



Urban Planning and design ready for 2030

## **D2.1 – The 5UP approach and its contextualisation in the project cities**

### **WP2– UP-Dating**

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Abstract	The main objective of this document is to clarify the project workflow, to provide a common ground for all partners on the 5UP approach, and to offer baseline information on the thematic areas and terms of the project. The report streamlines project activities for all partners to ensure the exchange and participation of all partners in all project stages.			

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## Executive summary

The main objective of this document is to clarify the project workflow, to provide a common ground for all partners on the 5UP approach, and to offer baseline information on the thematic areas and terms of the project.

The deliverable *D2.1 Project Vision Consensus (PVC)* starts by defining the workflow of the UP2030 project aiming to bring a common understanding to all partners about the process, activities, roles, and relevance of each of their tasks and deliverables. Overall, the PVC represents the UP2030 big picture highlighting cooperation and communication across work packages (WPs) for successful project implementation.

Furthermore, this document includes a description of the 5UP approach and a reflection on the role it plays in the project and the elaboration of the *UP2030 Service Platform*. Additionally, the document presents the three thematic domains that are approached in the project and the categorization of the cities among them to elaborate visions and accelerate urban transformation towards climate-neutral and social innovative cities. The document concludes with the UP2030 cities working groups that foster interaction, exchange and streamlined support to the cities and liaisons in the execution of the project activities.

As annexes, this document provides a glossary with key terms, and a list of deliverables with interdependencies among them to improve content management in the consortium.

The process to socialise the PVC with the consortium is also explained in this document.

### Content alignment with other UP2030 deliverables

The UP2030 project fosters exchange and cooperation among partners and deliverables beyond the WPs' structure. Therefore, the content of this document has been developed in alignment with WP leaders and task leaders. The following table lists the deliverables and milestones that were input for this present document and the upcoming ones that could benefit from the content here presented.

Input from	Contributes to
<p>Task-and-deliverables simplified description</p> <p>Group and bilateral calls among WP leaders and task leaders meetings</p> <p>Experience from the partners developing the following deliverables:</p> <ul style="list-style-type: none"> <li>• D4.1 - UP2030 Implementation Plan for the Pilot Cities 1</li> <li>• D2.4 - An Interactive Toolkit for Stakeholder Engagement and Co-Design of Visions and Pathways towards Climate Neutrality</li> <li>• D4.3 - Sustained Engagement Strategy of Learning &amp; Action Alliances to Promote the Neutrality Vision in the UP2030 Pilots</li> </ul>	<p>The overall project workflow and the identification of thematic relationships among tasks for a cohesive task and deliverables development.</p>

<ul style="list-style-type: none"> <li>• D2.5 – Report on Vision Co-Design Methodology Report and its Application for the Pilot Shared Visions</li> <li>• D4.2 - UP2030 Implementation Plan for the Cities 2</li> </ul>	
<p>Experience from the following milestones:</p> <p>M4 Cities have set-up LAAs</p> <p>M5 Cities run First Workshop on Needs</p>	<p>This deliverable aims to ease the execution of the following milestones by highlighting the possible cooperation among partners and streamlining their planning process:</p> <p>M6 Cities run the second workshop on vision</p> <p>M7 Cities establish User Stories</p> <p>M10 Cities run Third Workshop on Action</p>

This deliverable is developed at the beginning of the project (Month 06) and serves as a basis for all UP2030 partners to get a common understanding of the UP2030 approach and project-related activities. Besides the dissemination of the document among the project consortium, the PVC will be presented at a UP2030 Masterclass with all project partners (in Month 07).

## Acronyms

Acronym	Full name
D	Deliverable
DoA	Description of Action
EC	European Commission
GA	Grant Agreement
IT	Information Technology
KPI	Key Performance Indicator(s)
LAA(s)	Learning Action Alliances
M	Milestone
NZC	Net Zero Cities
PVC	Project Vision Consensus
SCM	Smart Cities Marketplace
T	Task
WP(s)	Work package(s)



# 1 Introduction

## 1.1 Purpose and Scope

The document aims to internally build a common UP2030 vision and to create an understanding of the process applied during the project. The PVC is the result of exchanges with project partners, during which different perspectives and views regarding the project workflow were shared. By clarifying terminologies, demonstrating deliverables interdependencies as well as explaining the contribution of the UP2030 approach for a transformation towards urban sustainability, the document guides all UP2030 partners.

## 1.2 Document Structure

The document is organised as follows:

- ❖ Section 1 – Introduction: Description of the purpose and scope of the document and its structure;
- ❖ Section 2 – Project Vision Consensus: UP2030’s “big picture” and related workflows;
- ❖ Section 3 – The 5Ups approach in the context of the PVCThe 5U, how the PVC approach connects to the 5Ups;
- ❖ Section 4 – UP2030 urban transformation domains, to elaborate visions for the pilot cities;
- ❖ Section 5 – Conclusions and next steps;
- ❖ Annexes – Project terminology, list of partners involved in each taskforce, and deliverables interdependencies.

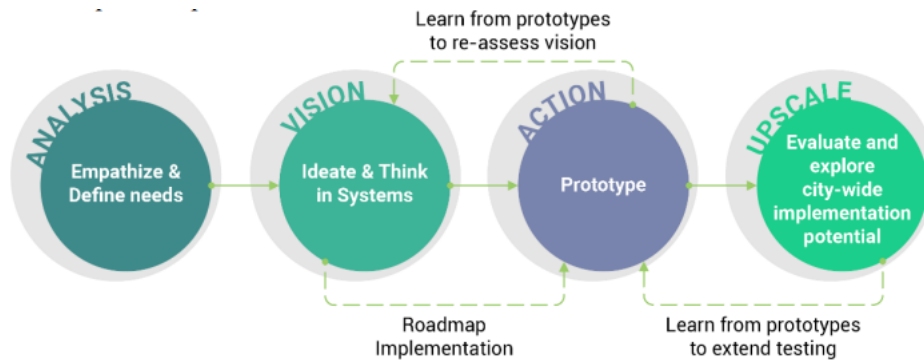
## 2 Project Vision Consensus

The objective of the PVC is to streamline the workflow of the UP2030 project and to bring all partners to a common understanding of the process, activities, roles, and relevance of each of their tasks and deliverables along the project timeline. Overall, the PVC aims to illustrate the big picture of the UP2030 highlighting cooperation and communication across WPs to deliver the project successfully.

This chapter explains the process used to define the PVC, its core approach, and the description of each of its components. The chapter concludes with the next steps in the socialisation of the document and process with the consortium.

### 2.1 Methodology

The process of the PVC included several alignment meetings between WP leaders and task leaders to identify the gaps and come to the same understanding of project processes. It started with a shared document to collect a task-and-deliverable simplified description from the responsible partners which was useful to identify content alignment or potential synergies among them. After this process, the PVC team organised all tasks and deliverables in chronological order along the project phases depicted in Figure 1 and linked them according to how they were or could contribute to each other.



*Figure 1: Project phases (Own elaboration- UP2030)*

The interdependencies and connections between tasks were visualized through a workflow diagram that was refined with feedback from WP leaders and task leaders in various rounds. The workflow also included the results of the observations on the project progress during the first six months, considering especially the experience from the UP2030 cities so far. The process during the first months showed that in a big consortium such as UP2030, with 47 partners from 14 countries, different professional backgrounds, skills and expertise, the understanding of some terms or processes vary and there could be multiple and diverse interpretations according to the partner expertise. The subdivision of the project in the usual WPs did not help to broaden the perspective and this caused isolated actions and misinterpretation in certain activities.

To mitigate this situation, the first lessons learnt of the project in terms of execution, content management, capacity building, cross-WP alignments and workflow were considered and added to the elaboration of the PVC and project workflow to streamline the project implementation.

## 2.2 PVC approach

The cities are at the heart of the UP2030 project and therefore the PVC takes the line-up of workshops and the pilot implementation as the backbone of the project. This approach aims to:

- Provide a full picture of the UP2030 project where all partners can see where they come to play.
- Clarify that each workshop is a step in the project timeline.
- Identify and plan follow up activities between workshops.
- Highlight that all deliverables and tasks contribute to the city's process, workshops, and activities and are not isolated actions.
- Evidence that all tasks and deliverables play a role along the workshop line-up. They are inputs or outputs for each workshop and phase.
- Promote cooperation and alignment across WP since they are key to delivering the project results.
- Identify agile working groups, hereafter referred to as “taskforces”, to tackle specific project activities that are addressed by different WPs, e.g. design and application of Key-Performance Indicators (KPI) framework, implementation roadmap design, engagement roadmap.

The PVC comprises the following elements:

- **Overview of the PVC:** Diagram with the project workflow, with identified taskforces as input and outputs of the cities’ workshops (See Figure 2 and Section 2.2.1);
- **PVC Taskforces:** List of the tasks that comprise each taskforce (See Figure 4: Taskforces)
- **Content management:** A list of project deliverables with identified interdependencies among them. This highlights that each deliverable takes input from previously submitted deliverables and, at the same time, serves as a base for the upcoming ones. This list is complementary to the task forces and is not exclusive meaning that more interdependencies can appear evident as the project develops (See Annex 6.3 Deliverables interdependencies);
- **UP2030 Cities Groups as per thematic domains:** To create spaces of exchange, the cities and liaisons have been grouped across thematic domains to promote interaction and to streamline the project implementation when dealing with similar topics or pilots. (See Section 4)

### 2.2.1 Overview of the PVC

As explained, the line-up of workshops is considered the backbone of the UP2030 project. For these activities to happen, the project tasks and deliverables play a key role and are listed as inputs or outputs of each one of the workshops in the pilot cities. The project tasks that are complementary or add to each other are grouped under one key umbrella term which correspond to the so called task forces.

