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MILAN
TRANSFERABILITY PACKAGE

UP2030 UPSCALING PHASE

UP2030

EXECUTIVE SUMMARY

The purpose of this document is to transfer the knowledge and results acquired by the City of Milan during the UP2030 project, so that the project concept (hereafter prototype) developed can be replicated or scaled up both in other parts of the city and in other cities seeking innovative solutions for sustainable urban development. This 'transferability package' contains information about the upscaling methodology designed in UP2030, defining the key concepts to be taken into account for its effective implementation in cities. The following sections of this document also provide a detailed account of how City of Milan has implemented the methodology in its local context, along with the results obtained from the process:

- Definition of the objectives for the upscaling phase for the city, specifying which are the dimensions that will be addressed and the impact generated with the actions.
- List of barriers when it comes to upscaling and measures proposed to overcome these. Some of these measures could be recommendations obtained from the finance and governance tools.
- Definition of a plan for upscaling the prototype, collecting the next steps for design and implementation and assigning roles and responsibilities among the actors involved.
- Provide a list of guiding materials and resources to inform key stakeholders about the upscaling phase and the activities that need to be conducted.

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GLOSSARY

Replication: transfer of a tested or proven interventions or initiatives to a different location at the same scale, in order to repeat success elsewhere and achieve similar results.

Upscaling: ability to take a tested concept, pilot project or initiative, and expand it while maintaining efficiency, in terms of people served, revenues generated, or other similar targets.

Prototype: initiatives, plans, programs or solutions developed by cities during the UP2030 project.

Learning Action Alliance (LAA): knowledge exchange and co-creation platforms intended to support the communication, coordination, innovation, and dialogue between city stakeholders at multiple levels.

THE IMPORTANCE OF UPSCALING – UP2030 UPSCALING METHODOLOGY

In projects such as UP2030, it is essential to devise a strategy for sustaining the work carried out during the project and maximising its impact. Due to this reason, the UP2030 project built an **upscaling methodology** to provide cities with instrument and resources developed during the project, so that the prototypes developed during the project can grow and adapt to other sectors, regions and countries, in order to accomplish the goals defined by each city. This process ensures that best practices are transferable and adaptable across different urban contexts.

The success of the replication or upscaling efforts is completely reliant on the institutional environment in which the actions will be implemented. Therefore, it is essential to create an enabling environment, which is constituted primarily by:

Finance

Mechanisms for accessing financial, technical and political support.

Governance

Supportive policy, legal and regulatory frameworks and better policy coordination.

Capacity

Enhanced capacity across all levels of government.

The upscale methodology was structured in three phases:

1. PREPARATORY WORK

Setting the basis for upscaling

- Understand the local context, challenges and priorities of cities.
- Define the objectives for upscaling.
- Explore the available tools on governance and finance that support upscaling.

2. LAA WORKSHOP

Bringing local stakeholders to the process

- Set the scene, presenting the objective and defining the resources and capacities to move forward.
- Create readiness among the stakeholders at the local level.
- Design an initial implementation plan for upscaling actions.

3. FOLLOW-UP WORKSHOP

Refining the next steps

- Analyse the main insights and results obtained in the LAA workshop.
- Define next steps for the implementation of upscaling activities.
- Develop a transferability package, collecting information about objectives, opportunities, barriers, actions and resources needed for upscaling.

One of the key outcomes of this process is the **transferability package**, which is designed to serve as a guidance document for cities to assist them in transitioning from the planning phase to the implementation phase of upscaling activities. The transferability package is also designed to facilitate the communication of results with relevant stakeholders within the municipality, as well as with other local and regional governments seeking to learn from best practices.

INTRODUCTION OF THE CITY

The city of Milan in the context of UP2030 project focused on becoming more sustainable, strong, and fair. Milan's vision is to design districts where urban green spaces provide maximum environmental, financial, and social benefits, serving as strong defences against climate change impacts. The city tests its methods at the overall city scale, neighbourhood level, and small lscale (e.g. a street/square).

