



Co-Creating Circular
Resource Flows in Cities

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

Deliverable 4.5

POLICY PROPOSALS FOR FLEXIBLE URBANISM

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D4.5 - Policy Proposals for Flexible Urbanism

Executive Summary

This Research & Policy Brief deliverable builds upon the learnings from the REFLOW pilot cities, unfolding practices that support policy making that together supports a strategic CE vision for the future. It therefore proposes both short-term actions, but also establishes a framework that guides future urban/spatial planning, that utilises urban metabolism accounting and is informed by flexible urbanism concepts.

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Glossary

Community of Practice (Cop): A group of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly.

Circular Community of Practice (CCop): CCop can be defined as a set of stakeholders that are engaged together to explore and experiment with circular and regenerative principles, looking for closing the loops of systems, repurposing, re-designing, re-manufacturing, reusing, recycling while better respecting natural ecosystems. Circular communities of practice may work in activities such as urban gardens or self-repair bike workshops, and they are composed of a diversity of people who not only share a circular approach to tackle societal challenges, but also a set of values such as openness, solidarity, a strong appetite for learning, and a resolution to become game changers.

Circular Economy (CE): A circular economy is an alternative to a traditional linear economy (make, use, dispose) in which we keep resources in use for as long as possible, extracting the maximum value from them whilst in use, then recovering and reusing products and materials. Within REFLOW the focus of the circular economy gradually extends beyond issues related to material management and covers other aspects, such as social impact, technological aspects and the evolution of urban governance structures.

Capacity building: The process by which individuals and organisations obtain, improve, and retain the skills, knowledge, tools, equipment and other resources needed to do their jobs competently or to a greater capacity

Co-creation: is a bottom-up and design driven approach that's fundamental to build a common and supported understanding of new routes and futures through all layers of society.

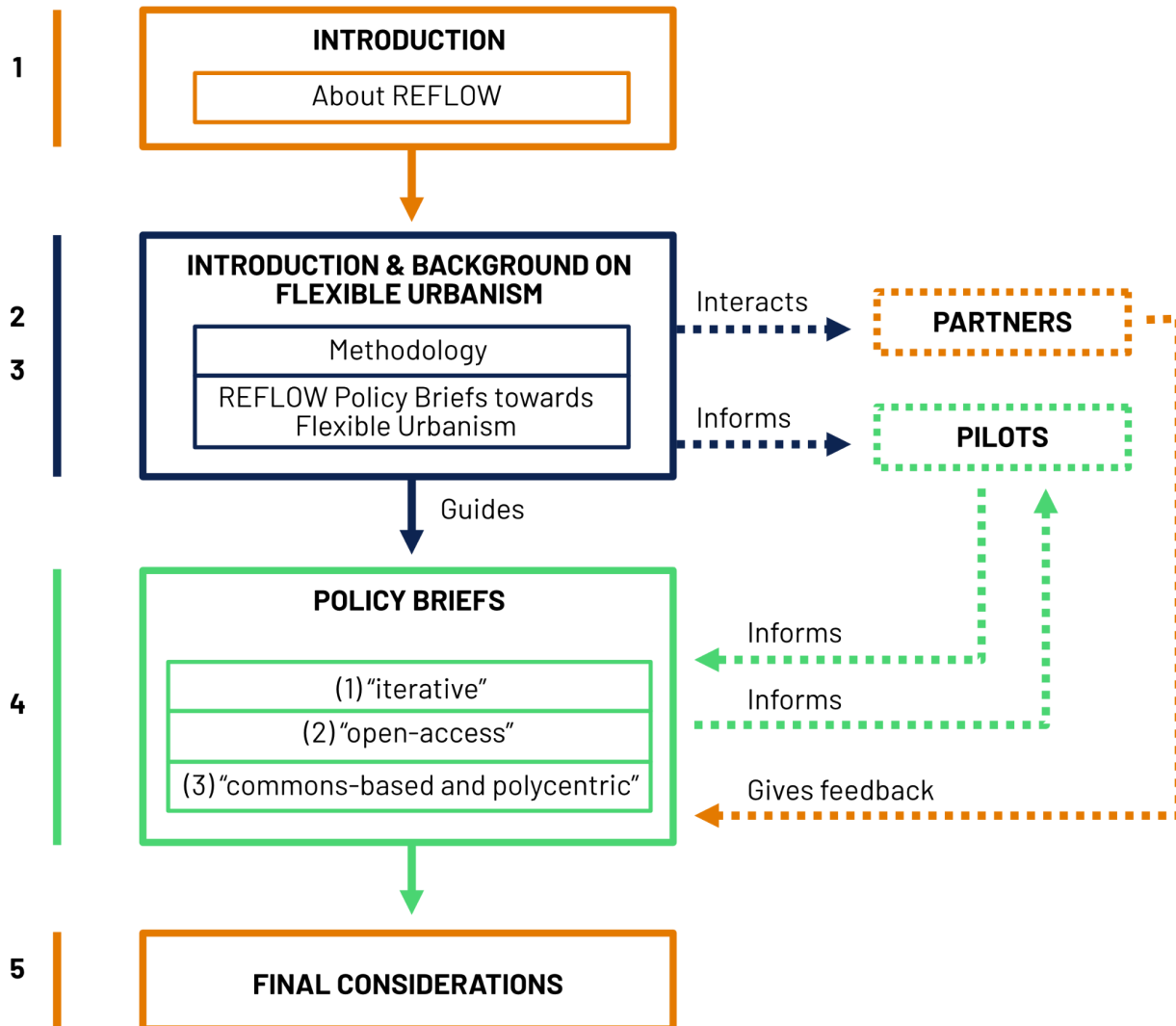
Distributed Design is an approach to design matching networks with distributed elements. Under this approach, creative individuals have access to digital tools that allow them to design, produce and fabricate products themselves and connect to a global network of collaborators.

REFLOW Collaborative Governance Toolkit (RCGT): A resource conceived to support the design and development of collaborative governance arrangements for the transition to circular and regenerative cities. This consists of a how-to practical guide for cities based on the REFLOW Framework to enable new forms of infrastructuring collaboration in ways that can unleash distributed agency and capacity for innovation.

REFLOW OS: Operating System based on GNU/Linux distribution technologies helping to incentivise circular practices in local ecosystems by monitoring and optimising urban metabolic processes. Peer-to-peer network to conduct economic activities such as monitoring, track and trace, and coordination among participants.

Stakeholder: A group, organisation, member, individual or system that affects or can be affected by an organisation's actions.

Reading Guide



1. Introduction

1.1. About REFLOW

REFLOW is an EU H2020 project, developed from 2019 to 2022, that seeks to understand and transform urban material flows and to co-create and test circular and regenerative solutions in urban and peri-urban areas across Europe. The REFLOW project has received funding from the European Union Innovation and Research Program, under the Grant Agreement No. 820937.

The vision of REFLOW is to develop circular and regenerative cities through the re-localisation of production and the reconfiguration of material flows at different scales, leveraging Fab Labs and makerspaces as catalysts for wide-scale collaboration and co-creation conducive to systemic, sustainable change.

The project builds upon the concept of 'urban metabolism', which seeks to understand urban contexts through the lens of biological systems and technical processes. The metabolism consists of all the chemical processes that occur within a living organism, or, in this case, the city. 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. However, over the past decades, the digital revolution has profoundly affected logistics, trade and international communications, opening doors for new urban flows that are turning our unsustainable industrial paradigm on its head.

1.2. REFLOW Vision

A circular and regenerative city in REFLOW represents an urban system with social and business practices which place equal attention to social, environmental and economic impact; where technology is open and represents a central enabler of positive social and environmental change; where the urban system ensures and support resilience of social and ecological systems; where governance is collaborative and inclusive; where knowledge is shared, and stakeholders are active and involved.

1.3. About the deliverable

This document focuses on presenting a series of policy briefs with practical implications inspired by REFLOW pilot cities addressing challenges of governance towards flexible urbanism. The objective qualitative analysis is to create a viable resource that guides and inspires cities in their transition to a circular economy enabled by a flexible urbanism model.

This resource complements the REFLOW repertoire for a CE transition and is based on the expertise and best practices of the six REFLOW pilot cities. Aligned with the values of flexible urbanism the manner of generating the resource was iterative, collaborative and informed by knowledge holders. The purpose is to put in practice the idea of flexible urbanism in a practical way while consolidating this resource.

The document brings together the formulation of conducive measurements that create a supportive environment for a transition towards Circular Economy (CE) from a bottom-up perspective. We explore this potential through thought-provoking questions such as

How can we collaborate, organise, reflect and discuss together in order to come up with urban solutions that improve our urban environment? How can long-lasting and meaningful collaborations be built for inclusive and equitable regional development that sustains people-centre development in a deeply uncertain world?

Inspired by the six REFLOW pilot cities, Amsterdam, Berlin, Cluj-Napoca, Milan, Paris and Vejle, the document presents six concise case studies aimed at capturing barriers and challenges that cities have been facing to develop a systematic and replicable CE. Based on this knowledge, it provides potential recommendations for policy making following a people-centred approach. The recommendations include strategies for multi stakeholder governance, reflecting on the solution of complex challenges involving stakeholders at various levels in local policy decision-making, ranging from public and private actors and mature and emerging industries to cities and regions, SMEs, Fab Labs, and multi-sector corporations. Within this scope, this document does not intend to cover all the REFLOW pilots solutions , but rather to highlight specific best practices connected to selected areas of intervention as inspiration for policy briefs. More information about the social and technological solutions developed by the REFLOW pilot cities can be found in the recommended links included throughout the text.

The deliverable also provides guidance in building links with potential tools that can be used by city planners, based on the toolbox repository of the REFLOW Collaborative Governance Toolkit¹, thus identifying challenges and barriers and ways to overcome them with available resources, for each of the following areas of intervention: “iterative city life”, “open-access”, and “commons-based and polycentric”.

The recommendations are described based on the concept of policy briefs, which are policy documents produced to support advocacy campaigns with the intention to engage and persuade informed, non-specialist audiences (Young et al, 2017). Thus, this deliverable is written in a way that can be accessible to a wider audience, in particular practitioners who work in the fields of circular urban development, circular economy and collaborative governance, but who mostly do not conduct policy research themselves or read expert texts, including decision-makers, politicians, NGO advocates, and journalists.

1.4. Connections to the REFLOW Framework and other deliverables

Throughout the project development, the REFLOW Framework (see Figure 1) has served the project partners, pilots and activities as a supportive general model, since it has been based on the REFLOW understanding of circular and regenerative cities, and thereby represents the REFLOW Vision (Parisi, Beye, Bekier, 2021).

¹ <https://governance.reflowproject.eu/toolbox>

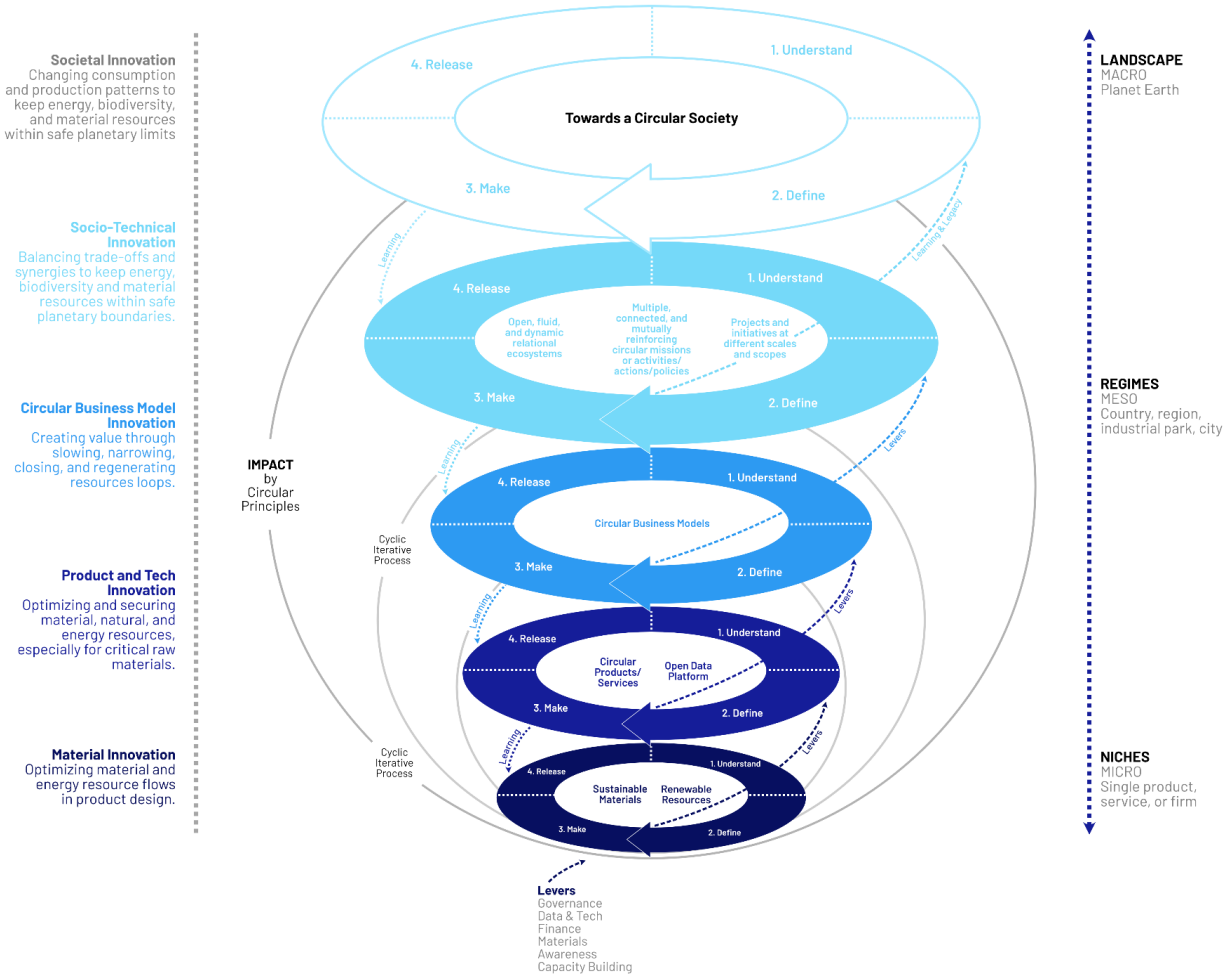


Figure 1. The Reflow Framework, Source: Copenhagen Business School.

Within the REFLOW Framework visualisation, Deliverable 4.5 fits across the micro to meso level, as the policy briefs further described in Section 4 are based on the REFLOW pilot cities solutions (micro level) and translated into policy opportunities to other city-wide ecosystems (meso level).

This deliverable connects to two main tasks of REFLOW, Task 4.3 - Implementation and testing of governance models and strategies and Task 4.4 - Evaluation and Policy Proposals. Based on insights collected through the development and implementation of the REFLOW Collaborative Governance Toolkit (RCGT) - D4.2, D4.3 and D4.4, this document brings guidance that can support urban systems to adopt and implement circular practices in innovation policies, through the lenses of urban governance. An iterative process was carried out in order to draw connections between the areas of intervention targeted by the policy briefs and the tools and practices documented in the RCGT toolkit, aimed at validating the implementation of selected resources from a panel of experts. An additional, complementary analysis of some of the

specific topics mentioned in the Policy Brief city cases can be found in the Toolkit in Practice² section of the RCGT website (see D4.4).