The UP2030 PVC depicts the sequence of workshops in black text boxes (Figure 2) and the taskforces (Figure 4) identified with text boxes in different colours. These elements are placed along the four project stages at the top of the image in grey. The phases are broken down into 10 smaller steps (white boxes below the phases), which help to understand the scope of each phase and at the same time are the categorization that Work Package (WP) 3 is using to organize the UP2030 solutions along the planning phases of a project. The arrows indicate the workflow and the arrows with dashed lines indicate feedback loops, which aim to highlight that despite the linearity of the process feedback loops are needed. The streams of work and the key elements identified in WP4 from the work with the cities are also incorporated in the diagram.

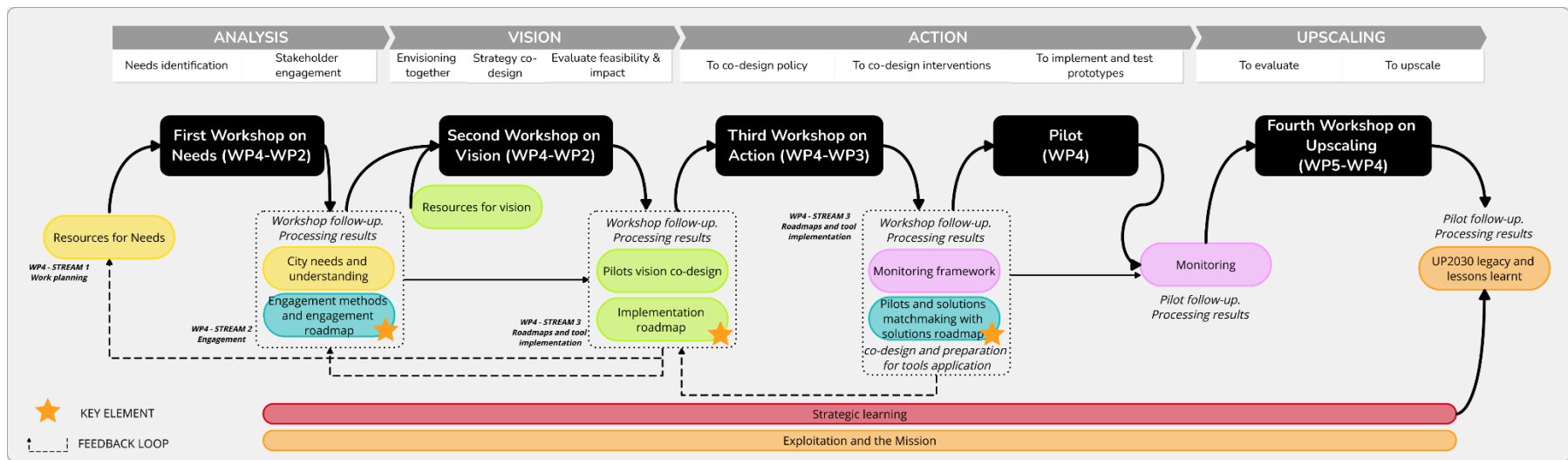


Figure 2: UP2030 PVC – Workflow of the UP2030 project with the line-up of workshops and the pilots as backbone.

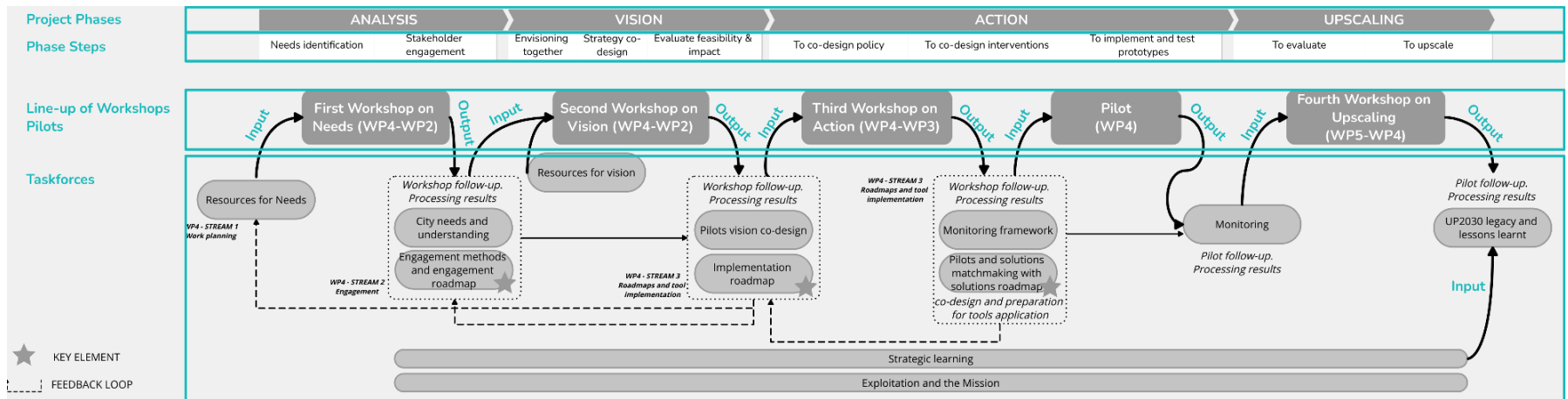


Figure 3: How to read the PVC diagram. Classification of the PVC components, highlighting the workflow with inputs and outputs before and after each workshop and pilot.

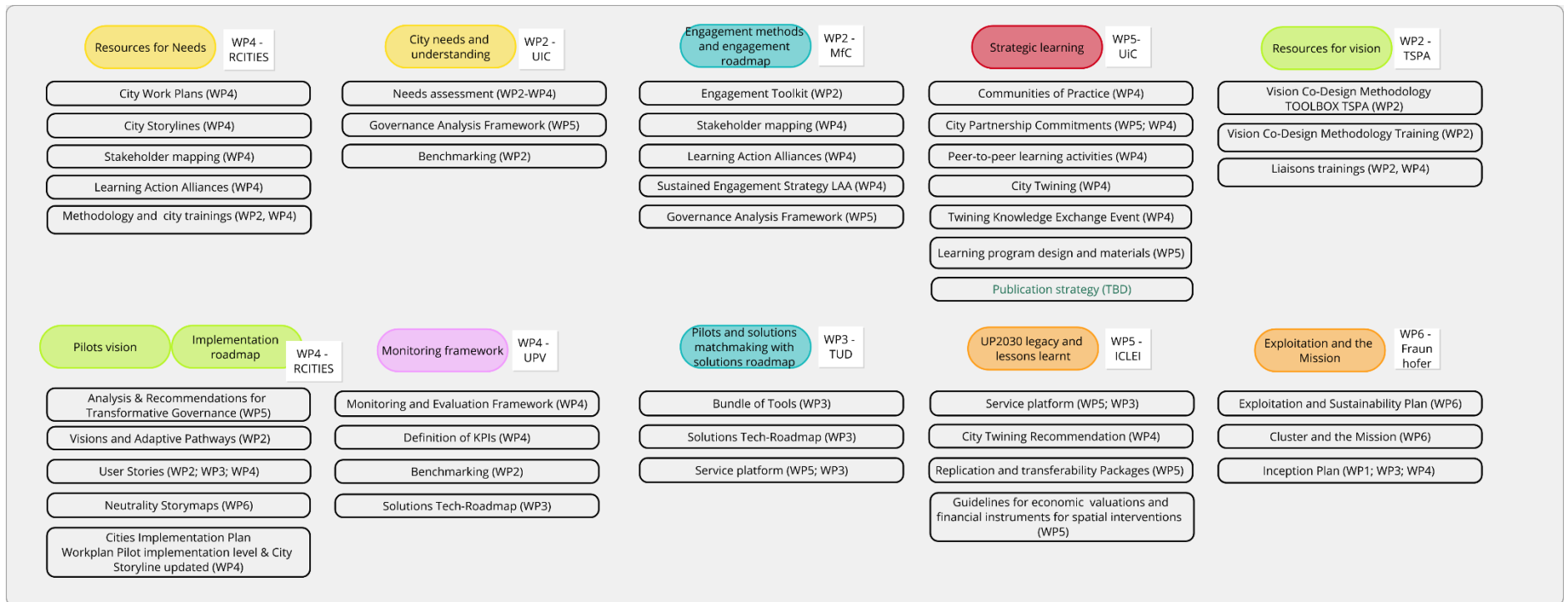


Figure 4: Taskforces: grouping of project activities under one umbrella term to align efforts across work-packages and foster cooperation.

Figure 4, shows the key umbrella terms, or taskforces, with the tasks that are comprised under them. This highlights the connections between tasks, and the need for work across WPs and aims to organize the workflow and the content creation making sure that the right partners are on board and in contact. It is important to mention that the list is not exhaustive as other relevant tasks may also be taken in consideration or might appear necessary to include along the process, will be included. It is equally worth mentioning that some activities listed within a taskforce were not stated within the project proposal but are key for its implementation. This is the case of the taskforce resources for vision which has been created building upon the experience from the first workshop on needs, where it became evident that additional preparatory activities, such as methodology definition and trainings, were required. Another example of this situation is the publication strategy under taskforce strategic learning. Although there is no specific task for this in the project proposal, it is necessary to address it as such and define an approach to proceed so that the dissemination KPIs included in the GA can be achieved. For each task force a partner as leader has been appointed, this is depicted next to the taskforce title.

### 2.3 Process for PVC Socialization

To socialize the PVC with the project consortia, this present document will be disseminated after submission (Month 6, June 30<sup>th</sup>) followed by an online meeting to present the concept.