Milan's work involved two prototypes. The city developed the Ecosytem Services Assessement tool, a methodology based on the open-source software InVEST©® (*Integrated Valuation of Ecosystem Services and Tradeoffs*), to evaluate the ecosystem services provided by urban green areas, allowing the measurement of the environmental and economic impacts of urban interventions. Prototype 2 consists of a customized checklist based on the City Resilience Framework (CRF), developed by the Resilient Cities Network, an holistic and easy-to-use methodology for a better integration of resilience in Milan's projects, narrative and governance.

From vision to action

CITY'S VISION

- Design Urban Green Spaces: Create city districts where green spaces are specifically designed to be highly effective.
- Maximize Benefits: Ensure these urban green spaces deliver the greatest possible environmental, economic and social advantages.
- Strengthen Resilience: Use these green spaces to act as "resilient buffers" against the damaging effects of climate change.
- Convert Challenges: Turn existing urban problems into opportunities.
- Promote Equity and Liveability: Ultimately build a city that is more liveable and fairer for all its residents and users.

PROTOTYPE

1. Ecosystem Services Assessment (ESA) tool based on InVEST model
2. Integrating resilience principles into planning projects and initiatives – a methodology based on the City Resilience Framework (CRF) by Resilient Cities Network.

Milan's adaptive pathway

Milan's adaptive pathway towards its vision is a structured, two-pronged approach that moves from developing targeted technical tools to integrating these methods into strategic decision-making and municipal governance to ensure lasting impact through the upscaling process. The city developed the **Ecosystem Services Assessment tool**, based on InVEST©®, to evaluate two ecosystem services provided by urban green areas: urban cooling and carbon storage and sequestration. The results of the assessment are provided in the form of maps that represent the environmental and economic value of the ecosystem service. Milan, supported by LINKS, also developed a handbook for the municipal staff to explain the results of the assessments, how to use them in the internal decision-making processes, and to provide a step-by-step guide for the replication of the methodology beyond the project.

Throught the **CRF methodology**, the city embeds resilience thinking into planning by providing a qualitative checklist for assessing projects and creating a governance framework for the Urban Resilience Department. The Upscaling Phase ensures lasting impact by filling methodological gaps, improving complementarity across tools, validating data reliability, and upskilling staff. Through training programs, integration into municipal plans, and ongoing collaboration via internal groups and the Learning and Action Alliance, Milan anchors these tools in municipal governance to guide long-term, climate-resilient urban transformation.

The people and tools needed for developing the adaptive pathway:

- **Fondazione LINKS (LINKS)**: Development of the "Ecosystem Services Assessment and Methodology" integrating **the InVEST©® tool**.
- **Resilient Cities Network (RCities)**: Co-developing based on **City Resilience Framework (CRF)**.
- **Vrije Universiteit Brussel (VUB)** and **Centre for Research & Technology Hellas (CERTH)**: Supporting engagement through **Neutrality Story Maps**.

