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THESSALONIKI
TRANSFERABILITY PACKAGE

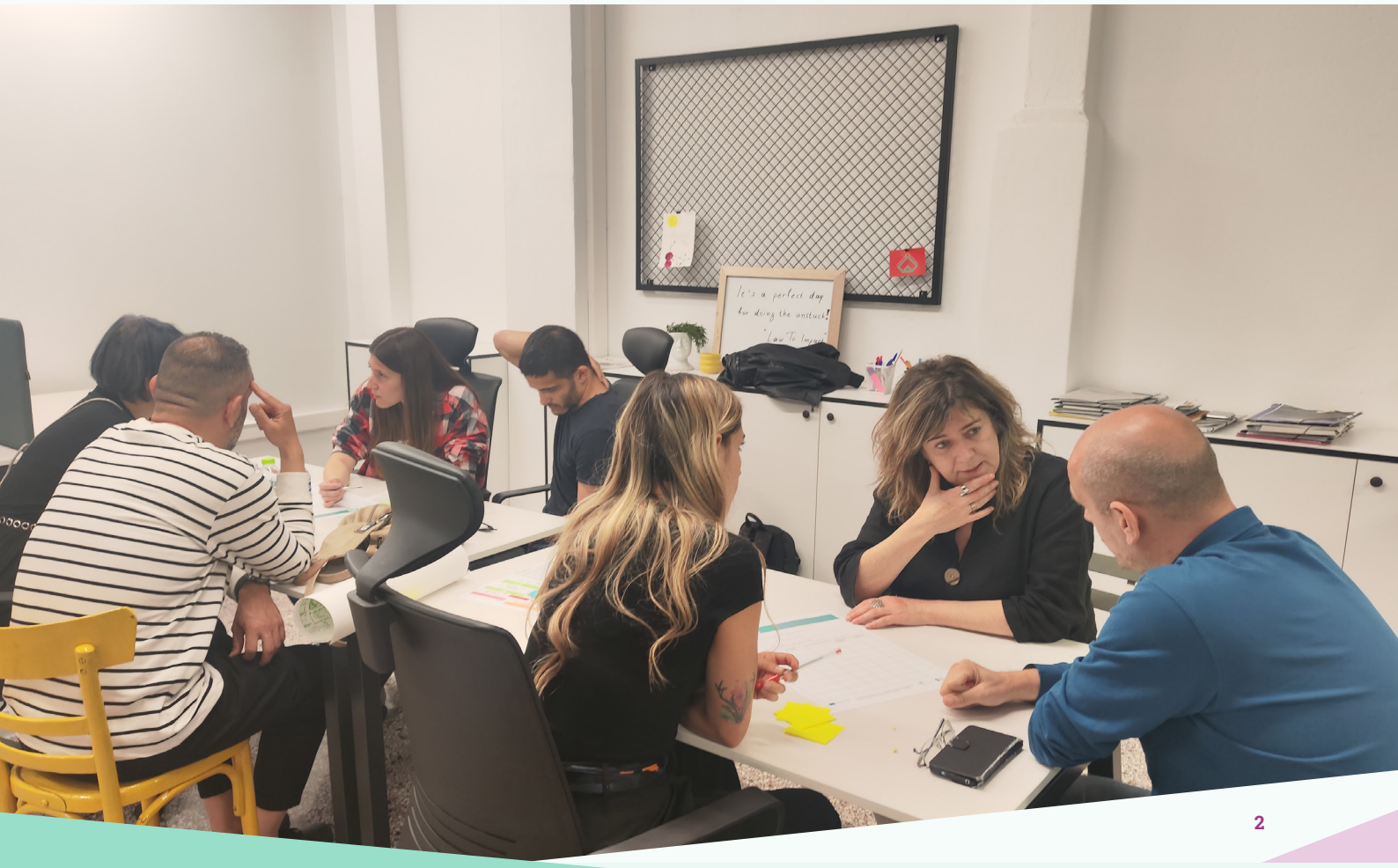
UP2030 UPSCALING PHASE

UP2030

EXECUTIVE SUMMARY

The purpose of this document is to transfer the knowledge and results acquired by the city of Thessaloniki during the UP2030 project, so that the 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 scaling 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 Budapest 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 guidance 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 be grown and adapted 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

One of the most pressing challenges for Thessaloniki lies in its aging and energy-inefficient building stock, the lack of affordable and adequate housing for the most vulnerable communities, the limited availability of green public space, and the dominance of cars in the public realm—often occupying sidewalks and reducing walkability-combined with the urgency for implementing a climate adaptation and mitigation plan that will support the city in achieving net zero emissions goals.

In the UP2030 project, Thessaloniki focused on the area of Dioikitirion, a neighbourhood located in the western end of the city's historic centre that has been impacted by 2010 economic crisis and tourism influence. These pressures have left a visible mark on Dioikitirion: the 2010 economic crisis led to long-term disinvestment in infrastructure and housing maintenance, while the rise of short-term rentals and tourism-oriented development has increased housing costs and strained the neighbourhoods' residential character. As a result, vulnerable groups—such as elderly residents and low-income households—face growing challenges related to affordability, energy poverty, and access to quality public space.