The work done in this deliverable is also a continuation of the research initiated in the development of the REFLOW Handbook³, which is a practical resource to assist cities in adopting circular economy strategies focused on co-creation methodologies in a practical and intuitive format. In addition to an initial curation of tools for supporting cities navigating and engaging in the transition towards a circular economy, the REFLOW Handbook also presents a general overview of EU policy-making in the field of sustainable urban development, and a selection of relevant city ‘concepts’ and strategies that broadly address the topic of sustainable urban development. From these city concepts, thematic policy areas of intervention were selected for developing the recommendations described in the following sections.

The REFLOW pilot cities focus on different sectors, follow different articulations of partnerships and have different sets of expertise, knowledge and skills. In order to evaluate the information about their solutions developments and connect their learnings to policy briefs, an extensive analysis of available information was carried out. The data used for building the city cases were compiled from several resources developed by REFLOW partners through the co-creation activities, individual workshops and consultancy, and in particular:

- The Detailed Pilot Planning and Evaluation Framework, - D5.1, from which the overall Pilot Cities Framework was gathered, as well as the general and city-specific objectives, activities, challenges, KPIs, and roles of partners.
- The REFLOW Framework - D1.3, in order to be aligned with the REFLOW Framework, a supportive model to enable the development of CE practices and governance following a multi-stakeholder approach. Data on the update of the REFLOW Pilot Cities’ Circular Action Plans were also collected, embracing their final list of key performance indicators, and main implementation challenges encountered.
- Validation and Performance Evaluation - D1.4, from which an analysis and validation of pilot use case scenarios was systematised, including results from the latest iteration of the Theory of Change and a comprehensive PESTEL analysis.

This deliverable has also close connection with other three REFLOW resources, which have been deployed in parallel with Task 4.4:

- City Ecosystem Design - D5.3, which illustrates the blueprint of economic loop models for each specific city resource stream: textiles, wastewater heat, energy, food, wood, plastics.
- REFLOW OS Pilot Applications Development and Testing - D5.4, which includes a technical description of the solutions developed by each REFLOW pilot city and highlights their functionality and application.
- Citizen Engagement and Capacity Building - D5.5, which describes the Citizen Engagement Strategy and deployment plan for each REFLOW pilot city and includes policy proposals focused on citizen engagement.

² “Toolkit in practice” from “Reflow Collaborative Governance Toolkit”, by P2P Lab, <https://governance.reflowproject.eu/toolkit-in-practice>, retrieved February 2022

³ REFLOW Handbook (D4.1) available as Gitbook: <https://books.fablabbcn.org/reflowhandbook/>

All deliverables can be found on the Knowledge Hub.⁴

2. Introduction and Background on Flexible Urbanism

This deliverable builds upon the learnings from the REFLOW pilot cities, unfolding practices that support policy making that together supports a strategic CE vision for the future. It therefore proposes both short-term actions, but also establishes a framework that guides future urban/spatial planning, that utilises urban metabolism accounting and is informed by flexible urbanism concepts.

Taking into account the deep uncertainties about the urban future, arising from social, political, technological, economic, and climate changes is a complex task. In laypeople's terms, we are defining that as "city making". City making embraces multiple interlinked dimensions. If the city's infrastructure is considered to be the "hardware" - buildings, streets, sewers, or green areas; its citizens, their everyday life, their desired positive environmental impact, their economic interests, and their political ambitions may be considered as its "software". Both the city's hardware and software are important components to be taken into account.

In a society that increasingly deals with deep uncertainty, there is a need for broadening how we think about and deal with interlinked resources. This includes discussing how to build decision-making infrastructure that supports dynamic adaptation over time (Haasnoot, et. al., 2012). Exploring innovative frameworks for decision-making and collaboration is key to fostering the transition towards a more circular future.

Nonetheless, urban planning is not limited to "how" (*re-calibrating how* we make decisions, considering participatory or co-creation processes) and "who" (*enlarging who* is partaking in decision making), but also improving "what" to focus within the different layers that compose a city (Schaick & Klaasen, 2010).

While urban planning deals with different layers of the urban environment, they also work on orchestrating different stakeholders and interests involved in each of these. The approach and role of urban planners have changed substantially in the last 50 years. Planners in public administration used to hold a big share of power in urban change. Nevertheless, the increasing variety of stakeholders involved in planning and their shifting power-relations have made planners adopt different roles nowadays, from process planners to network managers, or advocacy planners (Sehested, 2011).

There is also a growing number of citizens, civic organisations (nonprofits, grassroots) contributing to the urban planning dialogue. Pro-inclusive strategies on urban/spatial planning may contribute to such an organic narrative for flexible urbanism - e.g. the Centrinno Urban Ecosystem Mapping Guidebook, a how-to guide to urban resource cartographies.

⁴ <https://reflowproject.eu/knowledge-hub/>

Moreover, there is a growing body of knowledge and tools on participatory approaches for citizens and civic organisation involvement in planning processes (Hardin, 1999; Fishkin, 2005; Dedicim 2022; see also D4.1). Further examples⁵ can be found in the Fab City global initiative, a global organisation that emerged from the global Fab Lab network (which currently boasts 2000+ independent digital fabrication laboratories worldwide) to facilitate the transition towards a new urban paradigm PITO to DIDO. Of interest to this deliverable is the initiative's Network of 41 cities and regions (including Paris, Amsterdam, Seoul and Mexico City to give an example of the size and scope of the Network) which have pledged to join a movement to locally produce energy, food and materials in order to reduce their environmental and social impact on the planet, and globally share best practices through open networks. The 'Fab City Full Stack' provides a methodological approach, laying out seven interconnected layers of urban intervention - such as infrastructure and education - providing a framework for the 41 cities to implement top-down, bottom-up urbanism. Each locality represents a local effort by city leaders, community groups, Fab Labs and civic organisations who collaborate in their territories (the lower levels of the Full Stack), and at distance with the network (the upper layers of the 'stack'), to meet the planetary challenges presented by the climate crisis and social inequality. Seoul, for instance, known as the world's first sharing city, in which "*citizens are the "mayor," according to the former mayor of Seoul*" (Foster & Iaione, 2015:248) contributes to this global aim. Approaches that leverage temporary urbanism with use towards more participatory, inclusive futures, and the concept of *distributed design*⁶ can be conceptualised within the wider framework of Fab City. The "*space in which design happens*" helps us understand that new design practices, and subsequently, new economic models, need new words and new spatial forms (Menegaldo, 2020:89).

In conclusion, we need to develop and tell new stories about what the city *is* and what the city *could be* in a circular future. Advancing schemes for urban metabolism, urban and spatial planning, and flexible urbanism is not only a technical exercise for planners and experts, but a civic matter too. The built environment is ultimately made by the people and for the people.

2.1. Civic Flexible Urbanism

Informed urban planning and decision making requires taking a holistic and interdisciplinary approach. Reframing the urban debate vision and integrating notions of circularity may favour more elastic environments that tolerate heterogeneity and accept change. Changing spatial and social landscapes would require a diversity of interventions – in contrast to prescriptive, finite, and rigid development; thus, increasing the city's adaptive capacity to manage change (in economic, social, and environmental systems). To support this change this document includes:

- A (commons-based and polycentric) collaborative approach towards flexible urbanism, acknowledging existing power balances and asymmetries.

⁵ Read more:

<https://governance.reflowproject.eu/stories/initiatives/fab-city-global-initiative>

⁶ <https://distributeddesign.eu/wp-content/uploads/2021/10/This-Is-Distributed-Design-Book-by-Distributed-Design-Platform.pdf>

- A set of *practical* recommendations that we believe would facilitate a transition on governance towards flexible urbanism, considering the interdependences between city life and spatial planning.
- Concrete interventions that propose policy briefs towards flexible urbanism.
- Daily city life practices that could help to overcome social, ecological and economic challenges in a systemic manner, contributing to a fertile urban metabolism and a more flexible approach to urban planning.

Finally, one of the great challenges of our times is how to connect different scales and expertise for transformative change across the whole system from the individual to the societal level. This reality is also reflected on urban-spatial planning. Envisioning a metabolic adaptation over time that already maps and values existing urban assets (e.g. see Burdett & Philipp, 2018), flexible urbanism should consider inclusive principles, such as, but not limited to:

- Urbanism that is iterative⁷, open-access⁸, commons-based and polycentric⁹
- Careful zoning regulations
- Malleable approach to master planning
- Support for everyday urban experience interactions
- Adaptive capacity, capable of absorbing daily city activity-intensity
- Inclusive, integrated spatial principles
- Consideration for the more vulnerable urban communities
- Collective aims and sense of justice
- Stimulating the essence out of city life
- Space for urban acupuncture (strategic spatial location of interventions)
- Recognition of the role of design, time, and space in making cities more liveable

A set of strategies on urban/spatial planning that involve specific grassroots stakeholders are taking part in producing a change for urban interventions. Facilitating the change involves providing the analytical and practical tools to engage reflexively with urban development and planning challenges. Thus, we conceived and delivered an unique methodology (section 3) on exploring ways to facilitate this change on urban/spatial planning.

We identified three areas of intervention that urge civic society actors to contribute facilitating a governance transition towards flexible urbanism. The three areas of interventions comprising the above-mentioned bullet points translate learnings from the literature review into city life.

Thematic narratives titled: “iterative city life”, “open-access”, “commons-based and polycentric” provide introductory background information emerging from literature to provide a starting point for how civic society actors can engage with policy making and benefit from more inclusive approaches. We fertilise the discussion in the format of “policy briefs” (section 4).

⁷ Elaborated in section 4.1 titled “Policy brief (1) “iterative city life”

⁸ Elaborated in section 4.2 titled “Policy brief (2) “open-access”

⁹ Elaborated in section 4.3 titled “Policy brief (3) “commons-based and polycentric”

3. Methodology

For the development of this deliverable we followed a mixed-methods approach. Our methodology is composed of a literature review, qualitative data analyses from the available REFLOW qualitative data sets and feedback mechanisms from a panel of experts. The methodology is divided into four subsections: A general description of the methodology, and a detailed description of the process composed of sections 3.1. Collaboration with internal and external partners for the RCGT tools validation, 3.2. Participatory workshop, 3.3. Validation on the implementation of the RCGT tools connected to the targeted policy briefs and 3.4. Review of the pilot cities.

The process was conducted in an iterative manner and initially followed an adapted version of the double diamond¹⁰ method, known and widely used in design thinking¹¹. An adapted version of the double diamond¹² was also used by the project partner CBS earlier in the project's lifetime and served as inspiration for this work. However, throughout the process of making this deliverable the methodology evolved aligned with the REFLOW project process and the REFLOW Framework (see figure 1), which served as a guidance of the D4.5 iterative process. One iteration workflow was as follows; The objective was set (challenge), Information was gathered from existing documents and resources (discover), the selected data was put into context (define), experts were consulted for feedback (develop), the first iteration was made (deliver). For this current version, the policy briefs went through four iterations. The iterative process was favourable to achieving a refined outcome. Furthermore, the various interactions with knowledge holders (experts) aimed to ensure that the development was informed and context-based.

¹⁰ From "What is the framework for innovation? Design Council's evolved Double Diamond", by Design Council, 2019, (<https://www.designcouncil.org.uk/news-opinion/what-framework-innovation-design-councils-evolved-double-diamond>), retrieved March 2022.

¹¹ From "What is Design Thinking", By the Interaction Design Foundation, (<https://www.interaction-design.org/literature/topics/design-thinking>), retrieved March 2022

¹² Cities Circular Action Plans by CBS available at [REFLOW Knowledge Hub](#)

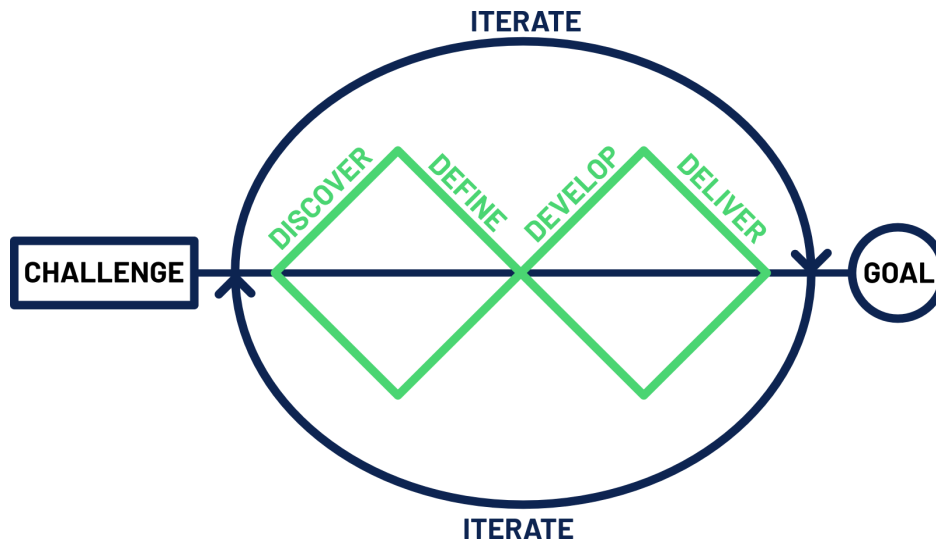


Figure 2. Simplified graphic of the iterative process.

At the initial stage, internal and external urban planning experts were consulted to compile a diverse and up-to-date set of references for the emerging concept of flexible urbanism. Following the literature review, a qualitative data analysis took place. The analysed data sets are composed of circa three years (2019 - 2022) of already existing data in form of deliverables created by the REFLOW consortium. Furthermore, qualitative data sets such as observational data from activities and experiments carried out throughout the project's life in six cities collected (i.e., Miro boards) were being examined. The list of documents used included: D1.3 The Reflow Framework¹³, D1.4 Validation and Performance Evaluation¹⁴, D4.1 The Reflow Handbook¹⁵, D4.2 The Reflow Collaborative Governance Toolkit (beta)¹⁶, D4.3 RCGT v.10¹⁷; D5.1 Detailed Pilot Planning & Evaluation Framework¹⁸, D5.3 City Ecosystem Design (working document), D5.4 REFLOW OS Pilot Applications Development and Testing (working document). Additional external resources such as policy briefs by OECD¹⁹ and the EU project iScape²⁰ were taken into consideration as best practices when deliberating the content. The review of the external resources inspired the selection of relevant policy topics and narrowed the problem statement into succinct areas of intervention. The three identified areas of intervention were “iterative city life”, “open-access”, “commons-based and polycentric”.