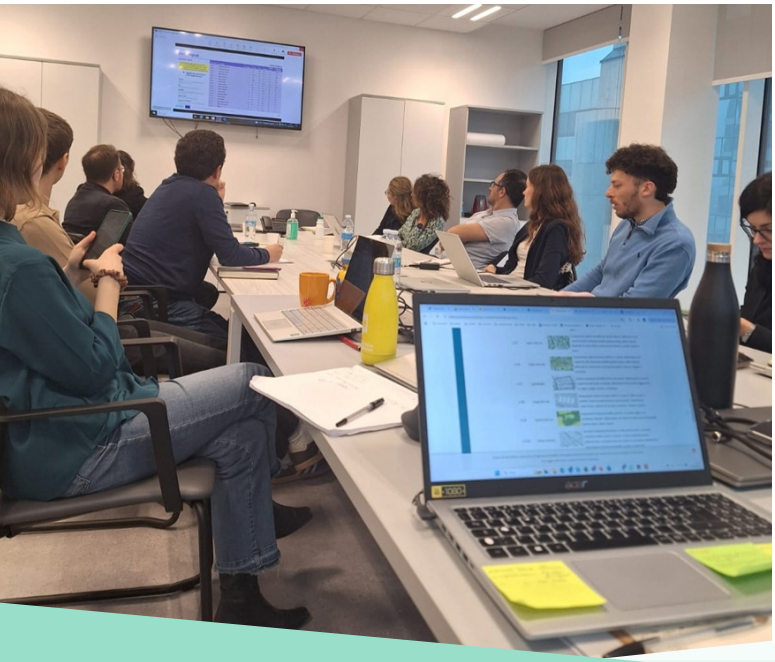
UPSCALING FOR MILAN

The Upscaling Phase represents Milan's effort to consolidate, integrate, and sustain the two prototypes developed during its adaptive pathway the Ecosystem Services Assessment (ESA/InVEST) and the City Resilience Framework (CRF) within municipal planning and governance. Its overarching goal is to equip the city with robust tools, governance mechanisms and financial strategies to ensure these methodologies are not only technically sound but also institutionalized and scalable across urban planning processes.

This phase was guided by four core objectives: addressing methodological gaps, ensuring complementarity with existing tools, establishing scientific and data reliability, building internal staff capacity for long-term application. Through collaboration with the LAA and municipal departments, Milan identified opportunities such as integrating InVEST into municipal plans (for instance, the Air and Climate Plan and the forthcoming Urban Green Plan) while overcoming barriers like fragmented data systems and methods.

Governance outcomes include the establishment of enduring internal and external coordination structures, while financial sustainability is secured through the use of open-source tools and internal resources. Looking forward, the city aims to solidify these methodologies through targeted training, economic valuation studies and ongoing integration into municipal research and planning frameworks, ensuring that resilience and ecosystem-based planning remain embedded in Milan's institutional practices.

The following sections provide an overview of the main results achieved by Milan in the upscaling phase, including the barriers and opportunities encountered together with local stakeholders, key decisions made, and a plan for next steps.



What are the barriers that need to be overcome with upscaling?

1. **Methodological challenges:**

- Fragmentation of methods and data used by municipal departments to assess ecosystem services, leading to inconsistency and duplication.
- Lack of locally adapted methodologies suited to Milan's specific urban context and data availability.
- Need to standardize tools and approaches to ensure scientific robustness and comparability across projects.

2. **Governance challenges:**

- Difficulty in integrating the prototypes into existing municipal decision-making and planning structures.
- Necessity to align new tools with existing governance frameworks and processes.
- Ensuring coordination and collaboration among departments through sustainable internal (transversal working groups) and external (i.e., LAA) mechanisms.

3. **Financial challenges:**

- Limited access to external funding for scaling up and maintaining the methodologies beyond project duration.
- Reliance on internal personnel resources, which may constrain capacity over time.
- Need to identify future financing opportunities for the design and implementation of NbS and continued methodological improvement.

4. **Institutional and capacity challenges:**

- Ensuring municipal staff have the technical capacity and training to apply and maintain the methodologies effectively.
- Embedding resilience and ecosystem-based thinking into daily municipal practices and long-term planning.

What are the opportunities that have been found in the upscale phase?

1. **Opportunities for methodological application and integration:**

- Application in strategic planning: direct application of the InVEST methodology to support municipal plans (for instance, the Air and Climate Plan and the forthcoming Urban Green Plan), guiding data-driven decision-making.

- Creation of a comprehensive methodology: integration of InVEST with existing ecosystem service tools used by the municipality to develop a unified and comprehensive methodology for planning, project assessment and monitoring activities.

2. **Opportunities for future development and funding:**

- Development of new projects: potential to initiate new EU Commission–funded projects to further refine and expand the methodologies.

- Synergies with ongoing initiatives: opportunities for collaboration with other EU projects to test and apply the tools across new case studies.

- Use of financial tools: future use of GGGI financial instruments (CBA Guide and Green Finance Guide) to identify funding opportunities for the continued development of the methodologies and the implementation of Nature-Based Solutions (NBS).

3. **Opportunities for knowledge and stakeholder engagement (LAA relevance):**

- Convergence of knowledge: the upscaling process promotes knowledge sharing and alignment among LAA stakeholders, strengthening cooperation between academia, planners, and municipal staff.