From vision to action

CITY'S VISION

Create a sustainable, thriving and climate-resilient neighbourhood by:

- Reimagining the building stock as energy-efficient and affordable, where all residents can live in comfortable and low-emission homes.
- Transforming public space into a greener, cooler, and more welcoming environment, where trees, shade, and nature-based solutions improve daily life and microclimate resilience.
- Designing a people-first urban landscape, where walkability, safety, and sustainable mobility take priority over car dominance, making the neighbourhood accessible and vibrant for all.

PROTOTYPE

District Climate Action Plan (DCAP)

Thessaloniki's adaptive pathway

The **District Climate Action Plan (DCAP)**, designed for the Dioikitirion neighbourhood of Thessaloniki, is structured as a comprehensive planning and policy document integrating climate mitigation and adaptation strategies, developed through participatory processes and technical analysis. Through strategies that promote energy efficiency, green mobility, and inclusive urban design, the plan builds long-term urban resilience and enhances the well-being of current and future generations.

The DCAP aims to become a replicable model of just, green, and climate-neutral urban transformation that supports the city's overarching commitment under the Climate City Contract (CCC) and the EU Mission for 100 Climate-Neutral and Smart Cities. The final format will be a methodological guide and policy roadmap, accompanied by geospatial visualizations, co-created actions, and integrated simulation tool outputs.

The people and tools needed for developing the adaptive pathway:

- **Major Development Agency Thessaloniki (MDAT):** Leading stakeholder engagement, spatial analysis, and co-design methodology.
- **Urban Climate Change Research Network (UCCRN):** Delivering simulation-based planning for adaptation and mitigation scenarios through the **UDCW Toolkit**.
- **DRAXIS:** Using the **Decision Support System** to provide geospatial intelligence on housing, energy, and demographics.
- **Global Green Growth Institute (GGGI) and Centre for Research & Technology Hellas (CERTH):** Assessing green economic pathways and affordability solutions with the **Urban GEM Model**.
- **Vrije Universiteit Brussel (VUB) and Centre for Research & Technology Hellas (CERTH):** Empowering community storytelling and enhancing climate literacy with **Neutrality Story Maps**.

UPSCALING FOR THESSALONIKI

The upscale phase focuses on assessing the targeted actions identified during the Action Phase Workshop, clarifying the challenges, evaluating their feasibility, assigning responsibilities to the relevant municipal departments or partners, outlining concrete implementation pathways, and defining a realistic timeline for delivery. Based on the outcomes of the previous workshop, Thessaloniki has defined two main objectives for the upscaling phase:

- **Explore how the District Climate Action Plan (DCAP) can be embedded within the municipality's existing strategic planning frameworks.** This includes embedding climate action into broader urban planning, strengthening cross-departmental coordination, and developing replicable tools and processes.
- **Extend the implementation of the prototype to additional districts and neighbourhoods across the metropolitan area**, with particular emphasis on areas that face higher environmental vulnerability, social inequality, and limited access to green infrastructure.

The workshop with municipal departments was key to planning the upscaling activities. The workshop gathered staff from the city services that had been engaged in previous stages of the DCAP processes, ensuring continuity and alignment with the co-creation work already completed. To accomplish the previously mentioned goals, it was necessary to bring representatives from key municipal departments together, including operational planning, green infrastructure, urban development, and sustainable mobility, and discuss the following points with them:

- **Policy Integration and Strategic Alignment**, to ensure that the DCAP is part of a broader holistic approach to urban climate resilience.
- **Opportunity to Shape Implementation**, to define how specific actions could be scaled up and operationalised, and assigning roles and responsibilities to the stakeholders involved.
- **Stakeholder Awareness and Engagement**, to show how the work done in different departments and sectors can actively contribute to the upscaling process and to the general climate action goals of the city.
- **Cross-Departmental Coordination**, to break silos and foster collaboration between units (e.g. environment, urban planning, mobility, technical services).
- **Capacity Building**, to exchange knowledge and give access to tools and data that can improve planning and decision-making in their own departments.

Stakeholders shared useful feedback on how the prototype and UP2030 learnings can be used in the future by defining some action areas. The following sections provide an overview of the main results achieved by Thessaloniki in the upscaling phase, including the barriers and opportunities encountered together with local stakeholders, key decisions made, and a plan for next steps.