¹³ “D1.3 The Reflow Framework” available at <https://zenodo.org/record/5094881>

¹⁴ “D1.4 Validation and Performance Evaluation” available at <https://zenodo.org/record/5744804>

¹⁵ “D4.1 The Reflow Handbook” available at <https://zenodo.org/record/3588252>

¹⁶ “D4.2 The Reflow Collaborative Governance Toolkit (beta)” available at <https://zenodo.org/record/3872729>

¹⁷ “REFLOW Collaborative Governance Toolkit (RCGT) v 1.0” available at <https://zenodo.org/record/4889840>

¹⁸ “D5.1 Detailed Pilot Planning & Evaluation Framework” available at <https://zenodo.org/record/3764138>

¹⁹ Organisation for Economic Co-operation and Development (OECD), <https://www.oecd.org/>

²⁰ iSCAPE (Improving the Smart Control of Air Pollution in Europe) was a European research and innovation project active from September 2016 to December 2019. <https://www.iscapeproject.eu/>

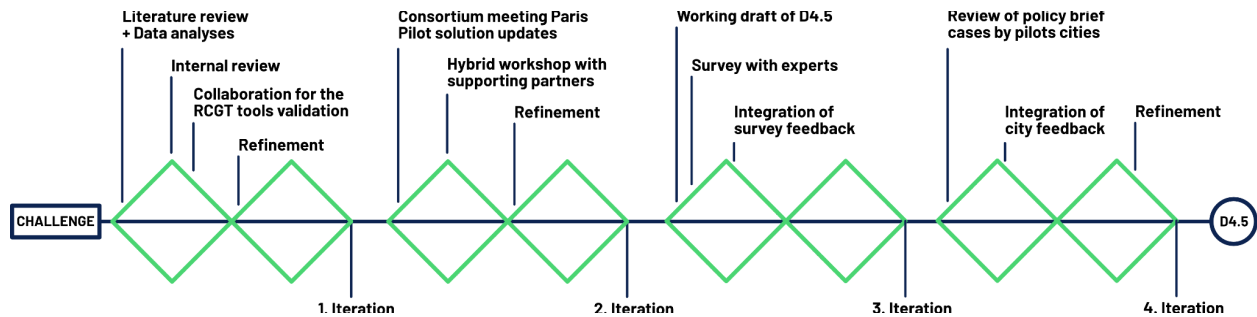


Figure 3. Iterations of the deliverable.

Throughout the process of data analyses, there were various interventions with external and internal experts. As mentioned earlier the consultation of experts aims to contextualise and refine the outcome (policy briefs) using an iterative method (see Figure 2). The methodology of this deliverable has evolved from the initial double diamond, to the more complex and holistic REFLOW Framework. The unfolding of this and the interventions with experts are described in the following subsections.

3.1. Collaboration with internal and external partners for the RCGT tools validation

The first intervention with a panel of experts was in the framework of the RCGT implementation validation together with the partners of P2P Lab. The main focus of this interaction was to collect feedback for the implementation phase of the RCGT tools. In order to properly pair and integrate the available RCGT tools with concrete policy cases, we performed an adaptation of the initially suggested Delphi Method for validation with an incremented panel of experts. Generally speaking, the Delphi method consists of several rounds of questionnaires, and the responses are aggregated and shared with the group after each round, allowing experts to reach consensus about a particular topic. The adapted version of the Delphi method took place aligned with each phase of the iterative process of consolidating this document. Collaboratively with P2P Lab, a panel of experts from Fab City Foundation, Ecovala, IAAC, Pop-Machina and iPRODUCE EU projects were defined. Each of the selected organisations had a profile that provided a comprehensive understanding and/or a direct link to the REFLOW project. Detailed information about the iterative validation process through surveys is described below in Section 3.3. Validation on the implementation of the RCGT tools connected to the targeted policy briefs.

3.2. Participatory workshop

IAAC, the project partner in charge of the work on policy proposals for flexible urbanism, led a workshop in Paris during the REFLOW consortium meeting, on the 19th of January, 2021. The results are openly shared via a Miro Board²¹ (see also figure 1- 3). The partners Ecovala, CBS, Metabolic, P2P, POLIMI took part in the workshop. There were two objectives for this workshop.

²¹ Miro board for the hybrid workshop in Paris https://miro.com/app/board/uXjVOU_dqTY=/

The first objective was to validate the references consolidated in the preparatory phase and to collaboratively contextualise them within REFLOW using practical examples. The second objective was to collaboratively review the areas of interventions for the policy briefs and to add potential links to existing work within REFLOW.

During the preparation phase we have collected key learning from different literature references. The content was built on an extensive literature review, containing the state of art on the concept of flexible urbanism. The key learnings were clustered and together with the name of the resource shared in a Miro Board (see Figure 3). This Miro board also included six sections for the six REFLOW Pilot cities. Each respective pilot city section included the pilot's context, challenges and connections to potential policy options. Context, challenges and connections to potentially policy options were filled with information based on the initial qualitative pilot data analyses.

During the REFLOW consortium meeting the partners Ecovala, CBS, Metabolic, P2P, POLIMI were asked to collaborate in an one hour workshop. The expected output for this effort was to relate the state of the art from the literature review and the qualitative data analyses with the Reflow context. First, the participants were asked to read the notes from the literature review in the Miro Board (see Figure 3).

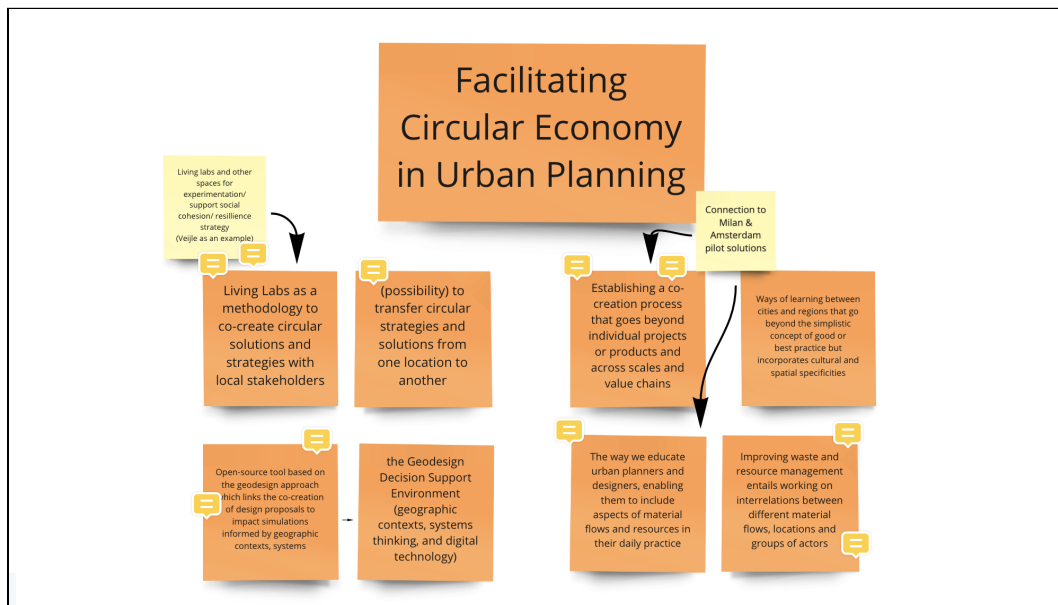


Figure 4. Informational phase, sharing the key takeaways from the Literature Review.

Secondly, participants were asked to choose the content from the notes that they could relate with REFLOW project ongoing activities and the REFLOWvision. The objective was to extract notions and build bridges from the broad literature review on flexible urbanism to the REFLOW concepts.

Thirdly, the participants were asked to comment on the structured pilot case studies presented. Similarly to the prior step, we have asked them to link data in the pilot case studies to ongoing activities within REFLOW. This step helped to ensure that the available data about the pilots is up to date to the current work in progress of the pilots together with the project partners.

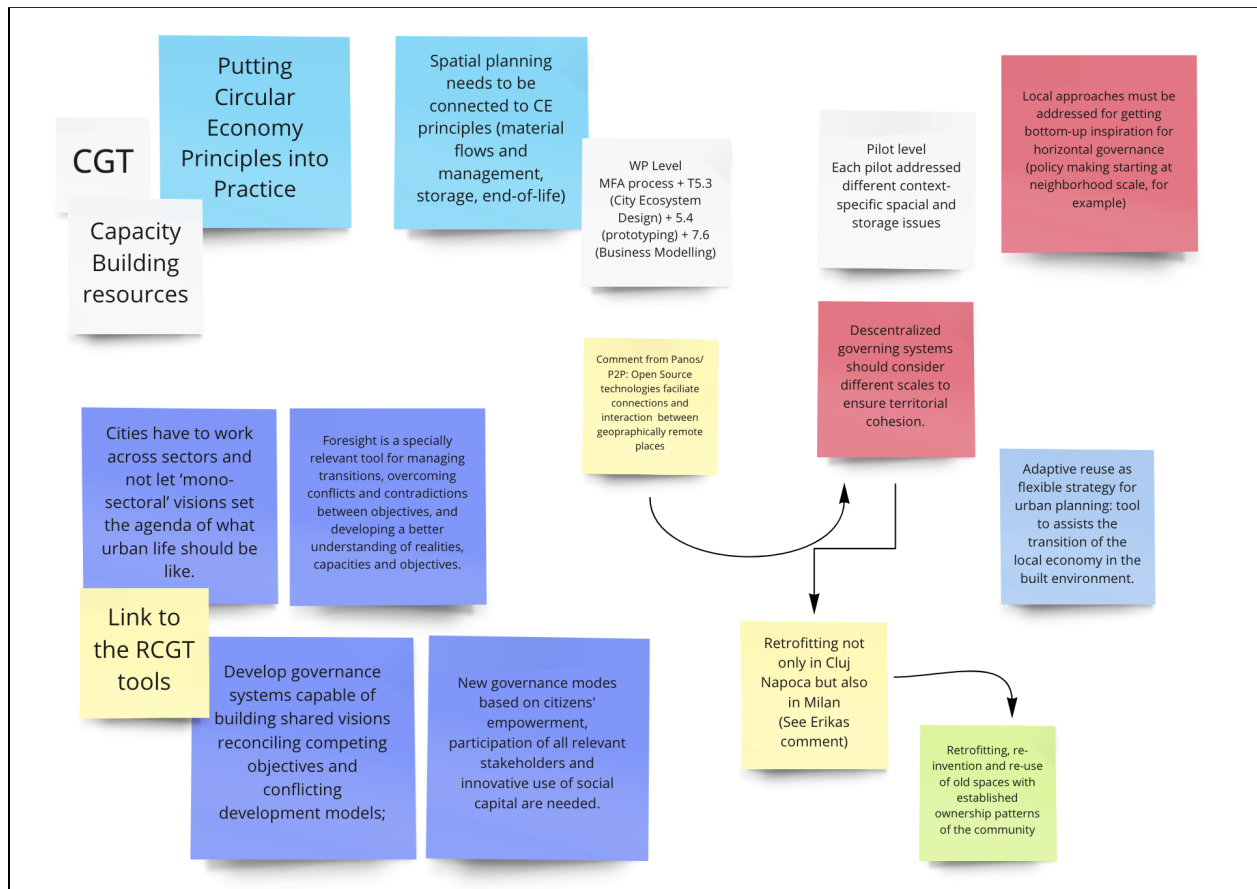


Figure 5. Co-selecting the main arguments on flexible urbanism.

After the workshop, we assessed the selection of content and outcomes of the workshop. The key outputs of the workshop was to build connections between the literature review and the REFLOW pilots' focus and activities, which ultimately illustrated practices on flexible urbanism tested in REFLOW pilot cases. The summary of the main takeaways from the workshop is used to develop the three thematic Policy Briefs: proposals on "iterative city life", "open-access", "commons-based and polycentric". Each includes the "context", the "challenge (problem statements)" and a "justification "why" the topic matters".

3.3. Validation on the implementation of the RCGT tools connected to the targeted policy briefs

Following up on the workshop results, participants and external partners received a survey to draw connections between the areas of intervention targeted by the policy briefs and the tools and practices documented in the REFLOW Collaborative Governance Toolkit. The survey with the supporting partners and panel of experts took place in March 2022.

In addition to the partners who participated in the first workshop for the discussion and participatory feedback on the definition of the policy briefs, three external partners were invited for contributing to the connection of RCGT tools in addressing policy challenges. The selection of external experts for the panel of experts was based on their familiarity with the work previously performed (beta version of the RCGT) and the connection with the REFLOW project. The internal team invited representatives from two sister European projects, Pop-Machina and iPRODUCE, and from the Fab City Global Initiative.

A preliminary assessment was made to identify synergies between the definition of the concepts of Collaborative Governance (described in D4.1 - REFLOW Collaborative Governance (beta)) and Flexible Urbanism. The connection between the two concepts is stated in the survey:

*The transition to circular and regenerative cities is a long term process that requires systemic change in managing urban resources, assets and practices. Rigid institutional governance systems to adopt **flexible, open and collaborative** decision making and institutional responsiveness to change is resulting in cities being unable to manage urbanisation and development processes. Therefore, traditional forms of urban governance, based on formalised structures and institutional arrangements, need to be revisited from a collaborative perspective. The challenge of silo mentalities in many public agencies, organisations and institutions, is resulting in a 'culture' associated with a general lack of trust, cooperation and information sharing. The tailor-made implementation of a **collaborative governance** suits local conditions, and the importance of "unlearning" and learning new ways to manage cities happens through an inclusive and shared approach.*

In order to give a clear scope of each area of intervention, three REFLOW cities were selected as case studies, highlighting their main contextual barriers and expected outcomes to support collaborative journeys towards circular and regenerative cities.

Reflow |  This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement number 820937.

REFLOW Collaborative Governance and Flexible Urbanism

 milena@fablabbcn.org (not shared) [Switch accounts](#) 

*Required

CASE STUDY (1): In your perspective, what would be the primary approach or solution for overcoming each of the following barriers:

Individuals may lack knowledge, transparency and information about open data practices *

- Building consensus on priorities around circular objectives, challenges and opportunities
- Consistency between planning and execution of circular transition paths
- Holistic assessment of city strategies, policies, and programmes
- Collaborative definition of circular missions' components and their interconnections

Figure 6. REFLOW Collaborative Governance and Flexible Urbanism Survey

The scenarios allowed the participants to identify contextual barriers to support and sustain the transition towards circularity and connect these barriers with potential tools or levers from the REFLOW Collaborative Governance Toolkit.

After reading each of the selected case studies containing a contextualised main question, participants drew connections between real barriers and the assets from the RCGT pool of tools through multiple choice and short answers. The solutions selected were finally connected with specific tools from the REFLOW Collaborative Governance Toolkit and were included as supporting material after each policy brief section. The qualitative data gathered from the open questions were connected to additional approaches the panel of experts considered relevant when addressing similar barriers, such as behavioural change, governance structure, or lack of technological solutions. The results were compiled and incorporated into the policy briefs, described in section four.

As a final step in this process, the results gathered from the online survey were aggregated and shared anonymously among the participants for a final round of validation. This iteration allowed participants to adjust their answers according to the group responses and to propose further improvements in the implementation of the RCGT tools.

3.4. Review by the pilot cities

The consolidated feedback collected through the workshop and the survey was incorporated in the third iteration of the policy briefs. The six policy briefs were put into six separate documents to ease the review process by the pilot cities' representatives. These documents included an introduction to the policy brief's topic, the pilot city case and a "read more" section. The latter included connections to other useful documents from REFLOW. Furthermore, that section also included a best practice example that is not part of REFLOW. The policy briefs were then sent to the six respective REFLOW pilot cities in March 2022. The aim was to ensure that the policy briefs were close to the solution's latest developments, included all information the pilots see themselves as relevant, and potentially highlighted any missing information. With the feedback of the pilot cities, the policy briefs were finalised.