As per the GA, this document does not have updated versions, however, it is key to highlight that the project development is a live process that might require adjustments along the way. Internal iterations of the PVC along the project implementation process are foreseen to integrate the lessons learnt of the previous phase, especially after each workshop and expected to be shared within the UP2030 consortium.

### 3 The 5UPs approach in the context of the Project Vision Consensus

Within UP2030, the main objective is to support urban transformative changes in pilot cities applying an approach known as 5UP: UP-dating, UP-skilling, UP-grading, UP-scaling and UP-taking. In the context of the PVC, the 5UPs are inherently embedded in the process workflow and evidenced in the UP2030 service platform that captures all project work through them.

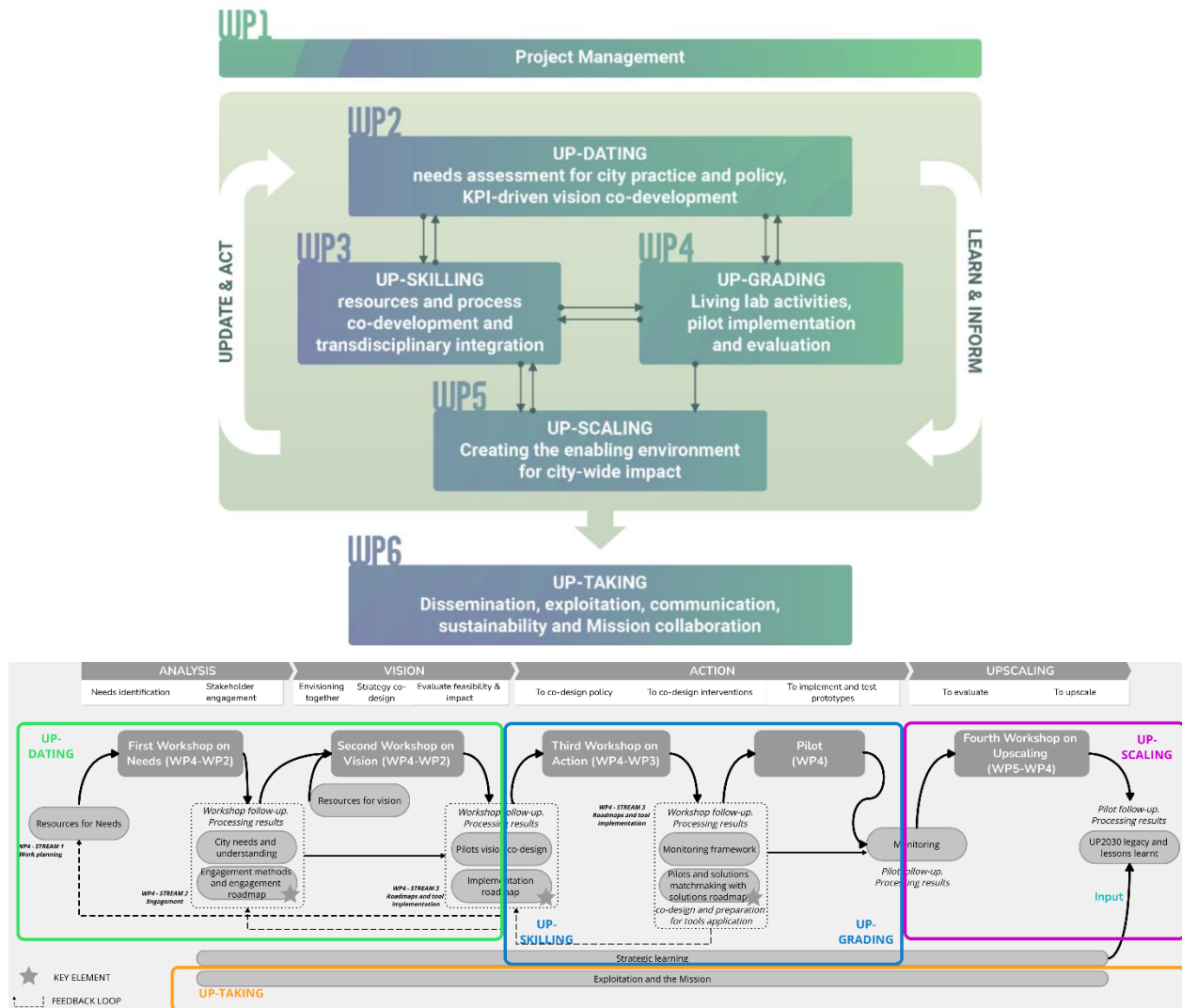


Figure 5: The 5UP-approach conceptual framework in the context of the PVC

In *UP-dating*, the aim is to understand which processes, planning codes, and policies should be urgently updated, and identify and address the needs and barriers through the [EU Cities Mission](#) vision. *UP-skilling* is focused on building capacities and resources for urban planning and design transformation pathways, while also upskilling the entire stakeholder ecosystem. *UP-grading* will prototype the transformation at a suitable physical scale in the pilot cities, renewing also their urban planning and design practices. *UP-scaling* focuses on extending the solutions across scales and integrating across sectors, whilst also responding to updating needs by shaping governance arrangements and matching projects to financial resources. Lastly, *UP-taking* supports uptake and outreach of the implementation through knowledge transfer.

### 3.1 The 5UP approach as base of the Service Platform

The service platform will contain digital and guidance resources hosted at the [Smart Cities Marketplace \(SCM\)](#), as the major market-changing enterprise supported by the European Commission (EC), which aims to bring cities, industries, SMEs, investors, researchers and other city actors together for smart and sustainable urban transformation. Also, an integration with the platform from [NetZeroCities \(NZN\)](#), a project under the EU Green Deal Horizon 2020 Innovation Action, is foreseen. The NZC Platform is considered the official EU Mission Cities Platform, as it is expected to function as a meeting point for cities to exchange knowledge, collaborate together and learn from each other.

Figure 6 shows how each of the elements of the 5UP approach is linked to an outcome that relates to the Service Platform.

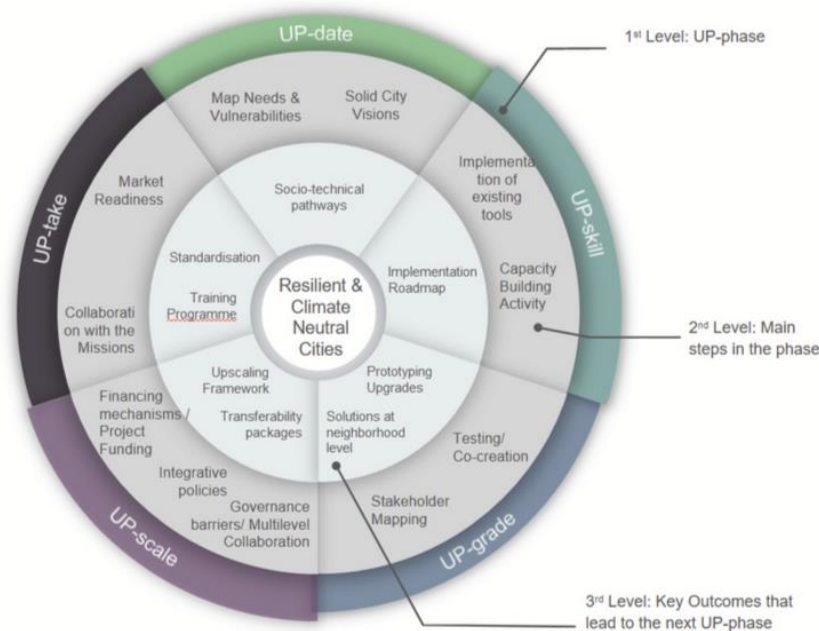


Figure 6: 5UP & Service Platform

The starting point is with UP-date, which will give cities the opportunity to understand how the socio-technical pathways based on the needs mapping and the cities' visions were done in UP2030. Moving forward, a synthesis of the implementation of the solutions deployed in the UP-skilling and UP-grading phases is generated. Within the UP-scaling phase, transferability packages and upscaling frameworks related to solutions are prepared to understand and replicate solutions in other cities in Europe and beyond. These outcomes are part of the digital resources that will be available in the service platform. Finally, the UP-taking phase is linked with market readiness and with the training programme.



## 4 Urban transformation domains and the UP2030 Cities

### 4.1 Urban transformation domains: Connected – Compact – Net-Zero

This section explains in detail the thematic domains (see Figure 7) of the urban transformation in which the pilots of the UP2030 cities are involved. The objective of this chapter is to identify common grounds among the cities based on their characteristics and pilot focus, and to group them along the domains. This approach aims to foster exchange among cities, streamline their pilot implementation and ease the pilot vision development in T 2.4 that is coherent with the overall city vision and future objectives. Each one of the thematic domains and its urban planning and infrastructure elements are presented in the following subchapters (4.1.1, 4.1.2, 4.1.3)