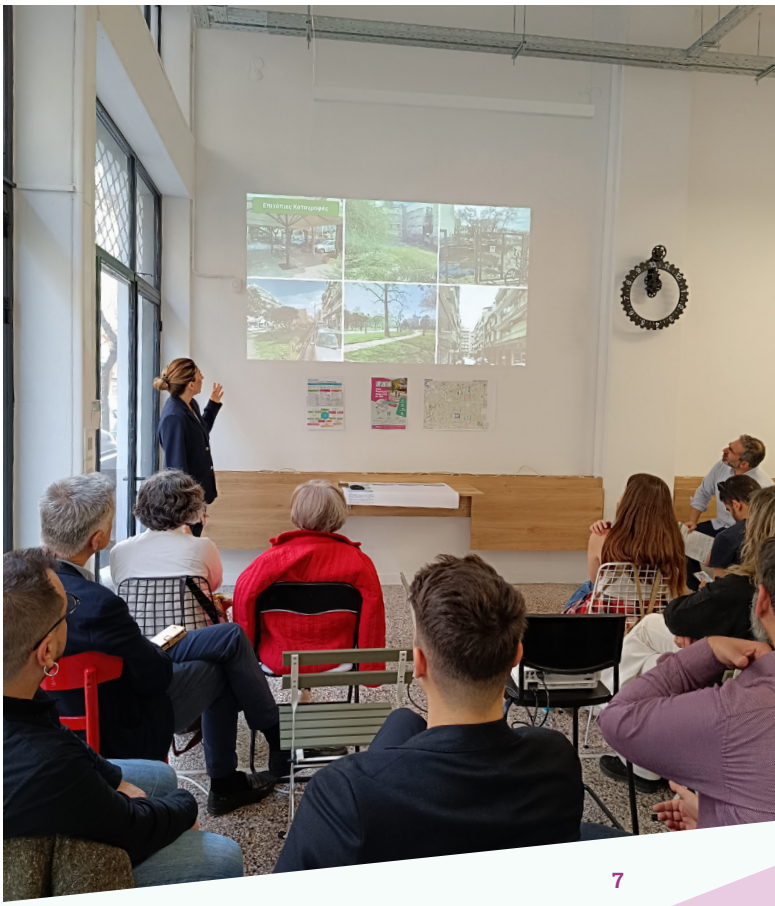
What are the barriers that need to be overcome with upscaling?

- **Lack of mature, ready-to-implement technical studies, which are a prerequisite for securing public or external funding.** In practice, many climate-related interventions (e.g., green corridors, mobility improvements, microclimate actions) cannot be financed unless they are backed by detailed engineering or architectural documentation.
- Need for **embedding interventions in a wider framework of urban regeneration, instead of submitting isolated or standalone projects**, in order to be eligible for structured financing. There is a need for integrated, area-based planning that links DCAP measures to broader urban transformation goals.
- **Capacity gap in producing or commissioning technical studies**, especially under constrained municipal budgets.
- **Staff shortages, seasonal constraints, and lack of unified planning** can undermine the timely and effective delivery of interventions.
- **Financial and political hesitations** that often block systemic transformation. Community resistance and political reluctance to alter existing traffic or land use patterns can often stall or block proposed interventions.
- **Complex coordination between multiple municipal and external bodies**, which can cause delays and confusion due to fragmented responsibilities and unclear procedures.
- **Multi-ownership of land and unclear legal status of spaces** like school yards create administrative and legal obstacles to implementation.

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

- **Leverage the strong political commitment in Thessaloniki** for strengthening resilience against climate change, to develop and submit new project proposals and pilot actions in additional districts across the city.
- **Align project ideas to the city's will for investing in urban greening**, with a wide range of projects aimed at increasing green spaces, restoring biodiversity, and enhancing microclimatic conditions.
- Municipal staff, city council members, and local communities have shown strong support for climate and environmental agendas. This **growing awareness and readiness for action at both the political and social levels** offer a solid foundation for the successful scaling up of DCAP. **The upscaling of the DCAP will provide an opportunity to embed climate actions into the city's strategic and operational planning frameworks** (operational plan, SUMP, SECAP, etc.), ensuring continuity, institutional ownership and long-term impact.
- **Encourage interdepartmental coordination, break silos and foster collaboration between different units.**
- **Correct spatial inequalities i**n access to green infrastructure and resilience measures, by expanding interventions to underserved areas.
- Broaden public awareness and engagement, **fostering greater community ownership**.
- **Secure external funding**, overcoming financial and political hesitations that often block systemic transformation.

Offer capacity building and knowledge exchange opportunities to stakeholders, by providing access to tools and data.



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 Thessaloniki went through the finance and governance aspects, taking as a reference the **tools** developed by 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

One of the main priorities for Thessaloniki has been to integrate the DCAP will into the city's official strategic and operational planning frameworks. For this, it is essential to identify and engage with municipal departments that are responsible for planning and implementation, breaking silos and fostering multi-level and multi-departmental collaboration. In addition, many projects require cooperation not only within municipal departments but also with external bodies, and therefore it is essential to establish adequate working procedures for successful implementation.