4. REFLOW Policy Briefs towards Flexible Urbanism

A transition towards flexible models for urbanism should consider inclusive principles and needs elastic environments that tolerate heterogeneity and accept change. When it comes to the policy context, top-down policies often lack the flexibility and "place awareness" to respond to local complexity. Bottom-up initiatives offer much more flexible responsiveness to address diverse territorial needs. Yet, they require a bigger scale and time conceptual framework to achieve long-term impact.

Based on the need of innovative collaboration frameworks for decision making processes (see section 1), 'Collaborative Governance' serves as a background for the explanation of six case studies inspired by the REFLOW cities. This emerging concept is of increasing interest for governments in many countries to improve the management and development of sustainable and flexible models for cities. In REFLOW, we understand collaborative governance

"as a long term, systemic process of steering and coordination of all the different levers in cities – policy, regulation, funding, knowledge, collective intelligence, and many others – in such a way that allows distributed capacity, legitimacy and agency for (circular) change across public and private sectors". (Frosini et al, 2021)

By empowering local actors in the co-creation of collective action to current challenges, bottom-up policy proposals can be created as an effective alternative to traditional policy development approaches. Policymakers would benefit greatly from accessing easily manageable data and tools, including those developed bottom-up, to deal with the new global landscape.

In this sense, we propose three main areas of intervention for policy briefs, namely: "iterative city life", "open, connected, mixed", and "commons-based and polycentric". The following section discusses challenges, processes, goals, actions and roles of strategies dedicated to

inspire action at the local level, connected to each of these areas of intervention, and the following case studies:

- Amsterdam pilot: Boosting circularity within the textile sector by inducing behavioural change and providing feedstock for the recycling industries
- Vejle Pilot: Empowering citizens as “change makers” towards solutions for “circular plastics”
- Berlin pilot: Stimulating citizen participation and decision making towards an energy sufficiency shift through transparent and open (municipal) data.
- Cluj-Napoca pilot: Enabling multi-stakeholder diversity and ecosystem representation, for informed decision-making processes and the alignment of local and global challenges.
- Paris pilot: Towards improved polycentric governance for increasing circularity of timber and wood flows
- Milan pilot: Commoning of material and immaterial resources and collectively determining the rules collaborative governing structures for circular value flows in the food system.

4.1. Policy brief (1) “iterative city life”

An “iterative city life” implies an experimental, co-created, and learning by doing approach for resilient city-making. The process embraces iterative testing of context-based nexus solutions while not being afraid of making and learning from failures. The approach makes use of transparent and rapid feedback mechanisms. Citizens are actively involved through different communication means and are being invited to take part in co-designed solutions. Citizens take part in informed and contextualised “quick-win” progresses, and are less likely to be discouraged by complicated bureaucratic procedures.

Establishing iterative co-creation processes allows planners to go beyond individual projects, across scales and value chains. Such co-creation practices combined with the emergence of digital civic infrastructure facilitate the participation of relevant stakeholders and may become valuable for collaborating across perspectives and foresight. Subsequently, iteratively experimenting with transitions, may provide space for overcoming conflicts and contradictions between multiple stakeholders’ objectives.

An iterative city life embraces multiple paced scenarios that may be shared for developing a better understanding of realities, capacities and objectives alongside these processes. Collaborative governance in the circular economy transition may contribute to territorial cohesion via contextualised governance models and spatial planning. For instance, circular methodologies emerging Fab Labs and Living Labs (but not limited to), embrace different spaces where experimentation processes can be prototyped. They represent a blended holistic approach of people, projects and processes. The use of open source technologies in these spaces may facilitate connections and interactions not only between geographically remote places (i.e. using open-source tools based on the geo-design approach) but also in terms of

iterations. Synchronous and asynchronous experimentations may be used to enable civic innovation processes, which links the co-creation at the heart of design proposals to impact simulations, informed by geographic contexts, systems, and communities of practice. Thus, eventually, more adaptive reuse or resources. Ultimately, as a flexible strategy for spatial planning, enabling co-creation practices for iterative city life may become a civic tool to experience acupunctural transitions of the local economy in the built environment.

Learn more about this scenario in practice from REFLOW city cases

City Case “REFLOW pilot city Amsterdam”

Boosting circularity within the textile sector by inducing behavioural change and providing feedstock for the recycling industries

Summary

The REFLOW pilot city Amsterdam (“pilot”) has focused on *textiles*, with the aim to *investigate* how they are used and maintained by citizens, the way these materials are discarded and reused, and how these resources can be brought back into the city’s material flow loop. To facilitate the shift towards more circular textile material streams in the region, the pilot implemented an overarching strategy consisting of two complementary scenarios: First a short-term “citizen” scenario, focusing on impacting behavioural change by empowering citizens to become changemakers. Second, a long-term “industrial” scenario, supporting the provision of raw material for the recycling industries, increasing the demand for recycled textiles and supporting the supply of newly produced products from recycled resources to other players.

Background context

Generally, the textile industry is far from circular. The sector is known for its large ecological and social footprint. Textiles flow into the region mostly following a linear model. While the quality of textiles is decreasing (mainly as a consequence of the fast fashion market), society calls for a greater responsibility for textiles collection, sorting and treatment in order to prolong their useful lifetime. Such a change will less likely be improved by “standing alone” institutions. Instead, it claims for a collective articulation. Changing the textile industry requires not only new regulations and effective policies but also innovative circular business models, technological support and an active citizen participation and cooperation throughout the different actors in the chain

In 2016, the **Pact of Amsterdam** established the Urban Agenda for the EU (UAEU), which aimed to ensure better regulation, better funding and better knowledge to achieve smart, inclusive and sustainable cities by 2020. The strategy focused on improving cooperation and strengthening the “urban dimension” in EU decision making. Following a similar approach, in 2020, the Amsterdam Circular Strategy 2020-2025²² was approved. The strategy and the related implementation programme have as main objective the creation of a thriving, regenerative and inclusive city for all citizens while respecting the planetary boundaries. For monitoring the progress towards a circular city, the strategy presented the ‘Amsterdam City Doughnut’, which is an evaluation framework that correlates the limit of prosperity needed for a socially equitable existence and the ecological limits of the planet. In respect to making the

²² From “Circular Strategy 2020-2025”, by City of Amsterdam, 2020
https://api.amsterdamsmartcity.com/storage/media/76/c_70071_7006807c-e9b1-47c6-985c-ee1f132d0f4f.pdf

textile industry compatible with these broader strategies, two important agreements have been established in Amsterdam. First, the **Green Deals Circular Textile** has the ambitious goals of boosting the production of new fabrics with at least 30% recycled material by 2025, and, by 2030, having 50% of textiles in a closed loop. More than 50 organisations in the Amsterdam Metropolitan Area (education, government, healthcare institutions, innovative start-ups, well-known clothing brands, etc) have been working together with a specific focus on making the denim supply chain more sustainable. Second, based on this new initiative, the “**Denim Deal**” is focused on making post-consumer recycling of textiles the new standard in the industry. The effort was signed by 30 parties, including the City of Amsterdam.

One of the most challenging aspects for incorporating sustainability into the textile supply chain is the need to slow down the entire system, which works against the current culture of quick response and fast fashion, thus, finding a sustainable balance between production and consumption is required (Joyner Armstrong et al., [2016](#)). To achieve sustainable patterns of behavioural change, policymakers have traditionally focused on social frameworks that rely on information-based campaigns. These approaches have largely been unsuccessful and widely criticised for being too timid and lacking in ambition, resulting in the general public “has remained largely disengaged” from government sustainability campaigns (Markkula and Moisander 2012; Welch 2017) and consequently less committed to behaving as changemakers.

Amsterdam pilot as an example of ‘iterative city life’

The pilot’s approach sheds light on the potential of active stakeholders’ engagement and participation combined with technological solutions. On-demand collection, circular product design and innovative business models are being tested by the pilot in parallel with the development of material flow analysis and the use of an enabling platform to track and trace materials.

Through the assessment of textile streams, with the support of Metabolic, the pilot has identified and selected tailored actions and relevant actors to drive system change. Circular loops for recycling, refurbishing and regeneration were selected to be further transformed into business model ideas considering the participation of various actors in the chain. Iterative activities took place by combining research material experimentation, promoting circular textiles in educational programs, facilitating workshops with citizens and students for effective textile collection, facilitating exchanges between entrepreneurs & sorting companies, and starting collaborative actions with local networks and policy makers.

Following a people-centred approach, the solutions aimed to investigate and create business opportunities along the chain, promoting and mapping new opportunities for recycling materials, and thus, working towards an iterative city model.

Rationale for action on the problem

In order to drive textile production and consumption towards circularity in an efficient and synergistic way, all actors in the textile value chain need to change their behaviour patterns and their ways of thinking and working. This change is not only related to fast fashion production and consumption, but to the use of home textiles, professional textiles used in the health sector, uniforms, and a large number of technical applications.

There is a need for policies and initiatives that encourage eco-design of textiles for durability and recyclability, foster business models aimed at recirculating textiles until their technical life is over, and influence consumption behaviour towards more sustainable patterns.

Collective and decentralised monitoring is also key, which requires a need for technological solutions development to ensure that circular systems and actors operate effectively.

Proposed policy options

The pilot wants to move away from conventional, awareness-raising approaches towards sustainable behaviour change and instead explore the feasibility of iterative social practices and low technological-based approaches to influence behavioural change. Innovation policies building upon processes of experimentation, including new processes, ideas and structures, collaborative and networked governance. The experimental approach, based on documentation flows for monitoring iterations, relies on an effective connection from the bottom-up (i.e. initiatives led by neighbourhoods, start-ups and civil society with established institutions across government, business and academia.)

Proposed policy opportunities based on the REFLOW journey

The pilot strategies focused on exploring social practice-based approaches combined with the technological infrastructure to enhance cross-sector collaboration and foster behavioural change. These strategies have led to real value creation that serves as an inspiration to new policy recommendations through:

- **Supporting technological solutions to engage communities with circular fashion for clothing exchange**

Clothing exchange is an example of a circular solution that enables slowing material loops. When put into practice, it can enable community engagement, boost creativity by giving old garments a second chance and identify opportunities for technological solutions that make exchanges possible and monitored.

The Swapshop prototype developed by the pilot uses exchangeable vouchers (swaps) to access clothing items and utilises REFLOW OS²³ track and trace to follow the journey of the clothes. The solution is a shop for second-hand clothes where customers can bring their clothes to be swapped with other clothes. More information can be found on the REFLOW Knowledge Hub²⁴ page under D5.4 - REFLOW OS Pilot Applications Development and Testing and under D5.3 - City Ecosystem Design.

- **Leveraging skills while keeping second-hand clothing in active use and reducing textile waste**

Exploring clothing upcycling can be an opportunity to improve certain skills, empower communities, and thus enable job creation in emerging economies.

The United Repair Centre is part of the connected work with the Green Deals Circular Textiles where REFLOW is a signatory. In collaboration with the Makers Unite, the initiative fosters newcomers' access to the job market through the collaborative design and production of sustainable products. More information can be found on the REFLOW Knowledge Hub page, under D1.4 - Validation and performance evaluation.

- **Assembling knowledge and educating stakeholders at every stage of the textile industry's cycle**

Communication campaigns, educational materials and awareness-raising are key

²³ REFLOW OS is a free and open-source software that combines tools to aggregate data from existing platforms and marketplaces, connects to specifically installed infrastructures, such as sensors, tracking labels and allows for the integration of open data. More information about it can be found on D2.6 - Multi-Platform Release of REFLOW OS for Cloud and Embedded Infrastructure on the [REFLOW knowledge hub page](#).

²⁴ "REFLOW Knowledge Hub" available at <https://reflowproject.eu/knowledge-hub/>

aspects to drive the systemic changes to transform the current economic model. By showing the impacts of the circular economy in every stage of the product's life cycle, stakeholders can better understand how to contribute to the production cycle.

Find more information about the REFLOW Amsterdam Booklet²⁵, a resource dedicated to addressing the environmental impact of the textile industry focusing on discarded consumer textiles.

- **Developing an international network of industry and government institutions to break through the systemic challenges of circularity**

Building a dialogue between the city council, civil society and private sector is crucial to identify the main regulatory and legal barriers as well as the sectors where actions can be taken.

More information about the pilot involvement in the Denim Deal can be found on the REFLOW Knowledge Hub page, under D1.4 - Validation and performance evaluation.

Sources consulted or recommended

The content presented is based on the following key project deliverables and REFLOW resources: D1.3 The Reflow Framework, D1.4 Validation and Performance Evaluation; D4.1 The Reflow Handbook; D4.2, D4.3 and D4.4 The Reflow Collaborative Governance Toolkit (versions beta, v1.0 and v1.1); D5.1 The Detailed Pilot Planning and Evaluation Framework; D5.3 City Ecosystem Design, D5.4 REFLOW OS Pilot Applications Development and Testing

City Case “REFLOW pilot city Vejle”

Empowering citizens as “change makers” towards solutions for “circular plastics”

Summary

The REFLOW pilot city Vejle (“pilot”) has focused on designing new sustainable solutions to reduce the need for plastic while co-creating circular strategies for plastic upcycling and recycling. Together with local stakeholders (citizens, public and private sectors), the pilot dived into micro-scale testing. Targeted experimentations, workshops, and engagement sessions were carried out with a mission to demonstrate how circular innovations applied to plastics can unlock multiple circular opportunities. The pilot supported the development of new business models, increased environmental awareness - at both production and consumption levels, and strengthened better services and products through public-private collaborations.

Background context

Over the past years, there has been a consistent increase in the use of plastics. Plastic pollution became an environmental challenge for society and the planet. Many strategies and incentives have been put in place to reduce its consumption. In December 2015, the European Commission adopted an EU Action Plan²⁶ for a circular economy, identifying plastics as a key priority and committed to devising a strategy to address the challenges

²⁵ “REFLOW Amsterdam Booklet” available at https://waag.org/sites/waag/files/2021-09/Reflow_booklet_total-compressed.pdf

²⁶ “European Union Circular Economy Action Plan” available at https://ec.europa.eu/environment/topics/circular-economy/first-circular-economy-action-plan_en#ecl-inpage-937

posed by plastics throughout the value chain, taking their entire life cycle into account.

At local levels, more effective legislation becomes necessary to improve waste management systems, and thus, facilitate higher waste collection and recycling rates. With the support of enabling legislation, cities can boost participation in recycling and promote the development of a local market for recycling, supporting, for example, increased revenues from recovered materials along with addressing other social challenges.