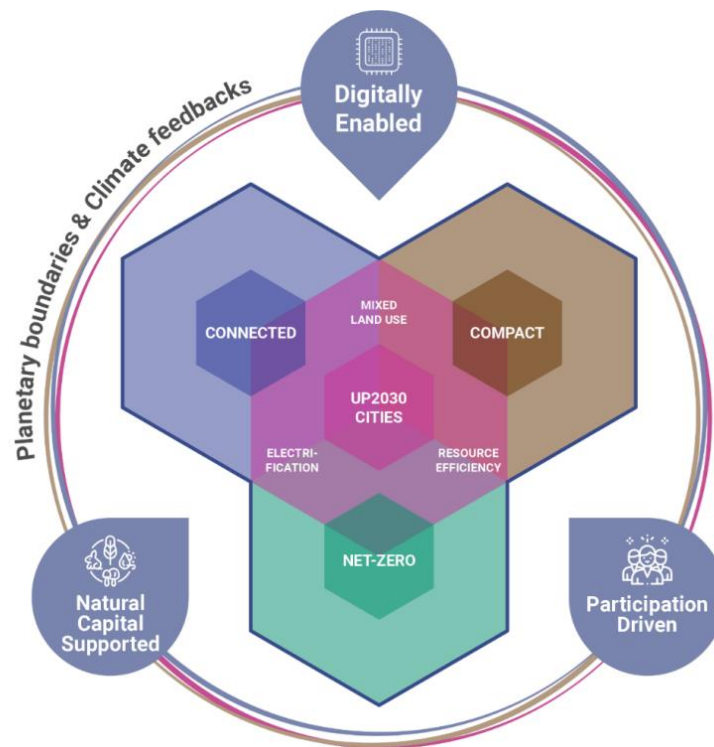


Figure 7: Urban transformation thematic domains addresses in the UP2030 project

#### 4.1.1 Net-zero city

A Net-zero city is a city whose greenhouse gas emissions are reduced, met or offset by the amount of renewable energy generated or the removal of emissions through various strategies. The goal of a net-zero city is to achieve a state where the emissions produced within its boundaries are equal to the emissions it can absorb or mitigate. This is essential to mitigate the impacts of climate change by significantly reducing the city’s carbon footprint and transitioning to sustainable and resilient systems. By adopting renewable energy, improving energy efficiency, and minimizing emissions, these cities strive to create a more sustainable and liveable environment for their residents while contributing to global efforts to combat climate change. (Quinio & Rodrigues, 2021; World Economic Forum, 2021)

Key strategies and approaches for a net-zero city:

- a. **Energy Efficiency and Reduction:** Net-zero cities prioritize energy efficiency by implementing measures to reduce energy consumption in buildings, transportation, and other sectors. This includes utilizing energy-efficient technologies, promoting sustainable construction practices, and encouraging the use of energy-efficient appliances and systems. It also involves adopting cleaner technologies, transitioning to electric vehicles, promoting sustainable waste management practices, and implementing regulations or incentives to encourage emission reductions.
- b. **Energy Generation:** The net zero city emphasizes the production and utilization of renewable energy sources, such as solar, wind, and geothermal power; energy recovery from waste or waste water. Solar panels and heat pumps/exchangers are integrated into the urban infrastructure, from rooftops to public spaces, providing clean electricity to power homes, businesses, and transportation. Energy efficient technologies and smart grids manage energy consumption and distribution, ensuring optimal use and minimizing energy loss.
- c. **Offsetting Emissions:** In cases where it is not possible to eliminate all greenhouse gas emissions completely, net-zero cities employ strategies to offset the remaining emissions. This can involve initiatives such as carbon sequestration through reforestation or investing in carbon offset projects in other regions.
- d. **Urban Planning:** Developing compact and mixed-use urban areas can minimize the need for long-distance commuting, bring services closer together, and reduce energy consumption (e.g., detached dwellings typically consume more energy). Integrating green spaces, preserving natural habitats, and promoting urban agriculture can also enhance the city's sustainability. Trees have the ability to control the local climate and enhance thermal comfort, resulting in a decrease in energy usage. Additionally, they contribute to the preservation of important services, such as safeguarding a cycle path from the effects of heatwaves, thus preventing the need for alternative modes of transportation.
- e. **Sustainable Transportation:** Encouraging sustainable modes of transportation is vital for a net-zero city. This involves developing a comprehensive public transportation system, supporting cycling, and walking infrastructure, promoting electric vehicles, and implementing carpooling or ridesharing programs. (OECD, 2021; Quinio & Rodrigues, 2021; World Economic Forum, 2021)

#### 4.1.2 Compact city

A compact city is a vibrant and efficient urban environment that is designed and built to reduce commute distance, promotes sustainability, and minimizes urban sprawl. It is characterized by its dense and well-connected layout, where various amenities, services, and facilities are easily accessible within a relatively small geographical area.

In a compact city, the emphasis is on creating a mixed-use environment where residential, commercial, and recreational spaces coexist in proximity. This allows residents to live, work, and play within a short distance, reducing the need for long commutes and transportation congestion. This also enhances social cohesion and community interaction within the residents through shared public spaces, community centres and gathering spots.

The main feature of a compact city is building verticality, buildings are typically taller and more closely spaced, this promotes efficient land use and reduce the urban footprint, leaving more space for green areas, parks, and public spaces. Transportation in a compact city is designed to be accessible, efficient, and sustainable. A well-planned public transportation system, such as buses, trams, and subways, is integrated into the city's infrastructure, making it easy for residents to travel within and between different neighbourhoods. Pedestrian-friendly streets, sidewalks, and cycling lanes encourage walking and cycling as viable modes of transportation, further reducing reliance on cars and promoting a healthier lifestyle.

Recycling and waste management systems are seamlessly integrated into the city's infrastructure, ensuring a sustainable and environmentally conscious approach to consumption and production.

The careful design of compact cities is crucial to avoid compromising their climate resilience. One example is the increased vulnerability of compact cities to the urban heat island effect, as they tend to have more impervious surfaces that contribute to flooding valuable and densely populated infrastructure. Therefore, it is important to prioritize climate resilience rather than solely pursuing compactness. UP2030 aims to analyze and address these trade-offs to ensure the sustainability and resilience of compact cities.

In summary, a compact city aims to create a liveable, vibrant, and sustainable urban environment by prioritizing efficient land use, promoting sustainable transportation, preserving green spaces, and encouraging community interaction. It offers the benefits of reduced congestion, shorter commutes, improved quality of life, and a smaller environmental impact.

(Bibri et al., 2020; Dieleman & Wegener, 2004; Kjærås, 2021)

#### 4.1.3 Connected city

The connected city is a technologically advanced and sustainable urban environment where intelligent systems, renewable energy, and citizen participation converge. It enhances the quality of life for its residents by prioritizing resource efficiency, accessibility and sustainability. (Rode et al., 2017)

In the concept of the connected city, authors have explored two primary approaches. The initial perspective encompasses the notion of connected cities, which emphasizes integrated planning. It concentrates on the interconnectedness of urban services and infrastructure. Additionally, it intersects with the concept of the compact city, which focuses on the development of high-quality and walkable urban planning. Well-connected streets and mobility infrastructure networks contribute to the creation of walkable, diverse neighborhoods and compact settlements. This aspect of the compact city promotes inclusive communities with improved access to services for pedestrians and individuals without access to private transportation. Conversely, cities with a dispersed road network continue to exist in a low-density, suburban manner (Millard-Ball & Barrington-Leigh, 2022).

Technological advancements are propelling cities towards connectivity and digitization, aiming to enhance the efficiency and functionality of urban life and services (Glen Martin, 2014). The digitization, connectivity, and automation associated with the "fourth industrial revolution" have given rise to the concept of the "smart city," where endeavors are made to integrate all facets of urban life (BBC Future, 2023).

Key features of connected cities include:

- a. **Integrated Mobility:** Connected cities prioritize integrated transportation systems that seamlessly connect various modes of transport, such as walking, cycling, public transit, and shared mobility services. They focus on creating a well-connected network of streets, sidewalks, bike lanes, and public transit routes to provide convenient and efficient mobility options for all residents.
- b. **Mixed-Use Development:** Connected cities encourage mixed-use development, which combines residential, commercial, and recreational spaces within the same neighbourhoods. This helps create vibrant communities where people can live, work, and play in close proximity, reducing the need for long commutes and fostering a sense of place and community.
- c. **Compact and Transit-Oriented Development:** Connected cities promote compact and transit-oriented development, which involves concentrating housing, jobs, and services around public transit nodes. By locating amenities and employment centers within walking distance of transit stations, residents have better access to essential services, reducing the reliance on private vehicles and promoting sustainable transportation options.
- d. **Smart Infrastructure and Technology:** Connected cities leverage technology and smart infrastructure to improve urban services and connectivity. This includes implementing intelligent transportation systems, real-time data collection, and analysis for traffic management, smart parking systems, and integrated mobility apps. These technologies enable efficient resource allocation, enhance urban planning decisions, and improve the overall functioning of the city.
- e. **Green Spaces and Sustainability:** Connected cities recognize the importance of green spaces and sustainability in urban planning. They prioritize the integration of parks, green corridors, and urban forests within the city fabric. Green infrastructure helps improve air quality, mitigate the urban heat island effect, provide recreational opportunities, and enhance the overall livability and resilience of the city. (Neal, 2012; Pozoukidou & Chatziyiannaki, 2021; Rode et al., 2017)

## 4.2 Cities working groups (to be developed further with Cities and Liaisons)

The goal of UP2030 is to bring together and align the three interconnected thematic domains of net-zero emissions, compact urban design, and connected infrastructure. By converging these domains, UP2030 aims to effectively and holistically amplify strategies and actions that will lead to achieving the core objectives of development and realization of resilient-climate neutral cities.

UP2030 seeks to integrate and synergize efforts in achieving carbon neutrality, promoting compact urban planning, and establishing well-connected infrastructure systems to create sustainable and resilient cities capable of withstanding the challenges posed by climate change.