While the Municipality adopts high-level strategies around mobility, urban greening or food management, sometimes there might be a gap between strategic goals and what is feasible under social constraints. For the specific upscaling actions that Thessaloniki is planning, community involvement and acceptance needs to be accomplished to continue with their development.

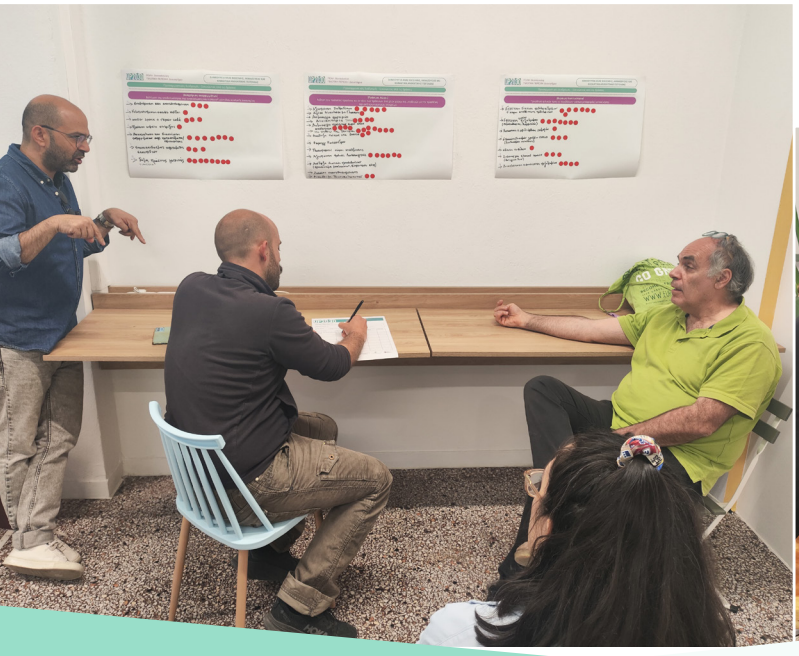
Finance

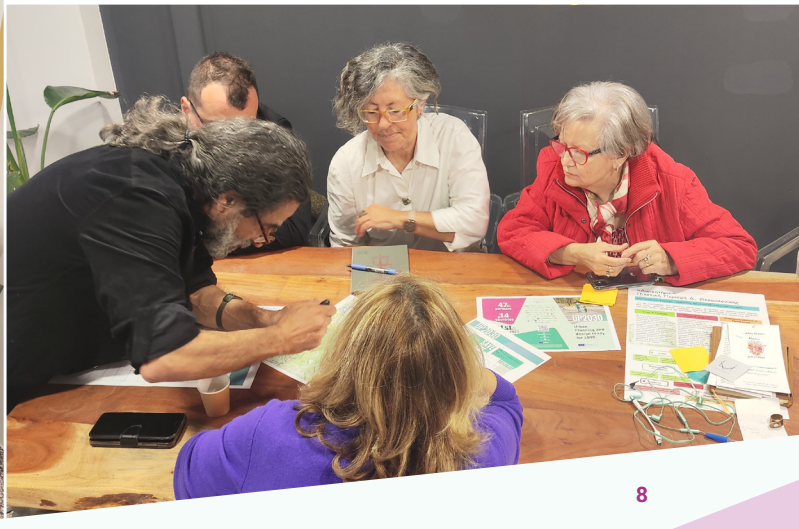
Thessaloniki's commitment to sustainable development has resulted in more funding opportunities for projects with this goal. However, municipal resources are limited, so it is important to seek other options to finance the activities that need to be carried out. Tools such as the **Green Finance Guide** developed by GGGI can support cities like Thessaloniki in:

- outlining a preliminary financing action plan that matches each type of interventions (e.g., nature-based solutions, sustainable mobility) with suitable funding sources;
- identifying potential technical assistance programs to strengthen municipal financial readiness;
- and assigning roles and responsibilities across departments and external partners to prepare for future funding applications (e.g., ELENA, Horizon Europe, national recovery funds).