At a broader scale, the National Strategy for Circular Economy²⁷ focuses on the need for transitioning towards a more circular economy approach in the country, opening up for an accelerated transition to new business models aimed at a rapidly growing global market for green technologies and services. With a greater focus on plastic, the National Plastics Action Plan – Plastics without waste²⁸ seeks to implement a vision of circular plastic consumption across the country implemented through 27 plastic initiatives. The national government has also published the Action Plan for Circular Economy²⁹, the National Plan for Prevention and Management of Waste 2020 – in the summer of 2021. The plan stipulates targets, indicators, policies and initiatives across the entirety of a circular value chain, with plastics pinpointed as the main focus area in the country's circular transition through reducing consumption and improving reuse and recycling of plastics. Moreover, the Danish government has established the Partnership for Green Public Procurement³⁰, which is a collaborative effort of public organisations that are committed to making extra efforts in partnership with other organisations to reduce their environmental impact from their procurement actions and drive the market in a greener direction.

The way plastics are currently produced, used and discarded fails to capture the economic benefits of a more 'circular' approach and harms the environment. The plastic generation has grown significantly over the last decades creating the need for reducing, reusing and recycling practices. At an industrial level, input and output taxes and charges on production have been applied by governments to incentivise recycling practices behaviour. Public procurements have also been influenced by circular principles when purchasing works, goods or services in order to contribute to closed energy and material loops. However, there is a lack of economic and social instruments to incentivise sustainable behaviour at a citizen level. Active citizen participation is crucial to driving the desired changes aimed at the circular action plans. Actions such as encouraging critical thinking, boosting knowledge exchange and promoting capacity building opportunities are still little explored by policymakers.

Vejle pilot as an example of 'iterative city life'

Circular practices and enabling regulations are necessary to increase citizen participation and circularity with solid waste management. The pilot has been facilitating, through a people-centred approach, connections and knowledge exchange between civic, business

²⁷ "National Strategy for Circular Economy" available at https://circulareconomy.europa.eu/platform/sites/default/files/eng_mfvm_cirkulaer_oekonomi_as5_uk_final_web.pdf

²⁸ "National Plastics Action Plan – Plastics without waste" available at https://en.mfvm.dk/fileadmin/user_upload/ENGLISH_FVM.DK/Regeringens_plastikhandlingsplan_UK.pdf

²⁹ "Action Plan for Circular Economy" available at <https://www.en.mim.dk/media/223010/alle-faktaark-1.pdf>

³⁰ "Green Public Procurement" available at <https://eng.mst.dk/sustainability/sustainable-consumption-and-production/sustainable-procurement/partnership-for-green-public-procurement/#:~:text=The%20Partnership%20for%20Green%20Public,market%20in%20a%20greener%20direction.>

and policy levels. Citizen participation has been shown as an elemental lever to create local circular solutions that involve better sorting practices at households, markets and residential care of elderly people (i.e. the Mobile Sorting Unit, see more in the section “solutions”). In parallel to the solutions experimentation at the three micro-scale test sites, collaborative governance has also been tested as an inclusive tool for identifying barriers and prioritising opportunities through a central steering committee group.

With the support of the local steering committee group, cross-pollination strategies have been put in place across the different micro-sites in iterations. Through collaborative experimentations, the pilot performed the assessment of plastic streams, boosted the creation of partnerships between Vejle’s actors, facilitated practical workshops for prototypes development, and developed awareness campaigns around improving plastic sorting.

Local experiences by the pilot demonstrated that the ability to collaborate involves the delegation of certain tasks from formal government agencies to accredited companies, business associations or community organisations. Realistic best practices have been framed through a collective approach to support the identification and showcase solutions for increased plastic reuse, recycling, and reduction with a wide and diverse range of stakeholders.

Rationale for action on the problem

The circularity of plastic value chains often relies on behaviour change at both individual and collective levels, among citizens, communities, businesses, workplaces, or decision-makers. Thus, a vision for a circular plastics economy requires action from all players in the plastic value chain, from plastic producers and designers, through brands and retailers, to recyclers. Effective collaboration between the public sector, industry and markets can increase the possibility of citizens having active participation by the creation and implementation of circular practices. Along this process, cultural barriers should be taken into account as it frequently influences the level of engagement of certain local actors. Different stakeholders may also have different motivations for taking part in collective action. Sharing know-how and trying out innovative solutions is a challenge when the city has very heterogeneous citizen-groups or non-homogeneous practices in the city, thus, a participatory process following democratic governance is very much needed.

Proposed policy options

There is a need to change the mindset of citizens and provide them with knowledge and the right tools to increase their participation, favouring the transition from passive to active participation. Collaborations between government, public and private sectors can also provide the enabling scenario for citizens to be part of the decision making and discussion of better initiatives related to plastic reduction or reuse. The pilot has been leveraging innovation into action by connecting civil society, companies and public institutions when developing new solutions. The experimental approach being tested aims at allowing room for monitoring learning and iterations of context-based interventions. The results gathered through the different solutions being tested provide arguments to the need of improving collaboration between stakeholders to boost a smart, innovative and sustainable plastics economy, where design and production fully respect the needs of reuse, repair, and recycling.

Proposed policy opportunities based on the REFLOW journey

A multidisciplinary perspective, which combines elements of technology, capacity building behaviour change and social aspects has been put in practice by the pilot to strengthen local actors’ partnerships and activate citizen participation. The bottom-up work allowed the

co-creation of solutions across segments and social boundaries, for grounded policy recommendations. Some of the outcomes gathered over the pilot journey are:

- **Leveraging skills through hands-on educational programs to foster new business solutions**

The creation of educational programs and events can be a great strategy to promote circular practices at a local level. By providing citizens with knowledge and tools, materials and resources can be recycled and bring benefits to citizens, industry and markets.

Capacity building activities were organised and carried out by the pilot focused on biomaterials and business models calibration. Find more information on the REFLOW Knowledge Hub page, under D1.4 - Validation and performance evaluation.

- **Engaging with Fab Labs, prototyping workshops as catalysers of an inclusive circular economy**

Fab Labs and maker spaces play an important role in the circular economy through practical experimentation and a strong emphasis on business model innovation for circular economies, commons-based production and open-source practices. They are also spaces of debate, collaborative projects and solutions prototyping through the combination of technologies such as digital fabrication and recycling initiatives for increasing the reuse of materials in cities.

- **Creating awareness and behavioural change through practical incentives and prototypes that revalue the plastic waste**

Adaptive and flexible approaches opens-up for different stakeholders (consumers, micro-entrepreneurs, citizens, companies, etc) to participate, share, rent, lend, or swap goods.

The pilot worked through an extensive collaborative process with the residents of Den Gamle Gård on tackling the very practical barrier for correct waste sorting. Find more information on the REFLOW Knowledge Hub page, under D1.4 - Validation and performance evaluation.

- **Fostering circularity as a transversal topic that connects different stakeholders and departments in the municipalities**

The identification of stakeholders is a key step in any project, especially useful if they are grouped according to typologies of “know-how”. In the public sector, efficient coordination between municipal departments is key to implementing circular economy initiatives, and their interdisciplinary nature allows cities to avoid working in silos.

The pilot has created strategies for a systemic change in plastic flows with the support of a Steering Committee group.

Learn more about it on the REFLOW Collaborative Governance Toolkit, under the section ‘Toolkit in practice’³¹.

- **Transforming plastic streams in collaboration with local community and through the application of new technologies**

The development of specialised technologies can create new opportunities for

³¹ “Toolkit in practice” in REFLOW Collaborative Governance Toolkit available at <https://governance.reflowproject.eu/toolkit-in-practice>

citizens and the interaction with the cities' needs, knowledge exchange and better engagement of the local community.

The pilot has worked on the development of a value chain mapping game that helps construct an outline of the value chain in retail through gamification. Find more information about the REMA 1000's candy boxes on the REFLOW Knowledge Hub page, under D5.4 - REFLOW OS Pilot Applications Development and Testing.

Sources consulted or recommended

The content presented is based on the following key project deliverables and REFLOW resources: D1.3 The Reflow Framework, D1.4 Validation and Performance Evaluation; D4.1 The Reflow Handbook; D4.2, D4.3 and D4.4 The Reflow Collaborative Governance Toolkit (versions beta, v1.0 and v1.1); D5.1 The Detailed Pilot Planning and Evaluation Framework; D5.3 City Ecosystem Design, D5.4 REFLOW OS Pilot Applications Development and Testing

Read more

The REFLOW city pilots Vejle and Amsterdam worked closely with their citizens to develop their specific solutions. Their participatory and experimental approach has fed into an iterative process which is informative for the cities' development and potential transition to flexible urbanism. Similar movements in the London Borough Barking and Dagenham have also initiated large scale neighbourhood transitions. The following introduction of the "Every One, Every Day" initiative is yet another example of participatory, experimental and iterative city approaches.

City	Barking and Dagenham, United Kingdom
Initiative	Participatory City ³² - Every One, Every Day ³³
Description	The Participatory City Foundation is based in the London Borough of Barking and Dagenham is situated in East London and was formed in 2017. "Every, One Every Day", part of the Participatory Foundation, is a local initiative that is engaging deeply with participatory work and research on the neighbourhood scale. Their aim is to build a large-scale, fully inclusive, practical participatory ecosystem. They are currently involving a network of local people, projects and businesses. Collectively they are building opportunities for local residents to participate in practical enjoyable activities in their neighbourhood.

³² Participatory City, <http://www.participatorycity.org/>

³³ "Every One, Every Day" Initiative by Participatory City, <http://www.participatorycity.org/every-one-every-day>

Insights	<p>The initiative has a significant positive impact in the neighbourhood and has proven this through multiple qualitative research studies. Not only do the offered services and projects include capacity building activities, shared spaces and resources, it also has an impact on the qualitative lives of people. The citizens actively participate in their neighbourhood making and decide collectively the direction for further development. The neighbourhood itself has become more resilient. Comprehensive reports of the consolidated data, research findings, interviews, governance model and similar support the municipalities' evidence-based policymaking. The experimental and learning-by-doing approach, with the supportive backbone offered by the initiative itself, has inspired many other cities to start similar projects.</p>
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Relevant Tools

Additionally, this section presents the RCGT tools developed in REFLOW which were identified as supporting resources through the iterative survey described earlier in the methodology section of this document. The REFLOW cities governance models, and utilised RCGT tools for Amsterdam and Vejle are available in the Toolkit in practice section³⁴ of the REFLOW Collaborative Governance website³⁵.

The most relevant tools from the RCGT, selected for steering the transition towards “Iterative city life” are:

- **Circular challenges & opportunities**³⁶
A tool that helps collaborative brainstorming on circular challenges and opportunities, as well as their prioritisation for action.
- **Circular theory of change**³⁷
A tool that helps to define the logic concatenations and connectivity between long-term goals and impacts, outcomes, outputs and activities.
- **City portrait canvas**³⁸
This canvas helps to understand how to assess city strategies, policies, and

³⁴ <https://governance.reflowproject.eu/toolkit-in-practice>
³⁵ <https://governance.reflowproject.eu>
³⁶ Circular Challenges & Opportunities: <https://governance.reflowproject.eu/toolbox/circular-challenges-opportunities>
³⁷ Circular Theory of Change: <https://governance.reflowproject.eu/toolbox/circular-theory-of-change>
³⁸ City Portrait Canvas: <https://governance.reflowproject.eu/toolbox/city-portrait-canvas>

programmes in a holistic way, integrating environmental, social and economic, as well as local and global considerations.

- **Circular mission wave**³⁹

A tool that helps to define and visualise a mission-oriented transition to circular and regenerative cities based on a systemic and long term approach of intervention.

4.2. Policy brief (2) “open-access”

An “open-access” city encourages the idea of open and accessible information, and the possibility of engaging in interconnections, mixing strategies, methods, and people’s experiences. Open data practices, for example, enable transparency and can be used as a tool for building capacity, supporting citizens to make informed decisions. Open data in collaborative governance aims to overcome knowledge asymmetries, facilitate joint fact-finding, and enable trust-building. However, it has to be taken into account how citizens receive equal access to digital knowledge and resources. The connection to the digital sphere might be a barrier for specific groups of people, like e.g. the elderly population or people without internet access. In those cases, open-access needs to be addressed through physical means and spaces which are made available.

Physical and technological infrastructure when designed for open-source and participatory, can facilitate access to resources for collective actions, initiatives, and entrepreneurship. Apart from the positive social impact, they promote viable projects meeting the criteria of openness, reusability and transparency.

The more the sense of connection is stimulated, the more prosperous conditions for human interactions are sustained. Thus, stimulating exchange and social cohesion. Developing interconnected governance systems capable of building trust and shared visions over time help create a sensation of belonging to a systems transition.

While urban metabolism focused on cities, the concept of CE was conceived as primarily non-spatial as its focus is on the reorganisation of enterprises, sectors and the economy. Spatial planning needs to be connected to CE principles (e.g. retrofitting, material flows and management, storage, end-of-life, etc.). Designing for circularity using data-driven insights can improve environmental sustainability through efficient resource utilisation while strengthening collaboration among stakeholders. By sharing data and assessing the best practices for remanufacturing and recycling, local agents can collaboratively align circular practices across sectors to minimise waste production and enhance sustainable operations.

The involvement of local experts increases the quality of local governance through community participation. Contemporary development through the actual and active involvement of the

³⁹ Circular Mission Wave: <https://governance.reflowproject.eu/toolbox/circular-mission-wave>

community may also contribute to dismantling power asymmetries. Furthermore, it represents the diversity of local actors, collaboration across scales and engages with a holistic approach. Ultimately cognitive diversity is favourable for innovative and creative ideas.

Learn more about this scenario in practice from REFLOW city cases

City Case “REFLOW pilot city Berlin”

Stimulating citizen participation and decision making towards an energy sufficiency shift through transparent and open (municipal) data.

Summary

The REFLOW pilot city Berlin (“pilot”) is focusing on data-driven solutions towards climate-neutral heating. They envision that the extended usage and mainstreaming wastewater heat recovery will support the reduction of energy emissions. Within REFLOW, their concrete solution is a dynamic web application, created by the Berlin consortium, which offers information about the waste-heat potential in Berlin’s district. The main innovative function is the semi-automated match-making process between consumers and producers. Challenges that the Berlin pilot is facing among other things is to bridge the gap between the technological implementation, a transparent data-driven application, and the readiness of citizens. Furthermore, in connection to policy making, the Berlin pilot is relying on the support of municipal procurement, and effective/ supportive policies which make municipal data available while keeping it safe and private.

Background context

In the most recent years, Germany committed to climate neutrality by 2045⁴⁰. This goal is framing the municipality of Berlin guidelines towards a sustainable and climate protection transition. As a result, Berlin has released the Energy and Climate Protection Programme 2030⁴¹ (BEK 2030). The programme contains various strategies and measures for all significant operational fields of action in the city. Aligned with the BEK 2030 the digital monitoring and information system⁴² (diBEK) has been released. DiBEK is a framework that allows an appropriate backbone digital infrastructure to move towards sustainable city development. Furthermore, Berlin offers an accessible Programme for Sustainable Development⁴³ (BENE). Beyond that Berlin is continuously showing interest in the concept and development of Smart City. Smart City is based on connected IoT devices throughout the city which allows not only connectivity but information exchange.

Regulatory frameworks like General Data Protection Regulation 2016/679⁴⁴ are limiting the usage and processing of personal data. Public or municipal data is partially following similar outlines, which is hindering innovative and possible profitable or not-profitable initiatives and projects.