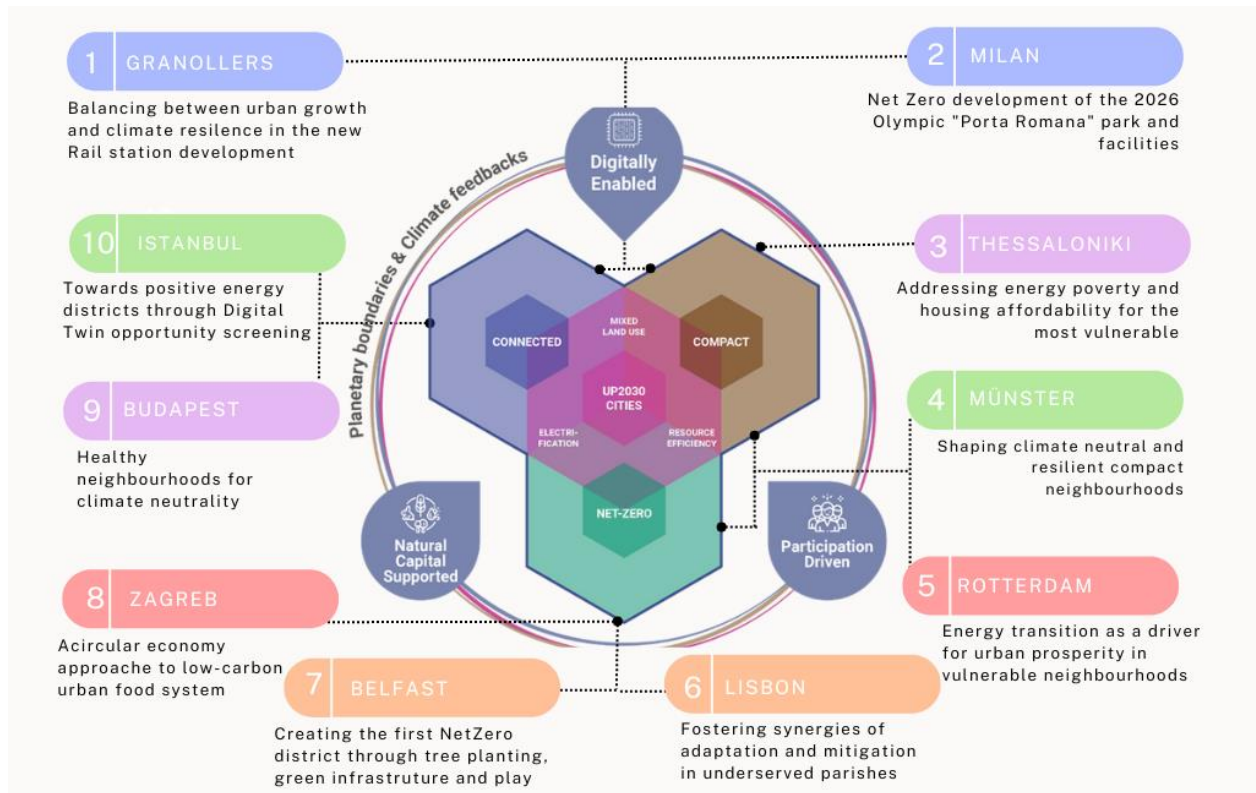


Figure 8: City pilots arranged by their relation with the UP2030 urban transformation thematic domains

All urban transformation thematic domains (connected/compact/net-zero) and its enablers (natural capital/participation/digitization) are relevant when aiming at climate-neutral and social innovation in cities. Yet, for simplicity, by taking into account the definition of the elements of each one of the domains the UP2030 cities have been re-categorised according these three thematic spheres.

As can be seen in the diagram in Figure 8, in UP2030 the cities develop pilots that reflect aspects of different urban transformation thematic domains, as they are comprehensive interventions.

The aspects of the pilots and their relationship to the domains are defined in more detail here:

- **Granollers:** Its pilot focuses mainly on the planning of new urban development around the new train station. This will offer great connectivity for Granollers with other sectors of the region and Barcelona, so its focus largely revolves around the connected city domain. Furthermore, the city expects to explore resilience related to urban growth, so compact city concepts and strategies will play a big role.
- **Milan:** In the case of Milan, like Granollers, the focus is on the development of a new urban area around the Olympic 2026 site "Porta Romana". This new development will also seek to work on connectivity aspects, but more related to mixed land use, which is also related to the compact city approach.
- **Thessaloniki:** The pilot focuses on addressing energy poverty and housing affordability for the most vulnerable population, concentrating on compact city principles, mixed land use and developments led by participatory processes. Ensuring high occupancy will lead to higher energy efficiency and, by extension, meeting the city's climate targets.

- **Istanbul:** The Istanbul pilot aims to develop a digital twin, relating to the connected city as a concept, for the development of a positive energy and zero-emission district. It will explore how technology can support the energy efficiency of the district.
- **Münster:** The city will work on the planning of climate-neutral, climate-resilient compact neighbourhoods. Connections are made between adaptation strategies, related to the compact city domain and urban land use redesign, and climate change mitigation, related to the net-zero city domain.
- **Zagreb:** For Zagreb, the project explores circular economy concepts to support the city's food system. The focus is on resource optimisation, related to the net-zero city, but also to the connected city, due to the operability of this system within the food supply chain of the city, improving its logistics. The delivery of provisioning ecosystem services will ensure that natural capital is supported wherever it is possible.
- **Lisbon:** Within its pilot, Lisbon will focus on working on adaptation and mitigation synergies in underserved areas, primarily related to the net-zero concept, but relying on participatory processes for its realisation.
- **Rotterdam:** Its pilot concentrates on understanding the energy transition as key driver of change for urban prosperity in vulnerable areas of the city. Its approach builds on participatory processes supporting net-zero city carbon neutral urban development.
- **Belfast:** This case looks at the establishment of the city's first Net-Zero district through the implementation of green infrastructure and the planting of green spaces and trees. This development strongly features a net-zero city concept, due to its focus on resource efficiency and ecological sustainable development transition.
- **Budapest:** The pilot addresses the creation of healthy streets that support climate neutrality and connection in the city. A strong focus on urban participation to understand the health issues of the inhabitants to be solved, as well as the net-zero concept to improve the ecology of the city, necessary to enhance the values and concept of a healthy city, will characterise the work in these neighbourhoods.

## 5 Conclusions and next steps

This document explained the PVC and the taskforces defined to streamline the workflow of the UP2030 project. It is expected that this document and the masterclass organized to socialize its content foster cooperation and ease the execution of project activities within the consortium. In the same way, it is expected that the contents and activities produced along UP2030 remain consistent and build upon the results of each other to maximise strategic learning among partners and optimise the use of resources.

With the organization of cities and liaisons in working groups, it is expected to enhance the exchange among cities and to open spaces to learn from each other along the process.

The masterclass to socialise the PVC has been scheduled to take place in Month 7. The agenda for that session consists of the presentation of the PVC, the clarification of linkages with the current WP internal processes, and the consolidation of the taskforces to address the upcoming project activities. A session of questions and answers is also considered part of the masterclass topics. Additional sessions to clarify key terms used in the urban planning discourse, are also envisioned derived from the PVC.

## 6 Annexes

### 6.1 Project terminology

#### Transversal Terms

Term	Explanation
<p><b>Project phases</b></p>	<p>All cities go through the four phases of analysis, vision, action and upscale, which have to be adapted to their local contexts.</p> <p>Briefly, the steps involved:</p> <p>Step 1 - Analysis: “Empathise” to create each pilot case profile. This step supports the identification of needs, baseline conditions and barriers for the city and its stakeholders.</p> <p>Step 2 - Vision: ideate and think in systems, tap into the creative abilities of participants that typically get overlooked to generate the vision through workshops. Link the vision to metrics and identify high-impact factor actions (prepare implementation roadmaps to move to Step 3 below).</p> <p>Step 3 - Action: Implement roadmaps to prototype pilot solutions, including designs of physical interventions, digital tools, products and new policies.</p> <p>Step 4 - Evaluate: Explore success through validation of metrics and based on new knowledge, examine opportunities for further upscale.</p> <p>These steps are reflected in a series of respective workshops that advance understanding and guide action.</p>
<p><b>Task forces</b></p>	<p>An UP2030 task force is a group of project activities that relate thematically with each other. Their purpose is to join efforts in delivering and to foster cooperation across work packages, optimizing resources and complementing the knowledge and background experience from the partners.</p>
<p><b>City Liaisons</b></p>	<p>Each Pilot City is assigned a City Liaison partner. The Liaisons are research/technical partners of the project from the same country as the pilot city for logistical and language reasons, who help the cities engage more efficiently and deeper with the project through direct support. Previous project experience has shown this is a strong asset for the integration of the city in projects and better demonstrators.</p> <p>A similar scheme by NetZeroCities supports cities through Climate Neutral Cities Advisors.</p>
<p><b>Communities of practice</b></p>	<p>Community of practice is a group of people who have some common interest (domain) and can share knowledge, experiences, tools and best practices to solve problems. In the context of UP2030, the City representatives can form a community of practice (Mladkova, 2015).</p>



<p><b>Cross-city learning activities</b></p>	<p>Exchange between cities in the project to learn from each other. It refers primarily to processes on “how to” reach a positive outcome, rather than dissemination of results.</p>
<p><b>Socio-technical transitions</b></p>	<p>Socio-technical transitions refer to the transformation taking place in the urban environment with the implementation of new technologies or projects and their impact on the citizens as main users. Socio-technical transitions challenge not only technological and scientific innovation but also process, policy and engagement innovation in urban planning and design.</p>
<p><b>Transformational change</b></p>	<p>Refers to the changes that occurred in an urban environment that set a precedent in the way the city is going to develop. Transformational change refers to development that is sustained in the long term and triggers more projects and urban interventions aligned to a city vision or development plan.</p> <p>The term can be applied when changes take place in the social structure, economic and physical environment, political regime, and social behaviour.</p> <p>It is differentiated from incremental change, where you only change some parameters of the system.</p> <p>As an example, the use of electric cars will not make cities significantly more sustainable – shifting travel modes through extensive behavioural change would be transformational.</p>
<p><b>Twinning</b></p>	<p>City Twinning is a strategy in which border-related cities engage in city branding through cooperation and the pooling of resources (Joenniemi, Sergunin, 2009).</p>
<p><b>UP2030 Urban planning design domains (connected, compact, net-zero cities)</b></p>	<p>The urban planning literature presents different concepts to approach urban development.</p> <p><b>Compact cities</b> are dense and developed with principles of proximity and mixed uses. The opposite of a compact city is a sprawling city, with extensive suburban development.</p> <p><b>Connected</b>, i.e. neighbourhoods are linked by public transport systems and micro-mobility opportunities, services and jobs are accessible. A 15-minute city is a derivative and mainstreaming concept of the compact, connected city or neighbourhood.</p> <p><b>Net zero</b> refers to a state in which the greenhouse gases going into the atmosphere are balanced by removal from the atmosphere. A net-zero city has reduced emissions in all different sectors of service (energy, transportation, communications, food, construction materials, etc) and offsets the remaining emissions.</p> <p>For more detail, please refer to Section 4.1</p>

