sustainable consumption**: when they make sustainable consumption choices, private households directly contribute to a reduction in CO2 emissions. This means that each and every individual can do quite a lot for a sustainable Berlin; **Corporate drivers**: Berlin’s corporate sector plays a major role in climate protection. Utilities companies, the housing industry and many state-owned enterprises have already committed to contribute to the achievement of Berlin’s climate protection objectives; **Developing quarters**: energy-efficient refurbishments and high standards for new buildings make buildings a significant component on the way towards climate neutrality. Green Moabit represents a pilot project aimed to develop an energy-related district (more efficient use of resources and a reduction in CO2 emissions); **Redesigning mobility**: the BEK 2030 plans comprehensive measures for the mobility of citizens: the expansion of cycle paths and public transport networks, more car and bike sharing offers and investments in electric mobility; **The energy of the future**: in future, the capital’s energy will be supplied from climate- friendly centralised and decentralised renewable sources. To achieve this, the supply infrastructure will be expanded and modernised. The Federal State of Berlin is developing a Masterplan Solarcity. In the long-run, one quarter of Berlin’s electricity supply is intended to be covered by solar power. It is one of the targets of the BEK 2030 to install solar systems on all suitable roof areas of state-owned buildings by 2030. The public utility company Berliner Stadtwerke (BSW), which supplies Berlin’s households with locally generated green electricity, is an important partner in the realisation of this project. **The Economy**: businesses play an active role in implementing the measures of the BEK 2030. They invest in climate protection and climate change mitigation, to the benefit of their owners as well as their employees. **Politics**: the public sector and its institutions provide the framework for climate change and climate change mitigation. They generate stimuli and support other stakeholders; **Society**: all of Berlin’s citizens are asked to act in a more sustainable fashion. Everybody can contribute to making the city liveable and building a better future. **Science**: Berlin’s scientific institutions and businesses are progressive. They drive change forward through their adoption of new technology and business models. Finally Circular Berlin is an on-line platform that develops knowledge on the circular economy and apply it through practical projects, community building and education.
Instruments and Levers	Not specified
Governance	City of Berlin
Partners	Senate Department for the Environment, Transport and Climate Protection Berlin Rainwater Agency
Indicators and Monitoring system	**djBEK** is the digital monitoring and information system of the Berlin Energy and Climate Protection Programme 2030. It is where all the data on the implementation of the measures of the BEK 2030 converges. The system has two functions: on the one hand, it creates transparency because everybody can access the data and view the results via the website dibek. Berlin.de; secondly, the impact of the BEK 2030’s measures is critically evaluated by diBEK. This is crucial for the success of the BEK 2030, since continuous monitoring and evaluation ensures that the implemented measures contribute to the achievement of the objectives in the best way possible. In addition, the system will allow for innovations to be integrated in the right places. With regard to all of the three areas climate protection, climate impact and climate change mitigation, there are hard as well as soft factors: outcomes like consulting on energy saving and educational initiatives are difficult to be monitored and presented.
Budget allocated	Not specified
Results, impacts and learnings	The annual monitoring reports of the senate inform about the progress in the implementation of BEK 2030.
Link(s)	https://www.berlin.de/senuvk/klimaschutz/publikationen/download/BEK2030_Broschuere_en.pdf https://unfccc.int/files/focus/application/pdf/161114_climate_action_plan_2050.pdf https://www.smart-city-berlin.de/en/ http://circular.berlin/circular-economy/

Cluj-Napoca | Circular Economy as 'Energy transition path'

City/Country	Cluj-Napoca, Romania
Initiative	Based on our analysis, there is no policy clearly focused on Circular Economy for the city of Cluj-Napoca. Thus, we have focused on the following policy documents: i. Integrated Strategic Plan for the Metropolitan Area of Cluj-Napoca; ii. Cluj-Napoca Development Strategy; iii. Energy Strategy of Romania for 2016-2030; and iv. Integrated National Energy and Climate Change Plan for 2021-2030. Further, we have looked into two relevant legal entities, namely the "Institute for Research in Circular Economy and Environment "Ernest Lupan" and the "Circular Economy Club (CEC) Cluj-Napoca". Lastly, we explored a related project titled "A Roadmap for Developing Romania's Strategy for the Transition to a Circular Economy 2020-2030".