While the protection of private data is certainly important, the rigidity gives little leeway for

⁴⁰ “Germany committed to climate neutrality by 2045” More information available at:

<https://www.bundesregierung.de/breg-de/themen/klimaschutz/klimaschutzgesetz-2021-1913672>

⁴¹ “Energy and Climate Protection Programme 2030” (BEK 2030) more information available at:

<https://www.berlin.de/sen/uvk/en/climate-action/berlin-energy-and-climate-protection-programme-2030-bek-2030/>

⁴² “Digital monitoring and information system” (diBEK) more information available at: <https://dibek.berlin.de/?lang=de>

⁴³ “Programme for Sustainable Development” more information available at: <https://www.berlin.de/sen/uvk/>

⁴⁴ “General Data Protection Regulation 2016/679” more information available at:

<https://www.enisa.europa.eu/publications/privacy-and-data-protection-in-mobile-applications/@@download/fullReport>

initiatives to use municipal data for publicly available applications.

Berlin pilot as an example of 'open-access'

Berlin pilot's proposed technical solutions are focusing on the **intersection between society, economy, environment and data science**. Their addressing the cities' pathway to climate neutrality through wastewater heat recovery. However, the main barrier to realise their solution is the availability of data and the matchmaking of energy demand and supply. Through their dashboard application, the "Wastewater Heat Radar", they concretely tackle that barrier. Making data available and accessible for the general public as well as the industry. Hence, their transparent approach is aligned with the idea of "open-access" in flexible urbanism. The potential policy recommendations should enable the transparent and intersectional approach that Berlin and potential inspired cities may follow. For this, an open policy approach will be outlined. The underlying consensus is to facilitate an environment that endorses their pilot specific actions/ solutions which ultimately lead towards flexible urbanism.

Rationale for action on the problem

The implementation of alternative and sustainable energy sources relies on the availability of open data, especially when entering a highly regulated market setting with difficult-to-access data. Consequently, the collection and usage of geographical data needs to be normalised. On the one hand, profitable income based on open data by the municipality is by law forbidden. On the other hand, there are regulations on the usage of open data from the municipality on public platforms. The access to data i.e. on the public land registry is highly regulated. Hence, there is a need for favourable and practical laws for governing data, data security and privacy in their respective applications. Furthermore, shifting asymmetries in power, resources and knowledge for (collaborative) governance is needed.

Proposed policy options

The pilot Berlin is aiming to reinforce open and transparent data management and to make data publicly available for citizens. Citizens can then be invited to participate in decision-making processes to improve urban services. Open data practices in collaborative governance models help to overcome knowledge asymmetries, facilitates joint fact-finding and enables trust-building. For example, the usage of an Open Data Dashboard permits a more transparent handling of public consumption of energy. Which is a key factor in building a transparent trust climate between the public authorities and the general public.

Proposed policy opportunities based on the REFLOW journey

The insights gathered during the pilot action phase have led to some recommendations that may guide the policymaking process towards flexible urbanism. An "open-access" approach, as explained at the beginning of this policy brief, encourages not only a general attitude but also guides how processes and regulations should be encountered. The following issues are highlighted:

- **Making municipal data available and accessible to citizens**
Citizens have access to municipal and geographical data sets and information. Supporting materials may be provided on open data platforms to lower the entry levels of understanding. Communication campaigns promote and share open data practices, objectives, challenges and opportunities to a wide audience.

The Berlin pilot has applied this approach to the Wastewater Heat Radar. More

information about the pilot specific solution can be found in D5.3 City Ecosystem Design, with more detailed technological features in D5.4 REFLOW Pilot Applications. Both documents are available via the REFLOW Knowledge Hub.

- **Ensuring that data security, privacy and usage are favourable for citizen engagement**

Data made available by the municipality or organisation follows the latest security and privacy standards (i.e. according to GDPR). Simultaneously holistic assessments of city strategies were acquired and illustrated. Challenges and opportunities are equally communicated.

- **Designing processes for new regulatory frameworks to invite citizens to participate**

Citizens are placed at the centre when considering new regulations or policies. Regulative barriers are avoided by involving citizens in sharing their knowledge and expertise and inviting them to decision-making practices. The focus is on collectively building consensus on shared priorities.

More information about favourable governance models and Berlin's governance application can be found in D4.4 The REFLOW Collaborative Governance toolkit, available at the REFLOW Knowledge Hub.

Sources consulted or recommended

The content presented is based on the following key project deliverables and REFLOW resources: D1.3 The Reflow Framework, D1.4 Validation and Performance Evaluation; D4.1 The Reflow Handbook; D4.2, D4.3 and D4.4 The Reflow Collaborative Governance Toolkit (versions beta, v1.0 and v1.1); D5.1 The Detailed Pilot Planning and Evaluation Framework; D5.3 City Ecosystem Design, D5.4 REFLOW OS Pilot Applications Development and Testing

City Case “REFLOW pilot city Cluj-Napoca”

Enabling multi-stakeholder diversity and ecosystem representation, for informed decision-making processes and the alignment of local and global challenges.

Summary

The REFLOW pilot city Cluj-Napoca (“pilot”) has focused on the development of urban sustainable energy sufficiency by retrofitting, a commonly known practice in urbanism. Retrofitting is adding smart technologies or new features to reutilize existing built environments and improve performance. Innovative monitoring systems, educational models and conceptual mechanic models were combined. The solution includes a 6-part platform tool that analyses the energy efficiency of existing and planned buildings and their environment. The pilot has built a local coalition and a strong collaboration with universities, research centres, NGOs and business clusters and digital innovation ecosystem actors. Their approach follows urban governance schemes that are targeting an ecosystem of beneficiaries and integrate societal, technological and administrative dynamics. Ultimately, the pilot has worked with a diversity of stakeholders which requires baseline strategies and policy frameworks that allow and foster connected cross-disciplinary work. The pilot has built a strong local network that connects the municipality to other cities across their own national borders to further cross-pollinate innovative ideas. This approach is inspiring and is asking

for applicable policy frameworks that allow and foster connected work, rather than siloed practices.

Background context

Solutions towards an energy-efficient and sustainable transition are asking for a multidisciplinary approach that includes a variety of stakeholders. Furthermore, a transparent approach to open data of public energy consumption is beneficial for building a trusting climate between different authorities and the general public. Generally speaking, many legislations that are beyond the municipal reach. This entails that the work within the municipality has to be aligned with the national legal framework. Grassroots initiatives willing to influence complex legislation frameworks will require learning how to navigate legislation on multiple scales.

The pilot is embedded within municipal strategies (i.e. Cluj Napoca Development Strategy⁴⁵, Integrated Urban Development Strategy 2030⁴⁶) and national regulations/laws (i.e. Energy Efficiency Legislative Framework in Romania⁴⁷, Law no. 160/2016, and the National Energetic Strategy for 2030⁴⁸). The municipality is part of the Covenant of Mayors (CoM)⁴⁹ and International city network C40 initiative⁵⁰. The National Energetic Strategy for 2030 advertises energy security, sustainable development and competitiveness. The Integrated Urban Development Strategy 2030 features a variety of development plans for the city's metropolitan area transition - the planning process must be open and inclusive to identify real territorial needs.

To summarise, Cluj-Napoca is facing environmental restrictions and economic efficiency to comply with the new strategies as new renewable energy sources are resource-intensive. Furthermore, specific investment in infrastructure and collaboration across sectors (instead of siloed work) could further foster innovation. And lastly, general transparency and exchange of energy data are crucial to be considered in further actions.

Cluj-Napoca pilot as an example of 'open-access'

In the pilot Cluj-Napoca, connected working groups from different sectors were favourable to find their solution. Many areas of "action" within the pilot Cluj-Napoca are addressing the notion of accessibility. As mentioned earlier, their aim is to make the energy transition accessible for their region through retrofitting. Not to mention the accessibility of regulations and guidelines in relation to retrofitting for citizens and building developers. The information barrier to the general public needs to be surpassed to open communication lines to government actors. The gathered data on energy usage is useful for the energy transition, informing procurement and policies for the CE. The involvement of local experts, the community (civic engagement) and government actors increases the overall governance cycles. A positive attitude from organised civic and cultural sectors, in cooperation with different authorities, can be beneficial to transforming policymaking.

⁴⁵ "Cluj Napoca Development Strategy" available at

<https://clujbusiness.ro/wp-content/uploads/2016/05/Cluj-Napoca-2014-2020-Development-Strategy.pdf>

⁴⁶ "Integrated Urban Development Strategy 2030" available at

<https://urbasofia.eu/en/portfolio/sp/integrated-strategic-plan-for-the-cluj-napoca-metropolitan-area/>

⁴⁷ "Energy Efficiency Legislative Framework in Romania" available at <https://www.iea.org/countries/romania>

⁴⁸ "National Energetic Strategy for 2030", available at

<https://www.gov.ro/en/news/the-national-strategy-for-romania-s-sustainable-development-2030-has-been-formally-launched>

⁴⁹ "Covenant of Mayors" (CoM) available at <https://www.covenantofmayors.eu/>

⁵⁰ "International city network C40 initiative" available at <https://www.c40.org/>

Rationale for action on the problem

Legislation and policy regarding energy distribution are in general beyond the municipalities' reach and part of a nationwide legal regulatory framework. The combined effort of actors in the city's ecosystem needs to be activated to ensure inclusive development. For this, not only government officials but also citizens and other local organisations have to be involved in the alignment of needs and goals. The identified needs and goals essentially have to reflect the local challenges while addressing European and global (circular) development priorities. Two concrete action points need to be in place to achieve this collaborative goal. On the one side, there is a need for an effective framework that increases and supports collaborative steering and decision making processes. And on the other side, a strong civic engagement in the governance cycle is essential.

Proposed policy options

Collaboration across sectors and scales and communication between civil society and government actors can generate new forms of collaborative governance. The pilot aims to achieve this through a multi-stakeholder approach that engages a diversity of actors. This requires the support of trust-building through public-private-people alliances. Generally speaking, the involvement of local experts increases the quality of processes and local governance through community participation. Which could lead to a contemporary development through the actual and active involvement of the community. Their overarching goal is to transition to a circular economy through a decentralised approach

Proposed policy opportunities based on the REFLOW journey

The pilot has showcased that a collaborative and interconnected approach through working groups has beneficial effects on their proposed solutions. Moreover, the cross-pollination of different sectors fostered the exchange of knowledge and skills. Coherent policies possibly can further facilitate collaboration and cultivate local contextualised initiatives which support the transition.

- **Engaging in a multi-action approach**

A multi-action approach is helpful to address local innovation in the most holistic manner. This may formulate in (but not exclusive by) firstly awareness-raising actions. In the case of Cluj-Napoca, this would materialise in continuous educational programmes, initiated through REFLOW, and further elaborated after the project's lifespan. Secondly, continuous development of infrastructure (i.e. show-casing retrofitting applications and impact). Thirdly, the awareness-raising actions and infrastructure would need to continuously be (re)evaluated based on interim results and impact. And finally, collective action should lead to collaborative policymaking.

The Cluj-Napoca pilot has released a holistic and integrated set of arguments for a circular-led energy transition in Cluj-Napoca which is available via the REFLOW Knowledge Hub in the document "Cluj-Napoca Energy transition".

- **Collecting information about existing and emerging initiatives and programmes**

At the initial stage a stakeholder mapping activity provides an overview of local bottom-up initiatives. This map can be continuously filled in by stakeholders. Furthermore, the mapping out of existing governance and organisational arrangements helps to navigate the political terrain in which will be worked in. It gives insights into people's visions, motivations, skill sets, working cultures, and existing

tools for collaboration and knowledge exchange.

At the second stage, other methods like backcasting may showcase in more detail connectivity and leverage points. The relational network involves the implementation of circular actions and spots pathways for action and decision-making. Throughout the whole process, it is generally recommended to continuously monitor existing and emerging city 'concepts' in response to the major challenges of sustainable urban development.

More information about the pilot's approach to ecosystem mapping can be found in the REFLOW Knowledge Hub, under D5.3 City Ecosystem Design.

- **Supporting interconnected governance experiments**

Based on the cities' visions and established activities, the “portfolio approach” identifies tailored governance experiments across different horizons of time. By continuously evaluating ongoing operations, strategies and potential impacts, a series of distributed assets and resources are used to fill gaps and help cities to achieve local systemic changes. In specific, it encompasses a combination of desk research, online focus groups and semi-structured interviews with different key actors and stakeholders of the city.

More information about the portfolio approach can be found on the REFLOW blog about REFLOW Collaborative Governance Toolkit⁵¹.

- **Facilitating across sectors and scales for multi-level collaboration**

Opportunities for concrete collaboration agreements are identified through the initial mapping exercise. The identified opportunities should connect a diversity of actors and support mutually beneficial arrangements. Matchmaking events and networking activities further foster connections. In addition to that, the activities from the professional sectors can be connected with existing educational programmes to further cross-fertilize knowledge and skill. Online and offline platforms such as interdisciplinary co-working spaces offer additional space for learning and collaboration.

More information about the educational programme “Master of Arts (M.A.) Course on Circular Economy” the “Educational Kit for Schools” and other types of cross-sector solutions which Cluj-Napoca has implemented can be found at REFLOW Knowledge Hub, under D1.4 Validation and Performance Evaluation.

Sources consulted or recommended

The content presented is based on the following key project deliverables and REFLOW resources: D1.3 The Reflow Framework, D1.4 Validation and Performance Evaluation; D4.1 The Reflow Handbook; D4.2, D4.3 and D4.4 The Reflow Collaborative Governance Toolkit (versions beta, v1.0 and v1.1); D5.1 The Detailed Pilot Planning and Evaluation Framework; D5.3 City Ecosystem Design, D5.4 REFLOW OS Pilot Applications Development and Testing

⁵¹ “REFLOW Collaborative Governance Toolkit” available at <https://reflowproject.eu/blog/collaborative-governance-as-infrastructuring/>

Read more

The above mentioned case studies exemplify in practice the “open-access” approach and provide initial policy briefs which can support the transition towards flexible urbanism. Other cities in Europe like Barcelona in Spain or Warsaw in Poland share a similar ethos and align with the idea of flexible urbanism. This section will give a brief introduction to two initiatives of each of the cities which may serve as further inspiration.