<p><b>User stories</b></p>	<p>User stories refer to a general explanation written from the perspective of the end user, describing how the methods and tools applied in UP2030 bring value to the cities and citizens.</p> <p>In WP2 and WP4, this term refers to the explanation of the urban planning roadmaps from the perspective of the city.</p> <p>However, this term is used differently in WP3 from an IT perspective, as it refers to user stories related to the UP2030 platform and solutions displayed there, and the explanation of how they operate related to the end user (also the cities).</p>
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## Analysis

Term	Explanation
<p><b>Assets and drivers of change</b></p>	<p><b>Assets:</b> urban assets constitute critical infrastructure (e.g. energy transmission stations, roads, open spaces)</p> <p><b>Drivers of change:</b> Factors that direct cities to change/evolve, e.g population growth, infrastructure, sustainability</p>
<p><b>Exploratory scenarios</b></p>	<p>Exploratory scenarios describe a desirable or less-desirable future for the cities, analysing different uncertainties that might arise in the future.</p> <p>The exploratory scenarios are conceived within WP2 and will sketch plausible and desirable future scenarios for the cities of 2030 and 2050 (aligned with the city visions).</p>
<p><b>Innovation-enabling city environment</b></p>	<p>Cities can have an environment that promotes, helps, and enables innovation through a policy framework, deliberate inclusive participation, shifts to sustainable behaviours, capacity building in city departments, new governance arrangements, and financial facilitation.</p>
<p><b>User requirements</b></p>	<p>In the context of WP2, user requirements refer to the city (as end-user) needs. User requirements mean finding the objectives and requirements so that solutions meet the needs of the city easily.</p>

## Vision

Term	Explanation
<b>Adaptive Pathways</b>	Identification of different development trajectories, based on adaptation and transformation of the current system, for addressing a carbon-neutral city future.
<b>Broad city visions approach (net-zero cities, green-blue cities, circular cities, 15min cities)</b>	Conceptual frameworks and visions developed by urbanists that can help UP2030 cities to reimagine themselves:  Net-zero refers to emissions reductions; Green-Blue to nature-inclusion; Circular city to optimal use of resources; 15-min city refers to the proximity of services to promote a sustainable lifestyle of better quality.
<b>Implementation roadmaps</b>	Translation of visions to specific actions, using specific tools, to obtain the delivery of prototyping actions in the tested neighbourhood environments.
<b>Learning and Action Alliances (LAAs)</b>	LAAs provide a mechanism through which institutional participants can come together, share knowledge, innovate, and devise solutions to 'wicked' problems. (Maskrey, Vilcan, O'Donnell, Lamond, 2020).
<b>Neutrality roadmaps</b>	Neutrality roadmaps refer to the visualisation of a strategic plan for the pilot cities to achieve climate neutrality and GHG emissions reduction.
<b>Regenerative Urbanism</b>	A concept that combines urban design, urban renewal, and circular economy approaches. The aim is to bring about a regeneration of ecological systems by taking into account planetary boundaries in ways of living and doing business. (Thomson, Giles; Newman, Peter, 2016)
<b>Roadmaps of transformative pathways</b>	Associated Information Technology (IT) infrastructure. It refers to a plan for implementing and integrating strategically the tools (mostly digital and data-related), which will be incorporated into a platform. This roadmap contains interoperability information, developing the IT infrastructure to integrate all data and solutions.
<b>Twinning requirements</b>	In the context of UP2030 twinning is not one-directional and does not lead to a one-to-one city correspondence, rather it creates a web of interactions between cities.

## Action

Term	Explanation
<b>Carbon budgets framework</b>	A method implemented in cities related to carbon accounting in a city. It provides visibility of carbon consumption, helping cities compare investment decisions for carbon reduction. Also, this method supports tracking ownership of data and monitoring data related to carbon in the city.
<b>Climate city contracts</b>	The overall plan for climate neutrality across all sectors such as energy, buildings, waste management and transport, together with related investment plans (EC, 2023).
<b>City living labs</b>	Experimentation spaces to improve urban life to test hypotheses and pathways towards regenerative urbanism, as well as sustainability and liveability transformations. (Urban Europe, 2023)
<b>Digital city twins</b>	Virtual representation of a city's physical assets, using data, data analytics and machine learning to help simulation models that can be updated and changed (real-time) as their physical equivalents change. (IN EU, 2023)
<b>Roadmaps actions</b>	The specific activities in an implementation roadmap. (Muller (2020)).
<b>Training programme on urban planning and design for climate-neutral and smart cities</b>	A programme for specific target groups (TBD) to train them how to leverage planning and design methods and techniques towards climate neutrality.
<b>Transformational proposition for renewed urban planning and design</b>	Related to the previous definition, this term refers to the implementation of projects and technologies in the urban realm that could trigger transformational change.
<b>Transformative governance</b>	In the context of UP2030 transformative governance refers to the ways of decision-making in each partner city that enhance change towards climate neutrality and liveable cities (Chaffin, et al. (2016))
<b>Story maps</b>	Refers to the Neutrality Story Maps developed in WP6. Story maps mean the visualisation of data (mostly scientific or climate-related) in an accessible format using web- and geospatial-based tools (e.g. ESRI story maps).  In WP2 they are mentioned within T2.4 as the visions and user stories will set the context for the story maps.

## Upscale

Term	Explanation
<b>Replication and transferability packages</b>	A bundle of tools/solutions will be produced in such a way that their implementation can be replicated in other cities, thus transferring the knowledge created in this project.
<b>Replication services platform</b>	In the context of UP2030 the Replication Service platform contains digital and guidance resources available directly through the UP2030 repository/website.

## 6.2 List of partners involved in each Taskforce (last update: Month 06)

<b>Resources for Needs (WP4) Responsible: RCities</b>	<b>Partners involved</b>
City Work Plans (WP4)	RCities, FhG, ICA, ICLEI, UPV, Liaisons, Cities
City Storylines (WP4)	RCITIES, Liaisons, Cities
Stakeholder Mapping (WP4)	RCities, ICA, MfC, Liaisons, Cities
Learning Action Alliances (WP4)	ICA, MfC, VUB, RCities, Liaisons, Cities
Methodology and City Trainings (WP2, WP4)	TSPA, Cities, CETAQUA, VUB, RCities, DRAXIS

<b>City needs and understanding (WP2) Responsible: UiC</b>	<b>Partners involved</b>
Needs assessment (WP2-WP4)	MfC, TUD, ICA, VUB, RCities, CERTH, DC, Cities & Liaisons
Governance Analysis Framework (WP5)	ADELPHI, GreenAdapt, ICLEI, RCities
Benchmarking (WP2)	UIC, all technical partners (solutions providers)

<b>Monitoring Framework (WP4) Responsible: UPV</b>	<b>Partners involved</b>
Monitoring and Evaluation Framework (WP4)	UPV, Cities & Liaisons, CETAQUA, VUB, RCities, DRAXIS

Definition of KPIs (WP4)	See above
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<b>Engagement Methods and Engagement Roadmap (WP2), Responsible: MfC</b>	<b>Partners involved</b>
Engagement Toolkit (WP2)	TUD, MfC, DC, VUB, CERTH, RCities, ICA
Stakeholder Mapping (WP4)	RCities, ICA, MfC, Liaisons, Cities
Learning Action Alliances (WP4)	ICA, MfC, VUB, RCities, Cities & Liaisons
Sustained Engagement Strategy LAA (WP4)	ICA

<b>Pilots and Solutions Matchmaking with Solutions Roadmap (WP3), Responsible: TUD</b>	<b>Partners involved</b>
Bundle of Tools (WP3)	CIRCE, GUNAM, METU, ETH, UCAM, DRAXIS
Solutions Tech-Roadmap (WP3)	UCAM, BH, TSPA, UCCRN, DELTARES, LINKS, MfC, MAG, LNEC, AQUATEC, DRAXIS
Service Platform (WP5, WP3)	ICLEI, BH, TSPA, UCCRN, DELTARES, LINKS, MfC, MAG, LNEC, AQUATEC, DRAXIS

<b>Strategic Learning (WP5) Responsible: UIC</b>	<b>Partners involved</b>
Communities of Practice (WP4)	RCities, Cities & Liaisons, ICLEI
City Partnership Commitments (WP5, WP4)	ICA, MfC, VUB, RCities, Cities & Liaisons, UIC
Peer-to-Peer Learning Activities (WP4)	RCities, Cities & Liaisons, ICLEI
City Twining (WP4)	RCities, Cities & Liaisons, ICLEI
Twining Knowledge Exchange Event (WP4)	RCities, ICLEI
Learning Program Design and Materials (WP5)	UIC
Publication Strategy (all WP)	FhG, UIC, TUD, RCities, ICLEI , DRAXIS

<b>UP2030 Legacy and Lessons Learned (WP5) Responsible: ICLEI</b>	<b>Partners involved</b>
Service Platform (WP5, WP3)	ICLEI, BH, TSPA, UCCRN, DELTARES, LINKS, MfC, MAG, LNEC, AQUATEC
City Twining Recommendation (WP4)	RCities
Replication and Transferability Packages (WP5)	ICLEI, FhG, ADELPHI, GreenAdapt, UIC, ISOCARP, RCities
Guidelines for Economic Valuations and Financial Instruments for Spatial Interventions (WP5)	GGGI, ICLEI, AQUATEC

<b>Resources for Vision (WP2) Responsible: TSPA</b>	<b>Partners involved</b>
Vision Co-Design Methodology TOOLBOX TSPA (WP2)	TSPA
Vision Co-Design Methodology Training (WP2)	TSPA
Liaisons Trainings (WP2, WP4)	FhG, RCities, Cities & Liaisons, ICLEI??