Level	City/ National level
Period of Implementation	2020-2050
Core vision	Cluj-Napoca is the most important city of Transylvania (NW region of Romania) with more than 410,000 inhabitants. In recent years, there has been a proliferation of festivals and various events, as the local authorities were extremely supportive for the assimilation of Cluj-Napoca with the collocation 'a city of events'. The creative industries and the university sector are Cluj-Napoca's economic engines. More than 15,000 people work in the local IT sector, most of them in branches of large multinational companies. There are 1,300 IT businesses in the city and the European media refers to Cluj-Napoca as the 'Silicon Valley of Romania'. In the sector of **energy**, Romania has a balanced and diversified energy mix. The country benefits of important internal energy resources such a soil, natural gas and coal. Romania has invested and supported the development of renewable energy sources such as wind power, solar power, biomass and electrical energy generated in micro-hydropower plants. The renewable energy sources to be stimulated in Romania for the period 2030–2050 are: wind energy, hydropower, geothermal energy, biomass, and solar energy. As previous research has underlined, Romania has the potential for green energy production as follows: 65% for biomass, 17% for wind energy, 12% for solar energy, 4% for small hydropower plants, and 2% for geothermal energy. Cluj-Napoca will build a local coalition around technology options for energy transition paths, which will ensure the creation and assessment of circular economy loops, involving all relevant actors (administration, providers and citizens). The aim is to introduce a 6-part platform tool capable of analysing the energy efficiency of existing and planned buildings and their environment, of delivering technical proposals for improvements, financial estimates of the investments and life cost cycles as well as developing a heat island map effect of the proposals.
Implementation & Governance	Romania's integration in the European Union brought structural reforms at the core of the national, regional and local policies, and successive strategic documents have tried to generate the necessary changes. In the period February 2013 - December 2014, the **Strategic Plan of Cluj-Napoca** was developed. The Plan prioritized the future actions of the city in eight strategic dimensions: people and community, the creative city, urban regeneration and spatial planning, the green city, good governance, culture and local identity, healthy city and safe city. The key factors that prioritize the future projects of the city and would influence the local community on the long term are: participation (association, social inclusion, multiculturalism, youth, public health, sports and community), creativity (economic regeneration, IT, culture and creative industries, tourism, territorial marketing, environment, safety) and university (higher university, historical identity), all being considered within the eight above-mentioned strategic dimensions. These factors are strongly connected to the local community linking tradition (the university city) to contemporary development through the actual and active involvement of the community. Related to the **Circular Economy**, the "Roadmap for Developing Romania's Strategy for the Transition to a Circular Economy 2020-2030" aims to define the pillars to support Romania's transition to a circular economy by involving all relevant stakeholders and by attracting the necessary financial support. The key objectives are tied to the identification of the regional and local opportunities of the CE sector in Romania. For this purpose, IRCEM and the Romanian Ministry of Environment, in collaboration with the Department for Sustainable Development, as well as 12 other ministries and partners, will participate in 8 different working groups, one in each region of Romania. Several events took place between December 2018 and November 2019, including one on energy and one on circular cities. Concerning policies related to **energy**, both local and regional strategies are following the guidelines of the National Energetic Strategy for 2030, which sets as main strategic objectives: energy security, sustainable development and competitiveness. The time period covered for this study was 2016-2050, with yearly basis analysis for the period 2016-2030, and on 5-years basis for the period 2030-2050. The main elements considered in the Integrated National Energy and Climate Change Plan were the following: i. Economic growth and growth of revenue per household (until 2030); ii. The holistic approach to energy, economy, environment and climate change should be closely linked to the economic reality of the Member States, so as the macroeconomic and internal social balance is not affected; iii. Energy Security dimension: implementation of the projects included in the Energy Strategy of Romania 2019-2030, with perspective of 2050; iv. Reduction of the energy poverty and accelerated electrification of transport; v. Restructuring of the market framework in the context of transition-induced costs and the ability of the Member States to support these costs in terms of accessibility and competitiveness.
Instruments and Levers	The Strategic Plan of CLuj-Napoca refers to seven series of indicators (comprising 196 indicators) which are used as a basis for the future evaluation of the development strategy.