City	Barcelona, Spain
Initiative	Making Sense⁵² - Advances and experiments in participatory sensing This project has been co-funded by the European Commission within the Call H2020 ICT2015 Research and Innovation action. The grant agreement number is 688620.
Description	The Making Sense project empowered citizens through personal digital manufacturing, co-designing and deploying of environmental sensors. At Plaça del Sol is a town square in Barcelona, Spain they have focused on participatory sensing. Historically the residents around the town square Plaça del Sol experience loud noises of people consuming alcohol into the early hours of the morning. The local Making Sense team collaboratively worked with the neighbourhood association of the Plaça del Sol to address the issue. They have researched and measured noise levels around the plaça. Based on their research they proposed solutions to improve the situation.
Insights	Citizens were engaged in participatory sensing activities and Plaça de Sol. Their common interest in improving the status quo has supported their engagement. The initiative focused on building capacity within citizens to read and understand

⁵² Making Sense aims to explore how open source software, open source hardware, digital maker practices and open design can be effectively used by local communities to fabricate their own sensing tools, make sense of their environments and address pressing environmental problems in air, water, soil and sound pollution. More information about the project is available via their website: <http://making-sense.eu/about/>

	<p>environmental data. Based on the collective insights gathered the citizens could make more informed decisions and forward the insightful data to the municipality with a demand to regulate the noise caused by the consumption of alcohol at the town place. The city has answered the citizens' call with regulations that are being reinforced by police if necessary. The noise level at Plaża de Sol significantly dropped and the overall sense of the communal space was reestablished.</p>
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City	Warsaw, Poland
Initiative	Warsaw a Smart City - Smart Governance ⁵³
Description	The city of Warsaw is implementing a Smart Governance system as part of their Warsaw 2030 strategy and interest in becoming a Smart City. To become a Smart City they have identified six key areas, one of which is Smart Governance. To facilitate the organisation and integration the city aims to implement effective mechanisms for decision making along with new technological infrastructures.
Insights	Warsaw's ambition for coherent solutions in a smart city is enabled by cooperation. On the one side information of city data (electricity, water, air quality and waste) is being made accessible and on the other side interoperability of IT systems is essential. The municipality focuses on identifying challenges, environmental conditions and also forecast trends to prevent unfavourable conditions. Concrete solutions are smart automated interfaces for information access, smart hotlines and virtual services for residents and systems for analysing the residents' mobility. All of which feed into local development strategies.

Relevant Tools

⁵³ "Smart Governance" by Warsaw Smart City, more information available at <https://pawilonzodiak.pl/wp-content/uploads/2018/10/warsaw-towards-smart-city-april-2018.pdf>

Additionally, this section presents the RCGT tools developed in REFLOW which were identified as supporting resources through the iterative survey described earlier in the methodology section of this document. The REFLOW cities governance models, as well as the RCGT tools utilised in the process, for Berlin and Cluj-Napoca are available in the Toolkit in practice section of the REFLOW Collaborative Governance Toolkit website⁵⁴.

The most relevant RCGT tools selected for facilitating a transition towards “open-access” cities are:

- **Matrix of circular collaboration**⁵⁵
A tool that facilitates coordination, matchmaking and collaboration across different circular projects and initiatives.
- **Circular Experiment Canvas**⁵⁶
A tool that helps teams in designing the key characteristics of a circular experiment and to carry them forward into iterative cycles, towards a more detailed delivery plan.
- **Circular Experiment Deployment Canvas**⁵⁷
A tool that helps teams in defining, planning and resourcing a circular experiment towards impact.

4.3. Policy brief (3) “commons-based and polycentric”

A “commons-based and polycentric” city fosters the notion of collaborative decision making, distribution of power, and commoning of resources. Sharing resources is more resource-efficient, suggests collective responsibility and gives equal rights to access those resources to each of the participants while optimising financial and human efforts towards a common goal.

A “citizen engagement work” formally enables co-creating solutions that promote integration and collectivism, stimulates the creation of possible new circular (multidimensional and weighted) metrics that can support cities to increment their capability to design circularity actions in a more granular way - closer to citizens and their behaviours transformation.

On the other hand, *polycentricity* is a co-created distributed governance system that includes multiple “governing” entities, actively interacting to make and enforce ways of exchanging within a specific policy arena or location (which is not always efficient - e.g. see Ostrom, 1999)

Nowadays, in urban and peri-urban areas, such interactions can be facilitated and documented by open digital civic infrastructure. In the case of polycentric peri-urban areas, access to digital resources and knowledge may support distributed models such as on-demand transportation systems, a distributed energy grid with several generation sources, or access to itinerant public

⁵⁴ <https://governance.reflowproject.eu>

⁵⁵ Matrix for Circular Collaboration: <https://governance.reflowproject.eu/toolbox/matrix-of-circular-collaboration>

⁵⁶ Circular Experiment Canvas: <https://governance.reflowproject.eu/toolbox/circular-experiment-canvas>

⁵⁷ Circular Experiment Deployment Canvas:
<https://governance.reflowproject.eu/toolbox/circular-experiment-deployment-canvas>

services. Nevertheless, the digital divide, especially among elder population, needs to be taken into account. And non-digital knowledge and infrastructure must complement the “smart” approach both in urban and rural areas (where most elder residents live). The discussion about the digital divide refers to the gap between people who have access to modern information and communications technology and those who do not. Inclusive digitisation processes reinforces the need of giving all citizens equal access to digital knowledge and resources.

Advancing inclusive models in cities - the idea of "commoning of resources", work across sectors, putting interdisciplinarity as a key feature for their urban and social development agendas. Such an approach provides a more holistic interpretation of the urban environment, allowing a systematic view of problems and objectives. There are new models being experimented with (community land trusts, long-term land leases, co-housing initiatives, etc.) as new forms of community and public partnerships. Such agendas include re-invention and re-use of old spaces, sharing ownership with the communities - facilitating social use of the land, challenging spatial planners and designers. These are all means to enable and empower agents, people and organisations, willing to include aspects of materiality (resources) and more circular flows into their daily practice; thus moving towards conscious actions, positive governance outcomes.

Commons-based production is accomplished by communities who work for mutual and collective benefit under the principles of participation and shared governance, resulting in collective property and open access resources and services. By understanding the city as a shared resource, all inhabitants become productive individuals, co-constructing the various commons that fit their passions, skills and needs.

The active participation of citizens in decision-making processes allows cities to be constantly reshaped to respond to real changes, which reinforces the need for a governance structure that is capable of doing the same. In this sense, new policies should assist in promoting neighbourhoods as territories to bring their economies and other related sectors closer, for example promoting a polycentric network of open manufacturing spaces, such as fab labs, makerspaces, libraries, community centres and other municipal bodies focusing on economic recovery, reuse and recycling. Testing a multistakeholder approach in these innovative hubs collaboratively with decision-makers and the municipality representatives helps value existing connections across different groups of actors “makers” of the cities' vision — a more balanced decision making.

Learn more from this scenario in practice with REFLOW city cases

City Case “REFLOW pilot city Paris”

Towards improved polycentric governance for increasing circularity of timber and wood flows

Summary

The REFLOW pilot city Paris (“pilot”) focuses on timber and wood used in the event and temporary construction industry in the city. The pilot project sets out to quantify and qualify

the waste material flows generated from events and temporary structures through the development of new business models and digital tools to facilitate the reuse of wood materials and products and to accelerate the transition of these sectors towards circular models.

Paris is one of the world's most attractive destinations for both tourists and international professional meetings. As a consequence, a high number of temporary events are held each year which leads to the production of a large amount of wood waste, as many materials are often seen as one-time use.

The implementation of adequate strategies for circular wood waste management becomes even more challenging with the weak cooperation, common arrangements and coordination among the private sector and municipal department across different levels of government. The inefficiency of wood waste management practices is intensified with the gap in knowledge between actors involved in circular economics, actors involved in the decision-making and actors in the making processes. Consequently, the circular economy vision is sorely lacking technical and human resources at the municipal level, to enable its connection to already existing strategies. In addition, this situation has led to an empty field with regards to open technological solutions to track and trace materials, which are becoming more and more essential in the circular economy, for certification but also for visibility.

Background context

Paris city has been developing its strategy towards a circular economy, focusing on the production of a “sustainable, cohesive, responsible and resilient city” (Paris City Council, 2020). The initiatives already undertaken by the city include plans for climate and energy, local urban planning, urban agriculture development, local waste prevention, sustainable food, and various circular economy practices (Paris City Council, 2017). The Circular Economy Plan, developed by the City of Paris and local authorities of the Paris Region, reveals the most pressing circular economy challenges for the city and focuses on the territorial innovation approach in order to improve well-being and promote sustainable local development. The municipality has also been implementing actions across its different departments for boosting materials' circularity. The DILT (the Real estate, Logistics and Transport Department) has set up a reuse platform for office equipment of the Paris administration while the DCPA (Department of Public Buildings and Architecture) has been promoting the reuse of building materials on pilot sites and standardised its purchasing procedures to encourage the use of reuse. Another important international event has been pushing the public sector towards taking actions for improving waste management in the city, the upcoming Olympic Games to be held in 2024. One of its influences, for example, was the French parliament's bill to promote the circular use of wood in construction, placing timber and other natural materials into the spotlight. Moreover, the use of timber in the construction sector and bio-sourced materials is stated as a key development area in the 'Grenelle de l'environnement'. The Grenelle Environment sets forth a committed plan of action to tackle environmental challenges and to pursue sustainable development in France.

Inadequate regulatory framework and incoherent regulation across levels of government represent a challenge for the circular economy. Policymakers can design coherent policies for materials reuse and recycling through better coordination across policy communities but also involving the private sector and the society in providing data on materials. Documenting and quantifying potential opportunities or trade-offs for materials reuse and upcycling is a crucial step. Where synergies are found, one policy instrument will rarely be sufficient to

meet all objectives; rather, a mix of instruments is usually needed, including technological solutions, logistical improvements (transport and storage of materials, for example) and incentives for innovative circular business models.

Paris pilot as an example of 'Commons-based and polycentric'

The pilot has worked on creating new opportunities for the use and reuse of materials involved in the event and temporary structure sectors. Technological solutions and robust business models have been developed and tested by the pilot to strengthen the collaboration among agents such as designers, event planners, site managers, and waste management companies of various scales.

Commons-based strategies have been created to foster a circular management of wood waste produced from events and temporary construction taking place in the city. These strategies include practices that require the engagement of events and temporary architecture actors, fab labs and maker spaces, wood workshops and designers, incubated companies, and reuse resource centres. In this sense, behavioural and logistical challenges were taken into consideration by the pilot to develop resources that foster a collaborative transition to manage wood waste, such as protocols for improving sorting and collection in events and the creation of a best practice guide on how to use and reuse materials.

By exploring mechanisms connected to collaborative learning, efficient monitoring systems, and transdisciplinary knowledge, the local team strives to optimise circular systems in the Parisian timber industry to tackle the problems of urban and peri-urban areas.

Rationale for action on the problem

The scattered management of timber waste in big cities is often caused by a combination of several key factors that range from the lack of technological solutions, the rigid and outdated business models, and lack of appropriate processes and knowledge of conventional actors. Steering the transition to circular and regenerative cities may rely on networked local organisations agreeing on a certain necessity (i.e. as for having a common space, such as the Fab City Hub Paris, a place for exchange and reflection, dedicated to the major issues of the resilient and productive city, including food production, urban agriculture, transitional urbanism, inclusive territories, circular economy). This sort of articulation requires flexible governance structures and common goals.

Proposed policy options

The pilot has been creating opportunities to facilitate connections between the civic, business and political levels, and thus, develop aligned arguments for showing the potential of a circular and regenerative city model. The actions aim at achieving results at a global scale, testing governance dynamics and international cooperation to collaborative conceptualise regulatory processes for identified challenges, and at a local scale, aligning multiple actors across sectors for a collaborative governance approach.

Proposed policy opportunities based on the REFLOW journey

The pilot has demonstrated that a systemic change towards circularity requires a combination of top-down and bottom-up approaches to governance. Certain enablers need to be in place in order to move towards a model of a polycentric and commons-based city, including the development of effective policies and the implementation of circular business models. Under this approach, in which a city is understood as a shared resource and all inhabitants are productive individuals, Paris Pilot tested different strategies to improve the circular economy within the timber industry by enabling public and private interactions.

Through the experimentation journey, the local team worked on strategies for harnessing the

potential of the platform and sharing-based models to boost the creation of circular protocols and a set of digital tools to reduce waste, strengthen trust-based relationships and promote social innovation.

- **Strengthening technological innovation and iterative process for open data**

Innovation mechanisms, such as material passports and tracking systems, have the potential to favour circular production practices, since they allow access to information by many types of stakeholders along a product's value chain. By filling a market gap with reliable material information, different producers and manufacturers become part of an active user network that supports more circular and regenerative city models. Technological solutions that connect iterative processes with open data practices have the potential to encourage product designs, material recovery systems, and chain of possession partnerships that improve the quality, value, and security of material supply. In this way, materials can be reused in continuous or closed loops or returned beneficially to biological systems.

Dimension-use, developed by WAO Architecture⁵⁸incubated at Driven in partnership with the pilot, is a semi-automated scanner for different materials aimed at creating new standards of reused materials information. Find more information about it on the REFLOW Knowledge Hub page, under D5.4 - REFLOW OS Pilot Applications Development and Testing.

- **Meeting circular economy goals through innovative business models**

Circular business models represent key activities necessary for the transition to a more resource-efficient and circular economy. However, the environmental outcomes of different models may depend on their market penetration. The emergence of enabling technologies, combined with more favourable consumption practices may drive greater market adoption of these innovations.

- **Fostering new ways of interacting and connecting materials, skills and people**

It is increasingly necessary to design and implement tools to connect local manufacturers, share data on materials, and thus enable local actors to adhere to circular economy practices. Through the exchange of information, interests, and skills, local manufacturers, designers, and fabricators can drive opportunities to create more sustainable products and services. The use of certificates on products containing information to understand their defined characteristics can be a great ally to facilitate the exchange of information, allowing recovery and reuse of materials by different users.

Re-Label is a platform developed by the pilot that offers a set of tools and services to local makers to better valorize their work, reduce the generation of waste and increase the reuse of wood scraps. More information can be found on the REFLOW Knowledge Hub page, under D5.4 - REFLOW OS Pilot Applications Development and Testing and under D5.3 - City Ecosystem Design.

Sources consulted or recommended

The content presented is based on the following key project deliverables and REFLOW resources: D1.3 The Reflow Framework, D1.4 Validation and Performance Evaluation; D4.1 The Reflow Handbook; D4.2, D4.3 and D4.4 The Reflow Collaborative Governance Toolkit (versions beta, v1.0 and v1.1); D5.1 The Detailed Pilot Planning and Evaluation Framework;

⁵⁸ <https://wao.paris/>

D5.3 City Ecosystem Design, D5.4 REFLOW OS Pilot Applications Development and Testing.

City Case “REFLOW pilot city Milan”

Commoning of material and immaterial resources and collectively determining the rules collaborative governing structures for circular value flows in the food system.

Summary

The REFLOW pilot city Milan's (“pilot”) objective is to provide circular and long-term technological solutions to transition to a circular agri-food system. In particular, they focus on “Circular Markets” including logistics, transportation, transformation, distribution and conservation of food and its value chain. The aim is to enable the circular agri-food ecosystem by connecting local peri-urban agricultural areas with municipal markets through innovative means.

To this date, Milan has engaged with a Sharing City⁵⁹ approach and likewise, the Milan pilot in Reflow started early to approach their governance model “shared” with many actors of the food ecosystem. Circular tech solutions in the food production and transformation ecosystem are affected by and contribute to a variety of ecosystem actors. The approach engaged and included the different voices, opinions, expertise and challenges in their innovation process. However, the diversity of challenges that have emerged needs a governance model which is connecting the different actors, agreeing on operative norms of the shared governance and enables sustainable stewardship of resources.