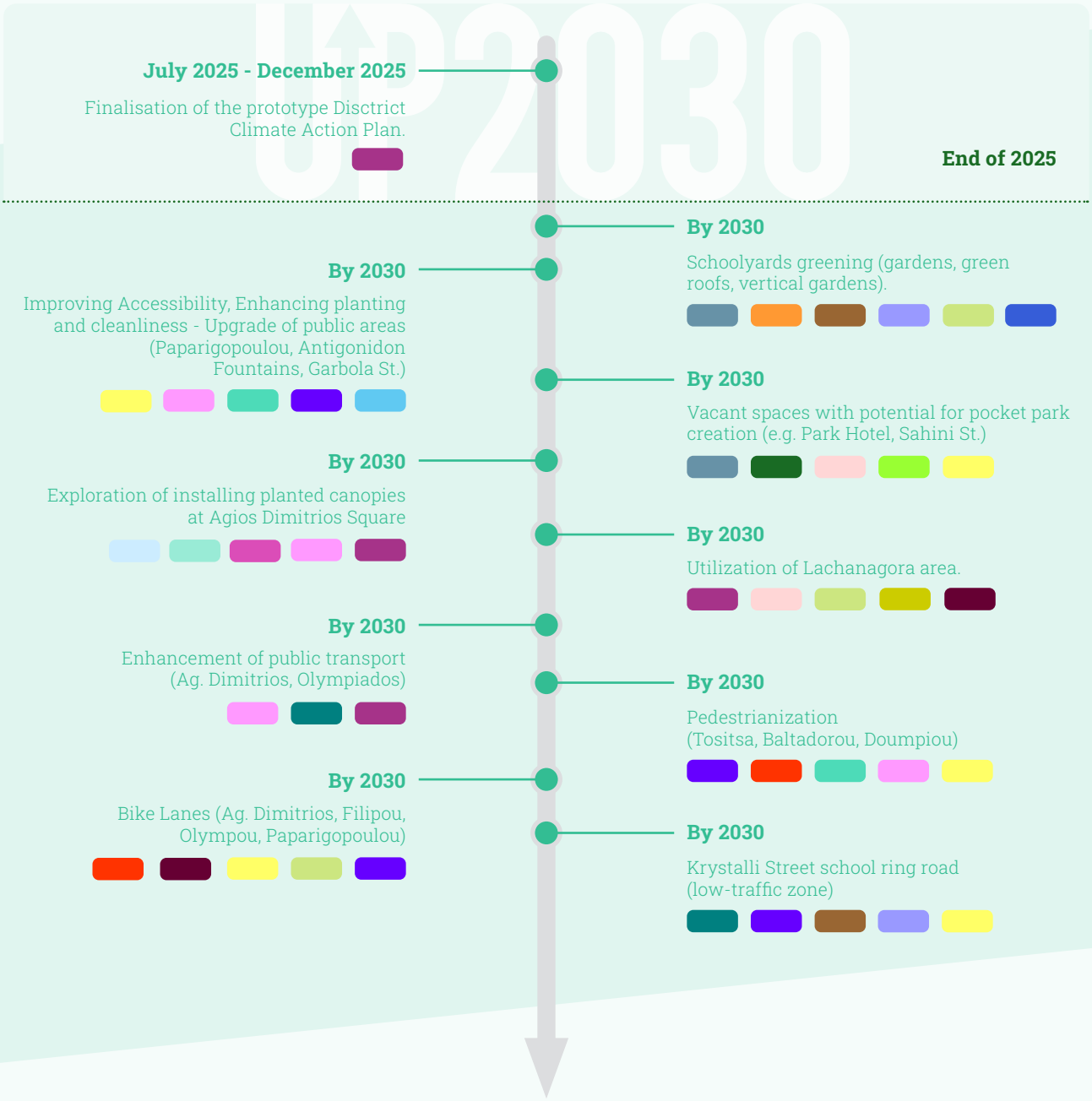
Moreover, Thessaloniki is exploring the option of embedding the **Cost and Benefit Analysis (CBA) Guide** into the city's planning procedures to evaluate climate actions under the DCAP. By using the CBA methods recommended, Thessaloniki can:

- Quantify the economic, environmental, and social benefits of interventions such as green roofs, energy retrofitting, or microclimate mitigation.
- Compare investment scenarios across focus areas (e.g., Lachanagora, XII Apostoloi, Antigonidon Square) to prioritize actions with the greatest net benefit.
- Present evidence-based justifications to municipal authorities and external investors for resource allocation.





Greening the city - Action plan for the next steps



Partners involved

- Municipality of Thessaloniki (general)
- Dept. of Architectural Projects & Greenery Studies
- Schooling Buildings Dept.
- Dept. of Redevelopment & Maintenance of Public Space
- Dept. of Architechture & Sustainability
- Dept. of Urban Planning
- Dept. of Forestry
- Dept. of Archaeology
- Thessaloniki Transport Organization
- Sustainable Mobility Department
- Education Directorate
- School Commitees
- NGOs
- Parents & Teachers Associations
- Technical Services
- Businesses / private contractors
- Local Communities /resident's associations
- Byzantine Antiquities Office
- Church/Metropolis
- Property owners
- Private investors
- Police

Thessaloniki has defined the following **milestones** for the actions defined above:

- **Schoolyards greening (gardens, green roofs, vertical gardens)**
  - 6 months: Mapping schoolyards
  - 12 months: Pilot in 2–3 schools
  - 24 months: Expansion to more schools

- **Improving Acessibility, Enhancing plandint and cleanlines - Upgrade of public areas (Paparigopoulou, Antigonidon Fountain, Garbola St.)**
  - 6 months: Redevelopment studies
  - 12 months: Implementation of accessibility & planting improvements
  - 24 months: Maintenance & monitoring