<b>Exploitation and the Mission (WP6) Responsible: Fraunhofer</b>	<b>Partners involved</b>
Exploitation and Sustainability Plan (WP6)	ISOCARP, all
Cluster and the Mission (WP6)	ICLEI, all
Inception Plan (WP1, WP3, WP4)	FhG, DRAXIS, K3Y, LINKS, UPV, Liaisons, RCities

<b>Pilots Vision and Implementation Roadmap (WP4) Responsible: RCITIES</b>	<b>Partners involved</b>
Analysis and Recommendations for Transformative Governance (WP5)	ADELPHI, ICLEI
Visions and Adaptive Pathways (WP2)	TSPA, Cities & Liaisons, UPV, CETAQUA, DRAXIS, BH, UCAM, RCities, ICLEI

User Stories (WP2, WP3, WP4)	DRAXIS, K3Y, LINKS, UPV, Cities & Liaisons, RCities, FhG, ICA, ICLEI, UPV
Neutrality Storymaps (WP6)	VUB, CERTH, DRAXIS, all
Cities Implementation Plan Workplan Pilot Implementation Level & City Storyline Updated (WP4)	RCities, FhG, ICA, ICLEI, UPV, Cities & Liaisons



### 6.3 Deliverables interdependencies

The following table aims to highlight the content relationships among deliverables. We do not have to reinvent the wheel with every deliverable created in the project. On the contrary, each deliverable should be connected to the content submitted in the previous months and be the base for those deliverables that come later. The following table depicts those content relationships. Please start reading from the green column, identify your deliverable there and check on the left, from which deliverables you should be taking input and on the right which deliverables you will be adding to. This list is not exclusive, more relationships can appear over project time.

TAKES INPUT FROM		YOUR DELIVERABLE		ADDS TO /IT'S INPUT FOR	
DELIVERABLE	MONTH	DELIVERABLE	MONTH	DELIVERABLE	MONTH
T 2.3 City & Stakeholder Engagement for the Identification of Needs for Upgrading, Barriers and Drivers of Change		D 4.1 UP2030 Implementation Plan for the Pilot Cities 1	3	D 2.5 Report on Vision Co-Design Methodology Report and its Application for the Pilot Shared Visions	12
T 2.1 Project Vision Consensus - The 5UP approach	0	D 2.1 The 5UP approach and its contextualisation in the project cities	6	D 4.4 Report on Monitoring, Evaluation and KPI Validation in the 5UP-Approach Implementation Pilots 1	12
T 2.2 Benchmarking against the state of the art in urban planning and design	0	D 2.2 UP2030 benchmarking report against state-of-the-art and identification of pilot opportunities 1	6	D 2.3 UP2030 benchmarking report against state-of-the-art and identification of pilot opportunities 2	12
D 4.1 UP2030 Implementation Plan for the Pilot Cities 1	3	D 2.4 An Interactive Toolkit for Stakeholder Engagement in Co-Design of Visions and Pathways towards Climate Neutrality	8	D 2.5 Report on Vision Co-Design Methodology Report and its Application for the Pilot Shared Visions	12
D 4.3 Sustained engagement strategy of Learning & Action Alliances to promote the neutrality vision in the UP2030 pilots	6			D 3.8 Tools and Approaches for Promoting Inclusive Participation and Spatial Justice 1	18

M5 - Cities run first workshop on needs	4				
D 4.1 UP2030 Implementation Plan for the Pilot Cities 1	3	D 4.3 Sustained Engagement Strategy of Learning & Action Alliances to Promote the Neutrality Vision in the UP2030 Pilots	6	D 2.4 An interactive toolkit for stakeholder engagement in co-design of visions and pathways towards climate neutrality	8
T 4.4 Cross-Pilot Exchange Community of Practice and Strategic Learning	n.a.			D 2.5 Report on Vision Co-Design Methodology Report and ist Application for the Pilot Shared Visions	12
M4 - Cities have set-up LAAs	3				
D2.2 UP2030 benchmarking report against state-of-the-art and identification of pilot opportunities 1	6	D 2.3 UP2030 benchmarking report against state-of-the-art and identification of pilot opportunities 2	12	D 5.1 Analysis and Recommendations for Transformative Governance and Policy 1	16
				D 5.6 Learning Programme Design, Development and Sustainability	18
D 4.1 UP2030 Implementation Plan for the Pilot Cities 1	3	D 2.5 Report on Vision Co-Design Methodology Report and ist Application for the Pilot Shared Visions	12	D 4.4 Report on Monitoring, Evaluation and KPI Validation in the 5UP-Approach Implementation Pilot 1	12
D 4.3 Sustained Engagement Strategy of Learning & Action Alliances to Promote the Neutrality Vision in the UP2030 Pilots	6				
D 2.4 An Interactive Toolkit for Stakeholder Engagement in Co-Design of Visions and Pathways towards Climate Neutrality	8				
M5 - Cities run first workshop on needs	4			M7 - Cities establish user stories	12

M6 - Cities run second workshop on vision	8			M10 - Cities run third workshop on action	18
D 4.2 UP2030 Implementation Plan for the Pilot Cities 2	12	D 3.1 Transformative Pathways Roadmaps: Strategic Integration of Solutions and Interoperability 1	12	D 3.2 Transformative pathways roadmaps: strategic integration of solutions and interoperability 2	12
				D 3.4 Bundle of Digital Twin Tools for Net-Zero Decision-Making 1	18
				D 3.6 Digital Planning and Design Tools for Climate Neutral Cities 1	18
				D 3.8 Tools and Approaches for Promoting Inclusive Participation and Spatial Justice 1	18
				D 5.3 UP2030 Service Platform	36
D 4.1 UP2030 Implementation Plan for the Pilot Cities 1	3	D 4.2 UP2030 Implementation Plan for the Pilot Cities 2	12	M7 - Cities establish user stories	12
D 3.1 Transformative Pathways Roadmaps: Strategic Integration of Solutions and Interoperability 1	12				
D 4.4 Report on Monitoring, Evaluation and KPI Validation in the 5UP-Approach Implementation Pilot 1	12				
D 2.5 Report on vision co-design methodology report and its application for pilot shared visions	12			M10 - Cities run third workshop on action	18
M5 - Cities run first workshop on needs	4				
M6 - Cities run second workshop on vision	8				

D 2.1 The 5UP-Approach and ist Contextualisation in the Project Cities	6	D 4.4 Report on Monitoring, Evaluation and KPI Validation in the 5UP-Approach Implementation Pilot 1	12	D 4.5 Report on Monitoring, Evaluation and KPI Validation in the 5UP-Approach Implementation Pilots 2	18		
D 2.5 Report on Vision Co-Design Methodology Report and ist Application for the Pilot Shared Visions	12						
D 4.2 UP2030 Implementation Plan for the Pilot Cities 2	12						
M6 - Cities run second workshop on vision	8					M7 - Cities establish user stories	12
				M10 - Cities run third workshop on action	18		
D 2.4 An Interactive Toolkit for Stakeholder Engagement in Co-Design of Visions and Pathways towards Climate Neutrality	8	D 5.1 Analysis and Recommendations for Transformative Pathways and Policy 1	16	D 4.5 Report on Monitoring, Evaluation and KPI Validation in the 5UP-Approach Implementation Pilots 2	18		
D 2.3 UP2030 Benchmarking Report against state-of-the-art and Identification of Pilot Opportunities 2	12					D 5.2 Analysis and recommendations for transformative governance and policy 2	32
						D 5.4 Guidelines for economic valuations & assessment of financial instruments for spatial interventions 1.	20
						M10 - Cities run third workshop on action	18
D 2.4 An Interactive Toolkit for Stakeholder Engagement in Co-Design of Visions and Pathways towards Climate Neutrality	8	D 6.6. Neutrality Storymaps for the Pilot Cities 1	16	D 3.4 Bundle of Digital Twin Tools for Net-Zero Decision-Making 1	18		

D 2.3 UP2030 Benchmarking Report against state-of-the-art and Identification of Pilot Opportunities 2				D 3.2 Transformative Pathways Roadmaps: Strategic Integration of Solutions and Interoperability 2	24
M7 - Cities establish user stories	12			D 6.6 Neutrality story maps for the pilot cities 2	16
D 3.1 Transformative Pathways Roadmaps: Strategic Integration of Solutions and Interoperability 1	12	D 3.4 Bundle of Digital Twin Tools for Net-Zero Decision-Making 1	18	D 3.2 Transformative Pathways Roadmaps: Strategic Integration of Solutions and Interoperability 2	24
D 6.6 Neutrality Story Maps for the Pilot Cities 1	16			D 5.4 Guidelines for economic valuations & assessment of financial instruments for spatial interventions 1.	20
				D 3.5 Bundle of digital twin tools for net zero decision-making 2	34
D 3.1 Transformative Pathways Roadmaps: Strategic Integration of Solutions and Interoperability 1	12	D 3.6 Digital Planning and Design Tools for Climate Neutral Cities 1	18	D 3.2 Transformative Pathways Roadmaps: Strategic Integration of Solutions and Interoperability 2	24
D 5.1 Analysis and recommendations for transformative governance and policy 1	16			D 5.3 UP2030 Service platform	36
D 2.5 Report on vision co-design methodology report and its application for pilot shared visions	12			D 5.4 Guidelines for economic valuations & assessment of financial instruments for spatial interventions 1.	20
D 3.1 Transformative Pathways Roadmaps: Strategic Integration of Solutions and Interoperability 1	12	D 3.8 Tools and Approaches for Promoting Inclusive	18	D 3.2 Transformative Pathways Roadmaps: Strategic Integration of Solutions and Interoperability 2	24