Governance	City of Cluj-Napoca / Romanian Government
Partners	The **Strategic Plan of Cluj-Napoca** was formed by 28 voluntary working groups from institutions, universities, NGOs and local administration. This experiment was possible due to three reasons: the nature of the local community with an extremely organized active civic and cultural sector; the high degree of cooperation and association between the public authorities and the private sector; the economic development potential which implies a significant local budget and economic resources available for the development of the city. Also, the **Institute for Research in Circular Economy and Environment "Ernest Lupan"** (IRCEM) is an independent NGO established in 2012 in Cluj-Napoca, Romania. In 2017, IRCEM became the official partner in the Circular Economy Platform of Stakeholders (ECESP) from the European Economic and Social Committee, Directorate-General for the Environment, Directorate B - Circular Economy and Green Growth, European Commission. Their research is based on: Waste management; Redesign materials and products in line with circular economy; Closed-loop, resource and energy efficient processes; Product life-extension, reuse, refurbishment and recycling, and substituting the use of recovered materials for virgin materials in manufacturing. Lastly, **Circular Economy Club** is the largest international network of circular economy professionals and organizations with over 260 CEC local chapters in over 110 countries. The aim is to bring the circular economy to cities worldwide by building strong local networks to design and implement circular local strategies, embed the circular economy in the education system and help circular solutions scale. The CEC Cluj-Napoca network is open to anyone who is interested in learning more about and helping to support the transition towards a circular economy.
Indicators and Monitoring system	No indicators or Monitoring systems are suggested
Budget allocated	Not specified
Results, impacts and learnings	No results have been published yet.
Link(s)	Integrated Strategic Plan for the Metropolitan Area of Cluj-Napoca Cluj-Napoca Development Strategy Energy Strategy of Romania for 2016-2030 Integrated National Energy and Climate Change Plan for 2021 -2030 Institute for Research in Circular Economy and Environment "Ernest Lupan" Circular Economy Club (CEC) Cluj-Napoca A Roadmap for Developing Romania's Strategy for the Transition to a Circular Economy 2020-2030

Milan | Circular Economy as 'Food policy'

City/Country	Milan, Italy
Initiative	In 2012 the Municipality of Milan developed a Framework Agreement for Territorial Development "Milan Rural Metropolis" which connects the Municipality, the Metropolitan authority, the Regional authority, 4 Agricultural Districts, 2 river basin authorities, in a public-private partnership (PPP) to act on rural-urban linkages with a 102 actions plan.The main strategy for circular economy in Milan (the Food Policy) is part of this agreement through rural-urban links actions. In July 2014, the City of Milan and Fondazione Cariplo signed a Memorandum of Understanding to promote and implement a general strategy on food for the city of Milan called **Milan Food Policy** and to activate an international dialogue aimed at defining and signing an international pact on urban food policies called Milan Urban Food Policy Pact (MUFPP). The Milan Food Policy arises from Expo 2015 and represents the program for a wider circular economy food-based, promoted by the City of Milan and the Cariplo Foundation.
Level	City level
Period of Implementation	2015-2020
Core vision	The Milan Food Policy designs and develops a framework for joint and coordinated actions on circular food-system based economy. For this purpose, a guideline document has been produced, to support the city government to make the city more sustainable starting from the issues related to food. The guideline is about many dimensions: some of these dimensions are components of the food cycle, such as cultivation, distribution and consumption of food, its waste and its treatment. Others directly or indirectly affect or are affected by the food cycle, such as: environmental and territorial factors of production, cultures and lifestyles, well-being, economies, research, infrastructure, etc., but also the food cycle. It contributes to defining a systemic vision of all these elements in the city of Milan and its territory, making explicit a general vision and promoting actions to realize this vision. It is transversal to the ordinary and special policies that the Municipality promotes in its areas of competence and has been defined through the active involvement of citizens and all the actors who work in the city within the food system, in order to capitalize on the different resources (ideas, skills, investments, projects, etc.) capable of triggering a multiplier effect. The Milan's Food Policy has also an European and International dimension, thanks to different networks: MUFPP (Milan Urban Food Policy Pact), Eurocities WG Food (Working Group Food), C40 Food System Network, 100 Resilient Cities, 100 Circular Economy (Ellen MacArthur Foundation), WHO Healthy Cities, FOOD2030, EU Platform FLW (European Platform for Food Losses and Food Waste), IPES-Food, CAP (Common Agricultural Policy). The various actions that can be ascribed to Milan's Food Policy are increasingly being recognized as good practices that need to be taken up in other European cities and contexts, and Milan is progressively assuming a mentoring role in situations that are still developing.