- **Vacant spaces with potential for pocket park creation (e.g. Park Hotel, Sahini St.)**
  - 6 months: Identify vacant sites
  - 12 months: First pilot pocket park
  - 24 months: Network of small green spaces

- **Exploration of installing planted canopies at Agios Dimitrios Square**
  - 6 months: Feasibility & stakeholder consultation
  - 12 months: Technical studies & permits
  - 24 months: Pilot installation

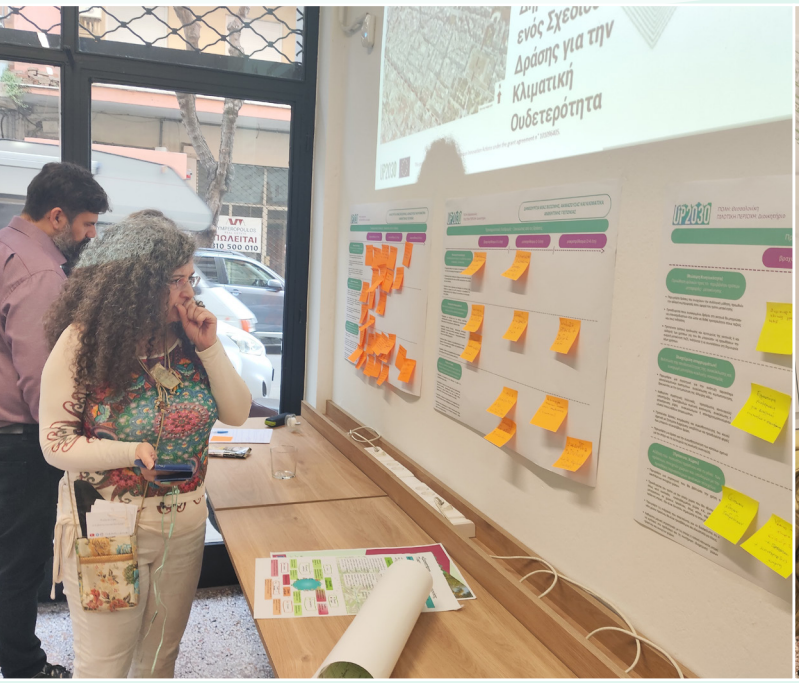
- **Utilization of Lachanagora area**
  - 6 months: Stakeholder negotiations (multi-ownership)
  - 12 months: Concept study
  - 24 months: Funding application & first works

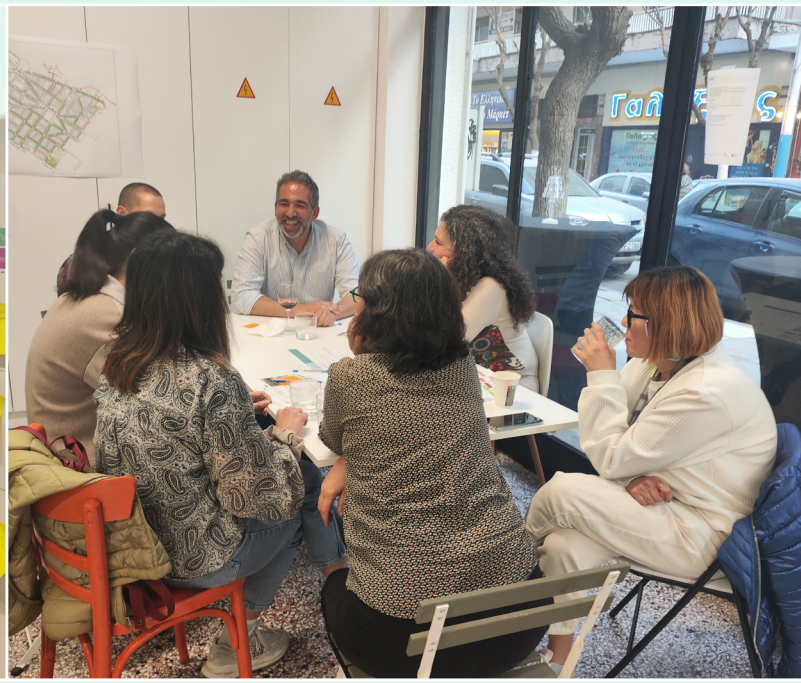
- **Enhancement of public transport (Ag. Dimitrios, Olympiados)**
  - 6 months: Needs assessment with Transport Org.
  - 12 months: Installation of new bus stops/shelters
  - 24 months: Integration with SUMP actions

- **Pedestrianization (Tositsa, Baltadorou, Doumpiou)**
  - 6 months: Traffic studies & consultation
  - 12 months: Pilot pedestrianization
  - 24 months: Expansion & evaluation

- **Bike lanes (Ag. Dimitrios, Filipou, Olympou, Paparigopoulou)**
  - 6 months: Design & approval studies
  - 12 months: Pilot bike lane construction
  - 24 months: Expansion & monitoring