D 2.4 An interactive toolkit for stakeholder engagement in co-design of visions and pathways towards climate neutrality	8	Participation and Spatial Justice 1		D 5.4 Guidelines for economic valuations & assessment of financial instruments for spatial interventions 1.	20
				D 3.9 Tools and approaches for promoting inclusive participation and spatial justice 2	34
D 4.4 Report on Monitoring, Evaluation and KPI Validation in the 5UP-Approach Implementation Pilot 1	12	D 4.5 Report on Monitoring, Evaluation and KPI Validation in the 5UP-Approach Implementation Pilots 2	18	D 4.6 Report on Monitoring, Evaluation and KPI Validation in the 5UP-Approach Implementation Pilots 3	36
D 2.5 Report on Vision Co-Design Methodology Report and its Application for the Pilot Shared Visions	12				
D 4.2 UP2030 Implementation Plan for the Pilot Cities 2	12				
D 5.1 Analysis and recommendations for transformative governance and policy 1	16				
Depending on the focus of the learning platform it will review most of the deliverables and project documentation		D 5.6 Learning Programme Design, Development and Sustainability	18	D 5.7 Online Learning Programme Materials	32
Reference to project documentation, inception plan and deliverables from the city implementation	0	D 6.8 Exploitation & Sustainability Planning & Activities Report 1	18	D 6.9 Exploitation & Sustainability Planning & Activities Report 2	36
				D 3.2 Transformative pathways roadmaps: strategic integration of solutions and interoperability 2	24

D 3.8 Tools and Approaches for Promoting Inclusive Participation and Spatial Justice 1	18	D 5.4 Guidelines for Economic Valuation & Assessment of Financial Instruments for Spatial Interventions 1	20	D 3.2 Transformative Pathways Roadmaps: Strategic Integration of Solutions and Interoperability 2	24
D 3.6 Digital planning and design tools for climate neutral cities 1	18				
D 3.4 Bundle of digital twin tools for net zero decision-making 1	18			D 5.5 Guidelines for economic valuations & assessment of financial instruments for spatial interventions 2	
D 5.1 Analysis and recommendations for transformative governance and policy 1	16				
M10 - Cities run third workshop on action	18				
D 3.1 Transformative Pathways Roadmaps: Strategic Integration of Solutions and Interoperability 1	12	D 3.2 Transformative Pathways Roadmaps: Strategic Integration of Solutions and Interoperability 2	24	D 5.5 Guidelines for Economic Valuations & Assessment of Financial Instruments for Spatial Interventions 2	32
D. 6.6 Neutrality Storymaps for the Pilot Cities 1	16			D 3.3 Transformative pathways roadmaps: strategic integration of solutions and interoperability 3	36
D 3.4 Bundle of Digital Twin Tools for Net-Zero Decision-Making 1	18			D 3.9 Tools and approaches for promoting inclusive participation and spatial justice 2	36
D 3.6 Digital Planning and Design Tools for Climate Neutral Cities 1	18			D 3.7 Digital planning and design tools for climate neutral cities 2	36
D 3.8 Tools and Approaches for Promoting Inclusive Participation and Spatial Justice 1	18			D 3.5 Bundle of digital twin tools for net zero decision-making 2	36
D 5.4 Guidelines for Economic Valuations & Assessment of Financial Instruments for Spatial Interventions 1	20			D 5.2 Analysis and Recommendations for Transformative Governance and Policy 2	32
D 6.8 Exploitation & sustainability planning & activities report 1	18				

D 5.1 Analysis and Recommendations for Transformative Pathways and Policy 1	16	D 5.2 Analysis and Recommendations for Transformative Governance and Policy 2	32	D 4.7 Report on Strategic Learning in City Twinning Programmes	34
D 5.5 D 5.5 Guidelines for Economic Valuations & Assessment of Financial Instruments for Spatial Interventions 2	32				
D 3.2 Transformative pathways roadmaps: strategic integration of solutions and interoperability 2	24				
M13 - All cities have at least one successful prototype	26			D 5.5 Guidelines for economic valuations & assessment of financial instruments for spatial interventions 2	32
D 5.4 Guidelines for Economic Valuation & Assessment of Financial Instruments for Spatial Interventions 1	20	D 5.5 Guidelines for Economic Valuations & Assessment of Financial Instruments for Spatial Interventions 2	32	D 4.7 Report on Strategic Learning in City Twinning Programmes	34
D 5.2 Analysis and Recommendations for Transformative Governance and Policy 2	32				
D 3.2 Transformative Pathways Roadmaps: Strategic Integration of Solutions and Interoperability 2	24				
M14 - Cities run fourth workshop on upscale	28			D 5.2 Analysis and Recommendations for Transformative Governance and Policy 2	32
D 5.6 Learning Programme Design, Development and Sustainability	18	D 5.7 Online Learning Programme Materials	32	n.a	n.a
previous project milestones					
M14 - Cities run fourth workshop on upscale	28				



D 5.2 Analysis and Recommendations for Transformative Governance and Policy 2	32	D 4.7 Report on Strategic Learning in City Twinning Programmes	34	D 4.6 Report on Monitoring, Evaluation and KPI Validation in the 5UP-Approach Implementation Pilots 3	36
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## References

- Bibri, S. E., Krogstie, J., & Kärrholm, M. (2020). Compact city planning and development: Emerging practices and strategies for achieving the goals of sustainability. *Developments in the Built Environment*, 4, 100021. <https://doi.org/10.1016/j.dibe.2020.100021>
- Chaffin, Garmestani, Gunderson, Benson, Angeler, Arnold, (2016), Transformative Environmental Governance. In *Annu. Rev. Environ. Resour.* 41 (1), pp. 399–423)
- Dieleman, F., & Wegener, M. (2004). Compact City and Urban Sprawl. *4, 30*, 308-323(16). <https://doi.org/10.2148/benv.30.4.308.57151>
- European Commission (EC), (2023), EU Missions Horizon Europe, Climate Neutral and Smart Cities. [https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/eu-missions-horizon-europe/climate-neutral-and-smart-cities\\_en](https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/eu-missions-horizon-europe/climate-neutral-and-smart-cities_en) Last retrieved: 29/06/2023
- IN EU (2023), Digital Twins en: <https://living-in.eu/groups/solutions/local-digital-twin>. Last retrieved: 29/06/2023
- Joenniemi, Sergunin (2009), When two aspire to become one. City-twinning in Northern Europe Copenhagen CDR (DIIS working paper, 2009:21).
- Kjærås, K. (2021). Towards a relational conception of the compact city, *58(6)*, 1176–1192.
- Maskrey, Vilcan, O'Donnell, Lamond (2020), Using Learning and Action Alliances to build Capacity for local flood risk management. In *Environmental Science & Policy* 107, pp. 198–205.
- Mladkova, L. (2015) Dysfunctional Communities of Practice - Thread for Organization, 4th International Conference on Leadership, Technology, Innovation and Business Management (ICLTIBM)
- Mueller, 2020, A Roadmap for Sustainability for a Community in The Netherlands. 2020 IEEE 15th International Conference of System of Systems Engineering (SoSE). Budapest, Hungary, 02.06.2020 - 04.06.2020: IEEE
- Neal, Z. P. (2012). *The Connected City: How Networks are Shaping the Modern Metropolis. The Metropolis and Modern Life*. Taylor & Francis. [https://books.google.de/books?id=NZrKR1\\_VwhoC](https://books.google.de/books?id=NZrKR1_VwhoC)
- OECD (2021). Transport strategies for net zero systems by design. <https://doi.org/10.1787/0a20f779-en>. (policy highlights).
- Pozoukidou, G., & Chatziyiannaki, Z. (2021). 15-Minute City: Decomposing the New Urban Planning Eutopia. *Sustainability*, 13(2), 928. <https://doi.org/10.3390/su13020928>
- Quinio, V., & Rodrigues, G. (2021). Net-Zero: Decarbonising the City (centre for cities).
- Rode, P., Heeckt, C., Ahrend, R., Melchor, O. H., Robert, A., Badstuber, N., Hoolachan, A., & Kwa, C. (2017). Integrating national policies to deliver compact, connected cities: an overview of transport and housing. <http://newclimateconomy.net/content/cities-working-papers>.
- Thomson, Giles; Newman, Peter (2016), Geoengineering in the Anthropocene through Regenerative Urbanism. In *Geosciences* 6 (4), pp. 2–16.
- United Nations Environment Programme (2016). A framework for shaping sustainable lifestyles: determinants and strategies. <https://wedocs.unep.org/20.500.11822/9995>. [07.06.2023]
- Urban Europe (2023) Urban Living Labs in: <https://jpi-urbaneurope.eu/urbanlivinglabs/>. Last retrieved: 29/06/2023.

World Economic Forum. (2021). *Net Zero Carbon Cities: An Integrated Approach*. Cologny/Geneva Switzerland. World Economic Forum. <https://www.weforum.org/reports/net-zero-carbon-cities-an-integrated-approach/>