Implementation & Governance	Milan Food Policy is the result of a 12 months path, made up of two main phases: the first one was the **analysis** of the Milanese food system. At the end of this phase, "The 10 Issues of the Food Policy of Milan" document was elaborated, which represents the base for the second phase, the **public consultation**. The consultation was 5 months-long (February - June 2015) and involved about 700 people from many different fields (e.g. councillors of the municipality, citizens, universities, profit and non-profit companies). The public consultation identified 5 main goals to pursue for the Food Policy implementation: 1. Ensure healthy food and sufficient drinking water as a primary food for all; 2. Promoting the sustainability of the food system; 3. Food education; 4. Overcome wastefulness; 5. Support and promote scientific research in the agro-food sector. The Food Policy is a project for the whole city: therefore, the Municipality also assumes the role of support, stimulus and facilitation of all forms of social, technological and organizational innovation that meet the principles set out in the Food Policy itself and that can contribute to the implementation of the guidelines contained therein. The Food Policy has been implemented by a series of actions: **Local food waste hub, Mid morning fruit, Tax reduction for companies donating surplus food, Gallarese orchard, Food Policy Hot Pot, Milano Ristorazione projects, Short chains, School Canteens short chains, Recovery products from markets, Land Market, Healty meal.** Food Policy is part of a wider strategy on circular city that the Municipality of Milan has developed in other domains: **waste, energy, food, creativity, manufacturing and mobility** (e.g Sharing city project represents the pilot project of the mobility domain).
Instruments and Levers	**Awareness-raising and networking actions** (e.g. "Advancing towards zero waste" C40 declaration, Milano Food City); **Regulatory actions** (e.g. PAES, Sustainable Energy Action Plan, PUMS, Sustainable Urban Mobility Plan); **Procurement PPP- public-private partnership** (e.g. Food Hot Pot); **Tax policies and business support**; **Pilot projects** (e.g. in European Projects: OpenAgri, Interreg "CircE", Life + "TRiFOCAL", Fit4Food, Sharing Cities, Reflow.
Governance	A shared governance, composed by: **Municipality of Milan** - Vice-mayor, Food Policy Office, **Food Council** (The Food Council promotes processes of co-responsibility of the actors of the Milan food system through specific inclusive participatory process), **Monitoring System** (Monitoring Framework of the Milan Urban Food Policy Pact)
Partners	**Public Partners**: Municipality of Milan - Food Policy Office - Environment Area - Economics Department, AMSA Gruppo A2A (Integrated waste management), A2A Ambiente (waste valorisation and recovery of matter management), Milano Ristorazione (Public company active in the management of school canteens) AMAT (environmental monitoring), ATS Regione Lombardia (health protection agency), MM (Milan water service), CAP Holding (Milan Metropolitan Area water service) **Private Partners**: Fondazione Cariplo (Philanthropic foundation active on Food Policy issues and partner of the Municipality of Milan. 3 areas activated: Research, Environment, Personal Services) Novamont (bioplastics and biochemistry), Cariplo Factory (Open innovation Hub of Fondazione Cariplo. Co-founder of Circular Lab with Intesa Innovation Center and Ellen MacArthur Foundation) Intesa San Paolo Innovation Center (Business accelerator, global financial partner of the Ellen MacArthur Foundation, an international leader in the circular economy) **University and Research centre**: Centro di Ricerca ESTà (Non-profit research centre that provides technical-scientific support to the Cariplo Foundation on Milan Food Policy), Università di Scienza Gastronomiche di Pollenzo - Slow Food ("Circular Economy for Food" promoter, a Corporate Social Responsibility that collects 40 case studies of food companies with a focus on circularity), Politecnico di Milano
Indicators and Monitoring system	The Monitoring Framework is composed of a set of **44 quantitative and qualitative indicators**. It has been defined on the basis of a three-year field work carried out by FAO and RUAF Foundation in seven cities of the world and in relation to the state of the art of technical-scientific literature on the subject.