- **Krystalli Street school ring road (low-traffic zone)**
  - 6 months: Technical traffic study
  - 12 months: Pilot interventions (signage, speed reduction)
  - 24 months: Full implementation & evaluation



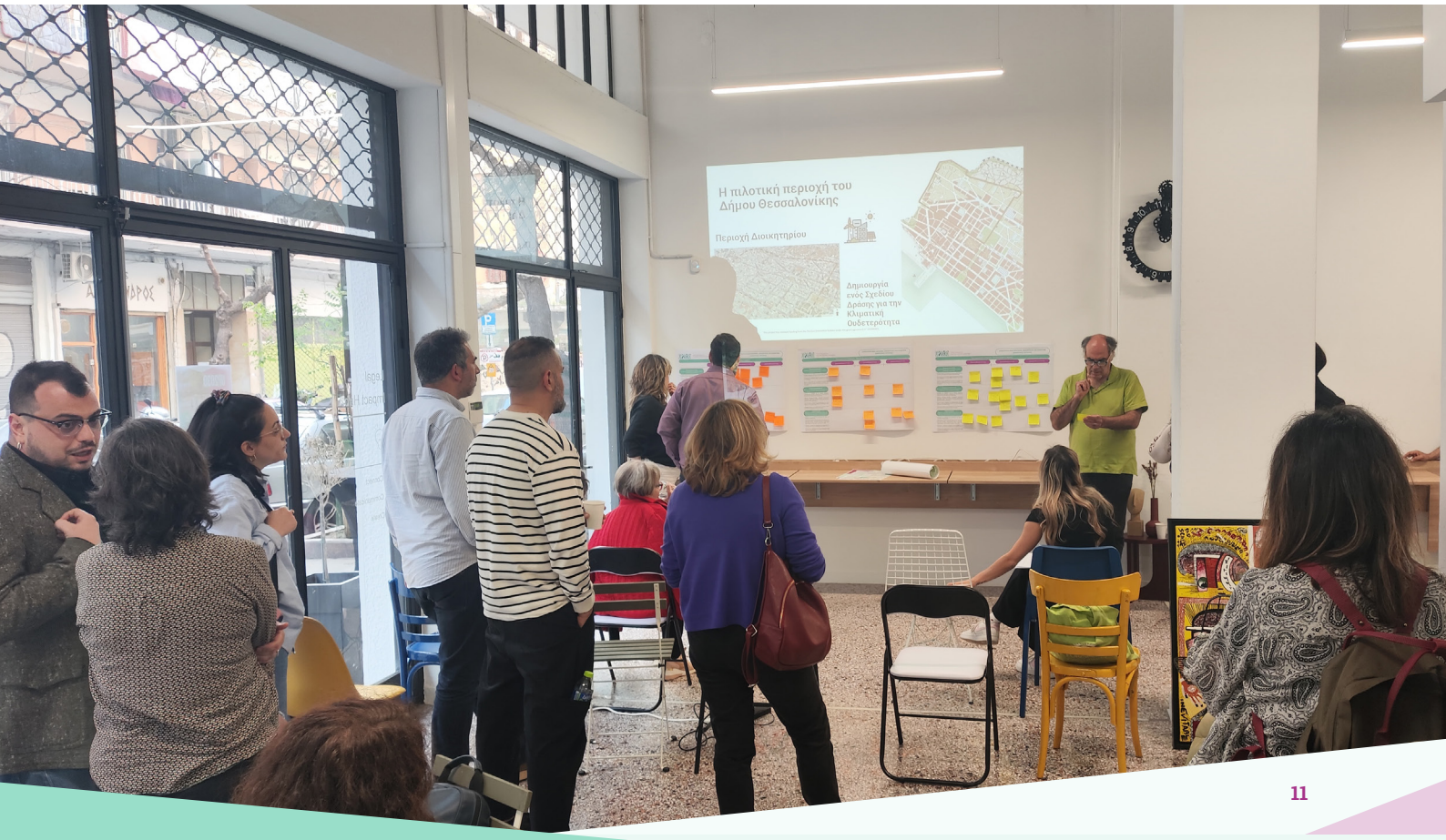


TOOLS' CONTRIBUTION TO THE PROTOTYPE AND POST-PROJECT USE

The tools used in the Thessaloniki case support the long-term viability of the District Climate Action Plan (DCAP) prototype by embedding climate planning into municipal processes, enabling data-driven governance, and facilitating the upscaling of strategies across the city. The DCAP, designed for the Dioikitirion neighbourhood, serves as a methodological guide and policy roadmap to help Thessaloniki achieve its long-term vision of becoming a sustainable, thriving, and climate-resilient city based on the core pillars of carbon neutrality, resilience, and just transition. By integrating the technical and participatory outputs of these tools into existing strategic frameworks (like the SUMP and SECAP), the city ensures institutional continuity and long-term impact beyond the project's conclusion.