- Increased visibility and new initiatives: enhanced visibility of Milan's methodologies and results may lead to new initiatives, partnerships and funding opportunities for both municipal and external stakeholders.

4. **Opportunities for governance and collaboration:**

- Consolidated governance structures: the existence of established internal (transversal working group) and external (Learning and Action Alliance) governance mechanisms provides a strong foundation for effective implementation.

- Openness to new expertise: both governance groups are designed to welcome new participants and knowledge areas, including expertise in economic and financial dimensions, ensuring flexibility and future adaptability.

Enabling the environment: governance and finance

Governance and finance are essential components of an upscaling plan. During the first phase of the upscaling methodology (preparatory work), the City of Milan went through the finance and governance aspects, taking as a reference the **tools** developed by the Global Green Growth Institute (GGGI) and adelphi, respectively, and explored how these resources could help them shape an enabling environment for their upscaling plan. The key findings obtained from this initial phase were then discussed with the stakeholders of the Learning Action Alliance. The main results of the discussion are detailed below.

Governance

During the upscaling phase, Milan's governance environment focused on integrating the InVEST and CRF methodologies into municipal planning and decision-making to ensure their long-term impact beyond the UP2030 project. This integration is achieved by aligning the tools with existing municipal processes, ensuring complementarity with other methods and enabling technical staff to use them effectively.

A key strength of Milan's approach lies in its consolidated governance structures:

- Internal Governance: A transversal working group bringing together departments such as the Green and Urban Regeneration Departments, which will remain active beyond June 2025.
- External Governance: The LAA, a multi-stakeholder platform expected to continue beyond the project due to members' strong engagement and shared interest.

Looking ahead, Milan aims to mobilize and expand these structures by welcoming new participants and expertise particularly in economic and financial domains to further strengthen resilience and ecosystem-based urban governance.

Finance

Milan plans to continue developing the methodologies developed during the project, and obtaining financial resources will be key for this. For its benefit, the prototypes are low cost and self-sustaining:

- The InVEST Tool (Ecosystem Services Assessment) is an open-source software requiring no licensing fees and future use involves only personnel costs for technical support or data processing.
- The City Resilience Framework (CRF) methodology functions as a self-contained checklist, allowing independent use by municipal staff. Future application similarly relies only on internal personnel resources.

There is a good local commitment to cover the expenses related to personnel, as the municipality will finance upscaling activities internally (and with the support of the in-house agency AMAT), relying on existing staff and departmental resources to maintain and apply both methodologies. This ensures financial autonomy and continuity without dependence on external project funding. However, the municipality also plans to explore any additional funding opportunity that could complement their existing resources:

- GGGI's Financial Tools (CBA Guide and Green Finance Guide) will be used as a framework to identify future funding opportunities for scaling and refining the methodologies.
- The use of Nature-based Solutions financing tools will be explored to access funding for the design and implementation of NbS projects that enhance urban ecosystem services and resilience.
- Synergies with EU-funded projects and initiatives will be leveraged to expand the application of InVEST and CRF in new case studies.
- Planned LAA meetings on the economic valuation of ecosystem services will further develop the financial dimension of Milan's approach and explore synergies with external partners.

Greening the city - Action plan for the next steps

June 2025

Actionable next steps concerning implementation and upscaling include the organization of kick-off meetings for each of the upscaling activities.

July 2025 to March 2026

Future meetings will be held to further explore the complementarity between the methodologies developed within UP2030 and the tools already in use within the Municipality.

September 2025 to December 2025

An internal training session will be organized to review the InVEST handbook and ensure it is integrated by the Municipal staff (Green Department and AMAT staff).

November 2025 to November 2026

Exploratory meetings will be held with the Learning and Action Alliance (LAA) focusing on the economic dimension of Ecosystem Service (ES) assessment, in view of possible synergies with other projects.

End of 2025

In 2026

Application of ESA methodology in/ for urban plans (Air and Climate Plan, Green Plan); application of the CRF for the development of a legacy document of the Municipality regarding climate resilience.

January 2026 to September 2026

Contribution of the Ecosystem Service Assessment approach to the exploration of green space role for carbon stock and storage in the framework of Milan's Climate City Contract (EU Mission 100 Climate Neutral Cities).