Background context

The Municipality of Milan is putting strong attention to co-creation practices with citizens. They leverage sharing and collaborative practices to forward socio-economic innovation. In 2014, the Municipality of Milan collectively composed the Milan Sharing City⁶⁰ document. This document outlines a collaborative shared ecosystem to develop an inclusive and sustainable shared economy. On a regional level, the Milano Metropoli Rurale Agreement⁶¹ (AQST) and the Milan Food Policy⁶² (MFP) sets out a strong political code of conduct. Part of the MFP is a forward-thinking project which address (i.e. food waste reduction spaces like Local Food Waste Hubs⁶³). Alongside these regional agreements, there is Waste Tax / Waste Tax Reduction (TARI), the Regeneration of Covered Municipal Markets and Milan Waste Management System⁶⁴ that frame the policy context of Milan. The new Air Quality and Climate Plan⁶⁵ (AQCP) Governance, as well as the monitoring/evaluation of it, includes,

⁵⁹ Sharing Cities is an international smart cities project addressing urban challenges such as energy use, low carbon transport and buildings, and harnessing data for the good of the city. <https://sharingcities.eu/>

⁶⁰ “Milan Sharing City” Document available at: <https://anyflip.com/zerr/kusu/>

⁶¹ “Milano Metropoli Rurale Agreement” (AQST) more information available at:

<https://www.milanometropolirurale.regione.lombardia.it/wps/portal/site/milanometropolirurale/english>

⁶² “Milan Food Policy” (MFP) more information available at: <https://www.milanurbanfoodpolicypact.org/>

⁶³ Milan’s “Local Food Waste Hubs” more information available at:

https://www.milanurbanfoodpolicypact.org/wp-content/uploads/2020/12/FW-Milan_2019.pdf

⁶⁴ “Milan Waste Management System” more information available at:

<https://www.municipalwasteurope.eu/sites/default/files/6.Danilo%20Vismara.pdf>

⁶⁵ “Air Quality and Climate Plan” (AQCP) more information available at:

<https://www.comune.milano.it/piano-aria-clima>

among the Municipality and other players, citizens' participation. Specifically, Section 5 of the AQCP regards the contribution of citizens to decarbonization targets. This means citizens' engagement is already embedded in the policy cycle.

In 2020, in full Covid-19 pandemic, the Municipality of Milan launched an open document to the city's contribution - called "Milan 2020 Adaptation strategy"⁶⁶ - to explore the scenario of the restart of the Municipality of Milan after the Covid19 epidemic emergency and set out some immediate actions or actions to be planned for the management of the "new normal". Among the other objectives on which the Administration has collected ideas and operational proposals, that of relaunching local production, promoting the development of new integrated short supply chains and the management of resources and devices according to the principles of circular economy, starting from the reduction of food waste as a solution to reduce social inequalities and environmental impact.

In the past, appropriate policy measures for safety and traceability have failed to be sufficiently implemented. There is only limited coherence of labelling, which makes traceability in transportation more challenging. Regulations such as Certification of Good Manufacturing Practice⁶⁷ and near-zero tolerance for contaminants are generally speaking good measures, however, give little space for experimentation with alternative reproductive methods. Additionally, there are restrictive provisions that limit the donation (N. 166/2016), distribution and re-use of food products which would limit food waste (N. 1069/2009).

Milan pilot as an example of 'Commons-based and polycentric'

In the case of Milan, the focus of the policy briefs go beyond the known restrictions through provisions and regulations in regard to circular food and agriculture production. The Milan pilot has received positive feedback on their collaborative organisational approach. Their proposed solutions initiated a collective monitoring and communication system, which lays the groundwork for a decentralised monitoring system in the municipal market environment. The management of resources is moving towards a commons-based approach through registering wasted products and re-directing them to other shops and citizens. Collectively they can align on agreements, rules of conduct, procedures. They can build on top of their already existing approach and the sharing city initiation and enable the network of markets within Milan to engage in a polycentric structure. The following subsections will showcase not only challenges and goals concerning circular food production but will also elaborate on policy opportunities.

Rationale for action on the problem

There is a general need to reduce food waste which can only be enabled by engaging with various actors. Various elements play an important factor to enable circular value flow. For instance, a general understanding and agreement on rules of conduct and procedures in relationship to collaboratively govern food production and transformation are needed. These procedures need collective and decentralised monitoring processes. The data generated

⁶⁶ "Milan 2020 Adaptation Strategy" more information available at: <https://www.comune.milano.it/documents/20126/7117896/Milano+2020.+Adaptation+strategy.pdf/d11a0983-6ce5-5385-d173-efcc28b45413?t=1589366192908>

⁶⁷ "Certification of Good Manufacturing Practice" more information available at <https://www.who.int/teams/health-product-and-policy-standards/standards-and-specifications/gmp>

through monitoring processes need to be traceable along the value chain. The dismantling of current myths of private ownership against community property and management are favourable. The overall heterogeneity of market waste management, increase of costs of raw materials and transportation-related expenses set further challenges for successful implementation.

Proposed policy options

The pilot is wanting to foster mutual coordination of governance units and aim to shift towards PITO to DIDO⁶⁸ model. Viable governance modes are needed for a shift towards a DIDO model in which local material and data flow increase. Aligned with the governing aspects of the initiative the pilot also aims to embrace site-specific mitigation options of multiple actors. Furthermore, an increased mechanism for experimentation would be favourable for development. Combined with the reinvestment in preservation or re-circulation or resource they would enable a sustainable transition to common resources.

Proposed policy opportunities based on the REFLOW journey

The focus of the policy brief, based on the Milan pilot's existing expertise and experimentation throughout the REFLOW project, is a suggestion to support polycentric governance. Milan has showcased that their local collaborative governance has positive impacts on the circular transition in the food sector. But has also showcased current challenges which have to be overcome. In general, the formalisation of strategic governance partnerships with clear roles is favourable. The challenges, responsibilities and implementation is shared across the ecosystem actors. Following are three recommendations that aid polycentric governance to transition towards flexible urbanism.

- **Mapping and analysing resources and societal structures**

An initial ecosystem analysis gives an overview of resources, primary and secondary ecosystem actors and stakeholders. Map and urban metabolism measurement of the city support the local teams in devising interventions that best address the unique context, challenges, and opportunities of their city. The results of the metabolism flow analysis can be distributed and communicated through (i.e. public exhibitions). The purpose of this analysis is also to identify possible stakeholders along the value chain. Mapping is a continuous strategy that is a "living document" that can include existing skills, knowledge, thematic interests. This may influence or feed into innovative partnerships or peer capacity building. Emerging actors contribute to the commonly defined problem focus and engage in different levels of collaborative governance. Furthermore, another layer of the mapping exercise includes city strategies, policies and programmes.

An extensive ecosystem network and resource mapping has led to one of the pilot solutions "Milano Prima-Seconda". Milano Prima-Seconda is a matchmaking system. Based on identified flows it tracks food surpluses and allows the users to create new value chains. The pilot solution can be found in D1.4 Validation and performance evaluation, a detailed technological explanation is featured in D5.4 REFLOW Pilot Applications. Both documents are available via the REFLOW Knowledge Hub.

⁶⁸ I.e. as in Fab City - it builds on the ideals of the Fab Lab such as connectivity, culture, glocalism and creativity, and scales it to the City. It implements the logic 'from bits to atoms' at the urban scale using the model: PITO (Product In Trash Out) to DIDO (Data In Data Out).

- **Connecting across levels and scales to establish collaboration**

Actors from small to large scale, from urban to regional levels should explicitly be incorporated into the governance model. This approach takes into account the diversity of contexts, affect, responsibilities and motivation which is crucial to take into consideration when engaging with holistic transitions. The facilitation of an effective representation of all stakeholders is a continuous process. The collaboration across levels and scales improves connectivity and allows a more flexible and responsive approach.

The Milan pilot has developed a solution called “BOTTO” which addresses the collaboration and communication across actors in the food ecosystem in municipal markets. BOTTO is a communication device that can be used across wholesalers. More information can be found at the REFLOW Knowledge Hub page under D5.4 - REFLOW OS Pilot Applications Development and Testing and under D5.3 - City Ecosystem Design.

- **Arranging governance vision, roles and responsibilities**

The involved participants agree together on a governance vision. This vision includes but is not limited to status quo, long- mid- and short term goals, partnership agreements, procedures for decision making. Here the actors create space (digitally and/or physically) that gives equal voice to all. Additionally, the creation of a monitoring and evaluation framework helps to track change over time. The initial establishment of such documents is crucial to continuously be aligned or revisit the collaborative vision of the initiative. Ultimately, the collaborations can be formalised in public-commons partnerships. The information generated is shared with wider audiences to keep citizens informed and engage them in peer-learning and knowledge exchange (i.e through co-creation workshops, surveys and hackathons).

Sources consulted or recommended

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Read more

Both the Milan and Paris cases demonstrate commoning and polycentricity as a pathway towards flexible urbanism. Similarly, cities like Ghent are dedicating their strategies to more holistic interconnected approaches. The following section outlines Ghent's initiative to deploy a city as a common.

City	Ghent
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Initiative	City as a common ⁶⁹
Description	The city of Ghent has a variety of established commons-based initiatives which are supported by the city administration. The policy Gent en Garde aims to strengthen food supply chains, increase sustainable production and consumption. Furthermore, the policy addresses the accessibility of food and encourages the decrease of food waste. Prominent is the city's established Food Council. The Food Council has regular meetings in place in which their collaboration contributes to new food-related policy proposals.
Insights	The municipality has created together with the citizens a nurturing environment. Over 500 commons-oriented initiatives with focuses ranging from mobility, shelter to food are actively working towards a socio-ecological transition in Ghent. The Food Council "food working groups" enable the food transition through closely working with grassroots initiatives. The municipality furthermore supports community groups by making the temporary use of vacant land and abandoned buildings accessible. These productive communities are based on the "open contribution" principle and are working towards urban resilience.

Relevant Tools

The RCGT tools developed which were identified through the iterative survey that mostly contribute to the governance approach of Paris and Milan are listed below. Additionally, the governance models for Milan and Paris are available at the toolkit in practice⁷⁰ section of the REFLOW Collaborative Governance website⁷¹.

The RCGT tools selected as mostly relevant for facilitating a transition towards a "commons-based and polycentric" city are:

⁶⁹ From "A commons transition plan for the city of Ghent", by Michel Bauwens (P2P Foundation, research) and Yurek Onzia (project coordination), 2017, more information available at "Commons Transition" via:

<https://commonstransition.org/commons-transition-plan-city-ghent/>

⁷⁰ <https://governance.reflowproject.eu/toolkit-in-practice>

⁷¹ <https://governance.reflowproject.eu/>

- **Circular team**⁷²
A combination of tools that support the definition of circular teams and the overall decision-making path.
- **Matrix of circular collaboration**
A tool that facilitates coordination, matchmaking and collaboration across different circular projects and initiatives.
- **City portrait canvas**
This canvas helps to understand how to assess city strategies, policies, and programmes in a holistic way, integrating environmental, social and economic, as well as local and global considerations.

5. Conclusion and Final considerations

We are aware that a transition to circular economy requires transformations at multiple scales and involves many and diverse actors. A systemic change requires both a change in individual behaviours and habitual patterns, but also strategic planning at a (inter-)governmental level, or EU policy plans such as the Green Deal and the New European Bauhaus.

REFLOW pilot cities cases have shown multiple ways for how collaborative governance may contribute towards flexible urbanism: **REFLOW pilot city Vejle** is empowering citizens as “change makers” towards solutions for “circular plastics”; **REFLOW pilot city Amsterdam** is boosting circularity within the textile sector by inducing behavioural change and providing feedstock for the recycling industries; **REFLOW pilot city Berlin** is stimulating citizen participation and decision making towards an energy sufficiency shift through transparent and open (municipal) data; **REFLOW pilot city Cluj-Napoca** is enabling multi-stakeholder diversity and ecosystem representation, for informed decision making processes and the alignment of local and global challenges; **REFLOW pilot city Paris** is improving polycentric governance for increasing circularity of timber and wood flows; **REFLOW pilot city Milan** is developing a commons-approach to material and immaterial resources, collectively determining the rules for collaborative governing structures and circular value flows in the food system.

With the intent to overcome these challenges, the city cases showcase *action* towards flexible urbanism. The policy briefs show overlaps that point to a holistic and integrated approach. Policy brief (1) “iterative city life” proposes an all-encompassing approach, as a key call for action for any city, and its citizens and institutions, urging for building a less rigid urban development and a (more adaptive) model. Policy brief (2) “open-access” shows decentralised horizontal approaches, collective decision making and governing, more comprehensive frameworks which respond more flexibly to complex everyday life in a city, in comparison to rigid frameworks which often give little leeway. Finally, the Policy brief (3) “commons-based and polycentric” can be argued to be following a “city as a commons” vision.

⁷²Circular Team <https://governance.reflowproject.eu/toolbox/circular-team>

The policy brief template facilitates a practical communication format for policy making / policymakers. Furthermore, the data utilised for the city cases may also provide general audiences a glimpse on civic actions and CE grounded practices from the REFLOW project

We presented a selection of best practices emerging from the six city cases involved in REFLOW, and beyond, and made concrete contributions for inspiring policies building from pilots' local initiatives. It may as well potentially contribute to current EU policy, such as the New European Bauhaus or the EU Green Deal. The compilation of reflections from circular communities of practice calls for the importance of "unlearning" and learning new ways to manage urban/spatial planning through an inclusive and shared approach.

This deliverable highlights the right of all citizens to inhabit, use, produce, govern and enjoy inclusive, safe and sustainable cities. Stemming from the findings of the policy briefs' cases, in summary, the common challenges faced by the pilot cities are the following: inadequate regulatory frameworks, lack of transparency (access of information), lack of open data practices, (democratic) governance structures and the need for a behavioural change.

We argue (and have demonstrated with concrete examples) that a flexible urbanism is iterative, open-access, and the "commoning of resources"; being more commons-based and polycentric, holds the potential to contribute to such challenges.

Relevance to other cities and scalability

We hope that the learnings from the REFLOW city cases serve as inspiration not only for the other project's cities, but also for sister projects and beyond. The cases have shown tested practices and their learnings have been transformed into tangible applicable solutions (e.g. The Milan pilot has transformed its learnings into policy recommendations to put in place a legally binding framework that strengthens the transition to a circular economy).

Final considerations

Flexible urbanism insights advocates the promotion of common goods essential for a fulfilling life. It is a matter of spatial justice, which embraces elements such as bottom-up practices. These practices contribute to the promotion of approaches that empower citizens to become changemakers, engaging in active citizenship.

Unfolding such a change process was facilitated by translating localised innovation action (e.g. the city cases demonstrated solutions) as *inspiration* for policy proposals. Touching aspects such as citizen engagement, open tech solutions, capacity building are at the heart of the importance of building the urban/spatial transformation from the bottom-up.

Subsequently, there is participation and cooperation among the different actors in the chain. From this collaboration between active citizens that care about "their" cities' development (rights for civic and political participation) certain niche dissemination strategies may occur: e.g.

targeting already existing innovation communities, such as, Fab Labs and maker spaces, as catalysts for an open, sustainable and inclusive economy.

Replicability

Furthermore, in order to increase its replicability and impact, the content of this deliverable will be transformed into a Gitbook, an open source and iterative online tool. The gitbook will be licensed under Creative Commons Attribution Share Alike 4.0 International which allows the content to be accessed, remixed and reshared by anyone, for free.

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