The **DRAXIS Smart City Decision Support System (DSS)** provides the necessary technological backbone for operational continuity and evidence-based planning. This platform is fully operational and will continue to be used by Thessaloniki Municipality for monitoring urban indicators, assessing policy impacts, and evaluating sustainable urban planning scenarios. To ensure its long-term viability, the DSS utilizes open-source technologies, and the platform's architecture is designed for the straightforward integration of new data as municipal needs evolve. Training materials, including video, have been developed to support future training needs, confirming that municipal staff have the capacity to maintain and operate the tool independently, with hosting sustained either through municipal infrastructure or a lightweight service agreement.

The Urban Design Climate Workshop (UDCW), **Simulation and Facilitation Toolkits (UCCRN)** and the **Neutrality Story Maps** (NSMs) support the methodological and engagement goals of the DCAP. The UDCW Toolkit provides science-based evidence by conducting multi-scale climate and energy simulations to assess risks, evaluate interventions, and align the urban transformation strategy with 2030 and 2050 milestones. This process embeds actionable interventions, such as urban greening and mobility improvements, into Thessaloniki's planning instruments, which is key to continuity. Additionally, the NSM is an open platform intended for continued use by the city to promote knowledge transfer and engagement allowing cities to independently use and edit the content.



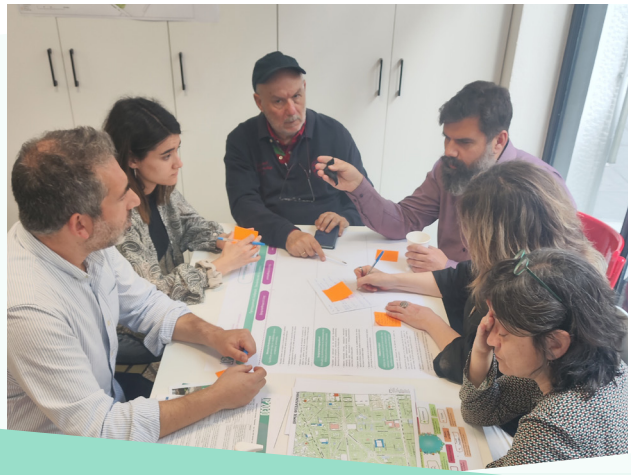
TRANSFERABILITY OF THE PROTOTYPE

Thessaloniki is a good example for cities looking to develop projects or interventions linked to master planning and informed decision making. These projects can guide current municipal planning processes and transform the way local governments think and act. 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 Budapest is located (Budapest province), and hence which most closely resemble the province Budapest:

CAPACITY FOR ACTION

Developing economies with high environmental value

Found across Easter-most Europe, the Balkans and the Iberian Peninsula, this cluster presents a striking contrast between environmental richness and socia-economic challenges. While these regions record **the lowest scores for socio-economic well-being and governance** in the study area, they protect **the highest share of natural areas**. These rural, sparsely populated regions face significant development gaps, with the **fewest hospitals per capita** and **low employment rates**, yet their commitment to environmental conservation remains their defining strength.

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

Most pronounced dryness, alongside high heat hazard and wildfire, in southern Europe

This cluster, **spread across southern and Mediterranean Europe** (e.g. France, Spain, Portugal, Italy, Croatia, Romania, Bulgaria), exhibits a more **rural character**, with its **low urbanization rate of 59% and very low percentage of urban area per region**. It is characterised by **extreme drought conditions** (by far the lowest SPEI of all clusters), **high heat stress, and the highest wildfire risk** in the study area, creating significant combined challenges for urban planning, public health and urban climate adaptation. **Air pollution is moderate**, (moderate-to-low risk per WHO Air Quality Guideline 2021), while flood and landslide risks are low to moderate (and attributable to pluvial and fluvial flooding). Exposure to sea-level rise is limited in these regions. The cluster is closely related to, and often geographically adjacent, the cluster "Greatest heat hazard, and wildlife risk in dry Southern Europe climate" in regards to heat stress, wildfire risk, air pollution.

URBAN MORPHOLOGY

High-density urban centres with minimal open space

This cluster is found in the major 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.

Thessaloniki 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 Thessaloniki prototype is not only applicable in places classified within these four typologies), but rather help to identify places where the transfer of this package of Thessaloniki 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 MESSAGE FROM THE CITY

"For Thessaloniki, moving from planning to implementation requires embedding community-led approaches into the core of urban transformation. Beyond expert-driven proposals, the active involvement of residents from the earliest stages is essential to shape and support meaningful change. A key challenge ahead is enabling the energy renovation of private buildings, while integrating neighborhood-level action plans into a cohesive urban regeneration framework that supports long-term delivery."

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The local actions have been led by the municipality of Thessaloniki and its liaison, MDAT SA.

CITY OF THESSALONIKI

MAJOR DEVELOPMENT AGENCY THESSALONIKI S.A.
ORGANIZATION FOR LOCAL DEVELOPMENT

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