Partners involved

- Milan Urban Resilience Department
- LINKS
- AMAT - Agenzia Mobilità Ambiente Territorio
- Green Department
- Academia
- Other municipal departments

TOOLS' CONTRIBUTION TO THE PROTOTYPE AND POST-PROJECT USE

As mentioned in earlier sections, the goal in Milan is that the methodologies developed are integrated and continued to be used by the municipality after the end of the project, supporting the internal decision-making processes and specifically in the design and assessment of urban transformation projects and plans. For this purpose, on the one hand Milan has leveraged the methodology based on the City Resilience Framework to integrate resilience in its projects and initiatives while supporting the Urban Resilience Department's efforts to structure a narrative and governance framework. On the other hand, it will be essential for Milan to continue collaborating with the partners that provided the tools that played a key role in the results obtained in the project.

InVEST tool (Fondazione LINKS)

By integrating the **InVEST tool**, The Ecosystem Services Assessment Methodology has been developed, which is a comprehensive operative and technical methodology for the preparation, computation and delivery of a spatial assessment of ecosystem services provided by environment with a specific focus on urban landscape. The open-source tool InVEST contributes to Milan's long-term vision by enabling the development of a context-based methodology that municipal staff can continue to improve and apply for planning green infrastructure, complementing existing municipal tools and being maintained with internal resources. By integrating ecosystem service assessments into decision-making processes (e.g., the Air and Climate Plan, the future Urban Green Plan), it ensures that urban transformations maximize environmental, economic and social benefits, while strengthening internal capacities and enabling future replication and upscaling beyond the project.

For future usage of the project, LINKS and the City of Milan have drafted a dedicated handbook to support local stakeholders in replicating the methodology, using the data and applications developed for the City of Milan, so that municipal staff can continue applying the tool beyond the project. In addition, Milan will explore new opportunities of collaboration with LINKS beyond the UP2030 project, while also exploring further opportunities (EU projects) to continue developing the methodology.

Neutrality Story Maps (VUB and CERTH)

By showcasing the work of the pilots and their prototypes in an accessible format with success stories, lessons learned and future strategies, **Neutrality Story Maps** works as a tool to learn and adopt similar climate neutrality strategies and approaches. The NSM enhances the work on prototypes by translating technical content into a communicative language aimed at raising citizens' awareness of ecosystem services and the benefits generated by urban greenery.

The tool has been embedded in the communication strategy for the project by Milan, who is using the tool to communicate their activities in UP2030 to the general public in an accessible multimedia narrative format. The city expressed interest in using the platform for at least the next five years that will be freely accessible.

TRANSFERABILITY OF THE PROTOTYPE

Milan is a good example for cities looking to develop technical studies and analyses that use data and engagement techniques, to be tested at a pilot scale physical implementation. In UP2030, one of the objectives that has been defined in the upscale phase is to maximise the impact of the prototypes developed during the project, expanding them to other sectors, regions and countries.

To this end, it is extremely important to understand the characteristics of the context of the place where the prototypes are to be scaled up or replicated. To facilitate this process of transferring processes and results, the UP2030 project has developed four **Urban Typologies** with over 1000 provinces each in order to identify provinces, covering almost all of Europe, that have similarities based on different indicators that have been analysed. By grouping European regions with similar attributes, the Urban Typologies aims to foster targeted collaboration and encourage knowledge-sharing and communication for more effective solutions, especially between regions and cities sharing similar opportunities and challenges.

Four distinct typologies have been created:

- **Capacity for action**: Considers socio-economic factors and governance indicators.
- **Contributions to mitigation**: Focuses on sectoral emissions, carbon sequestration capacity and renewable energy potential.
- **Climate hazards**: Focuses on prevalent climate hazards and exposure.
- **Urban morphology**: Focuses on urban landscape and infrastructure characteristics such as urban density, land use types, etc.