Budget allocated	Actions to prevent Food Waste and promote Food Donation: Municipality (1 mln euro), and Cariplo Foundation (5 mln euro). No other information about the whole Food Policy budget
Results, impacts and learnings	**By 2030 Milano aims**: to halve the per capita global food waste in retail and consumer sectors and reduce food losses along production and supply chains, including post-harvest losses. 20% greenhouse gas emissions by 2020 (PAES, Sustainable Energy Action Plan); 25% traffic (PUMS, Sustainable Urban Mobility Plan); 42% of the population served by public transport (PUMS, Sustainable Urban Mobility Plan) 70% recycling rate ("Advancing towards zero waste" C40 declaration) Land consumption at 70% (PGT, Territorial Government Plan) 3 million trees (urban forestry programme). **Lesson learned and key factors**: Cities need to analyze their food system and public drivers to discover food losses (municipal agencies, public markets, school canteens, etc.); Cities need to understand and reinforce the local actors active in networks of FLW (Food Losses and Food Waste) for food donation; Cities need to create umbrella initiatives (like platforms, networks, incentives, campaigns etc.) in order to offer concrete actions to their stakeholders and reach commons goal; Urban networks (Eurocities, FoodWIN, C40, etc.) play a fundamental role for exchanging experiences, inspire and train city officers; Cities need municipal officers dedicated to food policy that will work with multidimensional approach engaging and facilitating common initiatives to different city departments, municipal agencies, research centers, food banks, main stakeholders and local actors, major food businesses.
Link(s)	http://www.foodpolicymilano.org/ https://web.comune.milano.it/wps/portal/ist/st/food_policy_milano/progetti

Paris | Circular Economy as 'Urban metabolism'

City/Country	Paris, France
Initiative	Starting from 2014, Paris began its CE transition by exploring the city urban metabolism: results and data was disseminated by an app in order to visualize the resources flows (materials, water and energy) and map out some CE innovative initiatives. In 2015 the "États généraux de l'économie circulaire du Grand Paris" (250 partners between associations, companies, institutions, universities and with a citizen engagement) came up with a White paper that suggested 65 actions in order to facilitate the CE transition. In 2017 Paris defined "Le Plan économie circulaire de Paris" focusing on zero household waste, map out of all plastic chains starting from 2019, total food waste collection by 2020, zero building chain waste. Two roadmaps (2017 and 2018) were defined: every roadmap is composed of 15 different and concrete actions.
Level	City level
Period of Implementation	2017-2020
Core vision	The Paris transition towards a CE is made up of t**hree main domains (waste management, demand and behaviour of consumers, goods and services provided by economic actors) which in turn are based on seven pillars**: Sustainable supplies; Ecodesign; Industrial and Territorial ecology; Functional economy; Responsible consumption (collaborative in particular); Extension of the duration of use (reuse and repair); Recycling. The strategy combines existing and sustainable-oriented municipality plans with two specific CE roadmaps, where concrete actions (15) are implemented after a previous feasibility value process. The actions are three-levels related: **City services/ administration, Territory of Paris (exercise of powers, public policies), Metropolis of Greater Paris (partnerships).**
Implementation & Governance	In 2017, after an action diagnostic and feasibility studies phases, a first roadmap was defined by 15 practical actions that were splitted up in 5 categories: **Planning & construction** (building materials, building sites, sustainable and circular construction); **Reduction, reuse, repair** (waste reduction, repair, re-use, re-manufacturing in Paris); **Support for Actors** (Incubator, sharing, promote and raise awareness, inter-company synergies, network); **Public procurement** (sustainable purchases, clothing); **Responsible consumption**. In November 2018, after another action diagnostic and feasibility studies, a second 15 actions roadmap was defined and divided in 6 new categories: **Efficient administration** (number reduction, resale and contribution plan, furniture reuse, plastic use reduction); **Responsible consumptio**n (fostering places sharing-economy based, circular fashion); **Culture** (fostering CE actions in cultural spaces); **Events** (sustainable and circular-based organisations and assessment); **Awareness and education** (higher school education, CE education toolkit, municipal staff training, zero waste); **Territorial-level synergy** (local energy and local water enhancement fostering disposal and reuse, public procurement and building value-chain). At the same time, an assessment plan was released, where there's a generic evaluation of the strategy evolution and specific actions progress as well.