For each typology, respectively, these are the clusters that correspond to the province in which Milan is located (Milano), and hence which most closely resemble the province Milano:

CAPACITY FOR ACTION

Touristic Destinations

Spanning across Europe, with particular prominence along the Mediterranean coastlines of France and Spain, as well as the Alpine regions of Northern Italy and Austria, this cluster is characterised by **very high tourism activity** and a **large population size**. It boasts a **strong workforce and robust economy**, alongside an **average level of institutional trust and effectiveness**. The **proportion of protected areas is relatively high**, especially when compared to other clusters with similarly high levels of urbanisation.

CONTRIBUTIONS TO MITIGATION

High solar power potential, low sectoral emissions in southern continental Europe

This cluster is defined by **very high photovoltaic and CSP potential** and virtually no wind energy potential. The spatial distribution of this cluster mostly concentrated on central Europe and northern Italy. **CO_2 emissions from buildings, vehicles, and industry are among the lowest** across study area, while the **urbanization rate is high**, covering key urban centers in relatively flat, lowland basin landscapes. The **low share of forests and wetlands** indicates potential for focused solar energy deployment without interfering with these ecosystems.

CLIMATE HAZARDS

Highest exposure to flooding in varying geography

This cluster with multiple large capitals is **densely populated and highly urbanized**, and scattered across **heterogeneous landscapes**, including alpine, coastal, semi-arid Mediterranean, and secondary mountain ranges in **Central and Eastern Europe**. Its defining characteristic is the **very high exposure to pluvial, fluvial, and coastal flooding**, driven by diverse geographical, hydrological, and meteorological conditions. **High heat stress and high air pollution** (moderate risk according to WHO Air Quality Guideline (AQG) 2021) are additional critical hazards, while landslide and wildfire risks are moderate. The cluster faces **complex, multi-hazard challenges requiring integrated adaptation**. The cluster is closely related to the cluster "Heat hazard and air pollution in lowlands and basins in southern and eastern Europe" with respect to air pollution, heat stress and wildfire.

URBAN MORPHOLOGY

High-density urban centres with minimal open space

This cluster is found in the major metropolitan areas of Europe and is also widespread throughout Spain. It is characterised by a **very high population density** and an exceptionally **large proportion of densely built-up areas**—both significantly higher than in any other cluster. **Industrial and commercial zones occupy a substantial share** of the urban landscape. **Green spaces are limited**, while **impervious surfaces are extensive**. The terrain is relatively flat, with only a small proportion of the urban area situated on steep slopes.

For each of these four typologies, and for all clusters constituting the typologies, the following useful information is highlighted and can be explored: a short characterization, common challenges and opportunities in each cluster, as well as key areas for action and example measures and instruments therein. In doing so, clusters can support urban planners and decision-makers in identifying strategic priorities, in addressing climate challenges more effectively, and with knowledge transfer between similar provinces, across Europe.

Milan can serve as an example for other cities in these clusters, i.e. with these similar characteristics that are seeking to develop sustainable, climate-resilient and inclusive strategies for their local contexts. However, it should be noted that these typologies do not restrict the scope for replication and scaling up (i.e., the Milan prototype is not only applicable in places classified within these four typologies, since the InVEST tool can be applicated in any city), but rather help to identify places where the transfer of this package of Milan is most likely to be successful. In addition, it goes without saying that these clusters can not replace province or city case studies, and not be used as such. The clusters are on a province level.

*To explore the typologies, use the **interactive map**.*

*The full list of indicators is also found in the **methodology section**.*

KEY MESSAGES FROM THE CITY

"Within UP2030, our work really started from a very practical need: helping municipal staff to find and use methodologies that actually work for them in their day-to-day activities, and that can fill some of the gaps we often see in urban planning and design. We wanted to create something practical and useful, developed together with the people who will use it. That way, the methodologies are not abstract – they are rooted in the real operations and priorities of the Municipality."

"In the upscaling phase, we really wanted to involve both internal and external stakeholders, because each of them brings something unique to the process. We will need to keep strengthening the dialogue across departments — not only to improve the technical aspects, but also to build a shared culture around the use of ecosystem service–based methods"

"In conclusion, the UP2030 project has allowed us to take an important step forward in integrating resilient and ecosystem service–based approaches into the Municipality's urban planning and design processes – opening, for the first time, a discussion on this topic within the city administration."

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