Instruments and Levers	Biodiversity plan New Climate Plan Paris Resilience Strategy Other Municipality sustainable development plans (Climate and Energy plan, City of Paris staff travel plan, Local Urban Planning scheme, Local Housing programme, Local Waste prevention programme).
Governance	A multiple governance: **PROPOSE**: Open forum (Participants from the General Assembly on CE, all citizens); **PREPARE**: Technical Committee (General Secretariat, CE representatives from the Departments, Managers of actions in the plan or project leaders, any external figure according to the agenda); Steering Committee (Presidency, Deputy mayors, Office of the Mayor of Paris, any other elected on request by the committee presidency); **ADVISES**: Sponsorship Committee (Qualified figures)
Partners	Department of Green Spaces and the Environment (DEVE) Urban Planning Department (DU) Department of Roads and Transport (DVD) Department of Heritage and Architec- ture (DPA) Department of Accommodation and Housing (DLH) Department of Economic Attractiveness and Employment (DAE) Department of Property, Logistics and Transport (DILT) Department of Finance and Procurement (DFA) Department of Information Systems and Technology (DSTI) The Metropolis of Greater Paris (MGP) Department of Sanitation and Water (DPE) Department of Educational Affairs (DASCO) Legal Affairs Department (DAJ) Department of Informations and Number System (DSIN) General Secretariat (SG) Department of Cultural Affairs (DAC) Department of Information and Communication (DICOM) Department of School Affairs (DASCO) Department of Human Resources (DRH) Municipality of 10e (M10) Department of Public Construction and Architecture (DCPA) Other public-private partnerships (different for every action of the roadmap)
Indicators and Monitoring system	Observatoire national des emplois et métiers de l'économie verte (Onemev) Service de l'Observatoire et des Statistiques (SOeS) Commissariat Général au Développement Durable (CGDD) The analysis tool was LOCALFOOTPRINT® developed by UTOPIES
Budget allocated	Not specified
Results, impacts and learnings	By 2020 Paris aims to: Reduce quantities of household waste (-10%); Generalise the sorting of organic waste at source for all producers; Sort all plastic packaging (before 2022); Recover waste from construction and public works in the form of materials (70%); End to provision of disposable plastic cups, glasses and plates, except for those that can be composted in household compost and made entirely or in part from bio-based materials; Proportion of recycled paper in public purchases - the rest must be sourced from sustainably managed forests - (40%).
Link(s)	https://www.paris.fr/pages/economie-circulaire-2756#les-actions-de-la-ville-de-paris https://www.paris.fr/pages/nouveau-plan-climat-500-mesures-pour-la-ville-de-paris-5252https://www.paris.fr/pages/paris-resiliente-4264 https://www.paris.fr/pages/un-nouveau-plan-biodiversite-pour-paris-5594/

Vejle | Circular Economy as 'Resilience strategy'

City/Country	Vejle, Denmark
Initiative	The overarching initiative on city level is nested in the Vejle Resilience Strategy for 2016-2020, which is part of the 100 resilient cities network. More specifically, the second (out of four) pillar of the strategy focuses on climate resilience promoting a series of policies for wastewater management and mobility. Many circular economy-related measures and actions can be identified in this context, even when not explicitly referred to as such. On country level, Denmark has published on 2018 the national Strategy for circular economy to promote a transition to circular product design, new business models, and increased recycling.
Level	City level; Country level
Period of Implementation	2016-2020; 2018-2030 (The 2018 national Strategy for Circular Economy does not specify an exact timeframe of implementation. The range is derived from the authors' interpretation of the strategy.)
Core vision	The Vejle Resilience Strategy is being developed on the principles of co-creation, innovation, and sustainable growth to enhance cooperation across the city management, civil society and local business community to tackle some of the main challenges related to climate change, globalization, immigration and population growth. The main objective of the Strategy for Circular Economy is to support a transition to more circular economy, including better use and recycling of resources and the prevention of waste. With the introduction on the Resource Center Vejle the city council aims to boost its recycling operations and engage with citizens in matters of circularity.
Implementation & Governance	A broad array of stakeholders from the local government, research institutions, businesses and civil society organisations are involved in the implementation of the various actions of the Vejle Resilience Strategy. The main goals of the climate resilience pillar are to: • protect Vejle from water-related threats and turn water into an asset for urban and social capital, • establish public-private partnerships for resilient utilities, and • secure growth by using sustainable resources, renewable energy and green transport. Some indicative support measures that entail elements of circular economy are the following: **Holistic strategic wastewater plan**: The Municipality of Vejle is developing an integrated wastewater strategy that addresses the challenges of climate change, water supply, existing municipal water plans, and water quality. The aspiration is to pioneer this approach and set a goal for other municipalities to develop more efficient and sustainable solutions. The plan is to provide the municipality with an overview of the current systems and identify where further investment is needed to secure an improved and resilient wastewater system for Vejle. **Shared bicycle scheme**:The capacity of a shared bicycle plan is being researched in order to offer mobility options to educational institutions and businesses from the railway station. The goal is to promote alternative modes of transportation and incentivise behavioral change. **Energy neutral waste collection trucks**: The Municipality of Vejle is investing in the conversion of waste to biofuels to power waste collection trucks, reducing carbon emissions and energy consumption within Vejle. If this goal proves successful, converting the bus fleet to biofuels would be next. **Improved waste collection in housing estates**: (Municipality of Vejle, Green Forum) The Municipality of Vejle is providing information and separate waste bins in order to improve awareness of waste segregation amongst citizens and encourage them to be more aware of sustainability and inspire social responsibility. **TVIS district heating collaboration, to retrofit for biomass**: TVIS is a biofuel district heating collaboration between Kolding, Middelfart, Fredericia and Vejle municipalities. Established in 1983, it utilises the waste heat from the Shell refinery, DONG Energy power plant Skærbækværket and the waste incinerator Energist in Kolding as a resource which provides an eco-friendly and affordable district heating network.
Instruments and Levers	On a national level, several policies have been designed to enable enterprises as a driving force for circular transition; support circular economy through data and digitalisation; promote circularity through design; change consumption patterns; create a proper functioning market for waste and recycled raw materials; get more value out of buildings and biomass. The recycling of municipal waste is projected to reach at least 55 percent in 2025, 60 percent in 2030, and 65 percent in 2035. While the recycling of packaging waste at least 65 percent in 2025 and 70 percent in 2030. The waste directives also contain a number of new requirements for, among others, source-separation of organic waste from 2023 and extended producer responsibility for packaging waste from 2025.
Governance	Municipality of Vejl
Partners	Partners include local communities, NGOs, businesses and other cities which inform exploratory activities for the identification of resilience building opportunities. Vejle's resilience strategy is handled by a Steering Committee, which guides the core group of decision makers and stakeholders. These include the City Council, the Financial Committee and the Executive Board as well as the Municipality's Innovation Committee which acts as an Advisory Board. Partnerships also exist with the Educational Council, the Business Relations Committee and the Housing Strategic Steering Group. Furthermore, the Resilience Forum has allowed researchers and interest groups to contribute to the development and understanding of resilience.
Indicators and Monitoring system	The municipality has developed several smart-city projects to explore adjustments for greener and smarter urban areas. For example the municipality monitors the city center's Wi-Fi signals to create an overview of the citizens' movements. The information is utilised to create more efficient and climate-friendly transportation opportunities.
Budget allocated	Not specified
Results, impacts and learnings	Indicatively, since the introduction of a new waste scheme in 2016, including the installation of sorting garbage and the introduction of garbage trucks running on biogas, significant results have been shown. Based on the Klima 100 report, in 2018 Vejle citizens sorted approximately 81% of the 125 kg food waste that each Dane produces annually while the amount of organic waste collected has increased by 180%, paper and cardboard by 19%, and plastic by 25%.
Link(s)	http://100resilientcities.org/wp-content/uploads/2018/01/Vejles_resilience_strategy_webquality_160317.pdf https://issuu.com/sustainia/docs/klima100-2018-pdf_for_web_english https://mfvm.dk/publikationer/publikation/pub/hent-fil/publication/strategy-for-circular-economy/ https://www.vejle.dk/om-kommunen/nyt-og-presse/nyheder/nyt-ressourcecenter-i-vejle-saetter-turbo-paa-oeget-genbrug/

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