NET ZERO CITIES

EU MISSION PLATFORM | CLIMATE NEUTRAL AND SMART CITIES

DESIGN YOUR CITY'S NET ZERO STRATEGY: ONLINE PLANNING LAB

HANDBOOK



PART OF THE EU MISSIONS

CLIMATE-NEUTRAL & SMART CITIES

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Design Your City's Net Zero Strategy: Online Planning Lab

Handbook

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What is the Online Planning Lab

The Online Planning Lab is a free hybrid course composed of self-paced videos and learning resources, and live sessions. It offers a flexible and practice-oriented learning experience to support European cities in advancing their climate planning and implementation. It is composed of self-learning material including videos, readings and live sessions targeted at city representatives and policymakers from all EU and affiliated countries. These are available on the Mission portal under the tab "Learn". The programme is structured around six modules, covering key topics from "What is a Climate Action Plan and why it is useful", to setting up a "Transition Team", and from "Governance and Policy", to developing a "Portfolio of Actions", through "Sector-Based Emission Reduction Solutions", and "Financing Solutions".

All learning materials are available on the portal's Learning Hub. Here, participants can work with practical tools, learn from real examples from Mission Cities, and prepare for live sessions focused on connecting directly with other cities facing similar challenges, with multilingual materials supporting inclusive participation.

What is NetZeroCities and the Mission Cities

NetZeroCities is the platform for the EU Mission "Climate-Neutral and Smart Cities" that aims to support 100 cities to reach climate neutrality by 2030. NetZeroCities works as a service-oriented platform that brings together experts, tools and learning opportunities to help cities overcome structural, institutional and cultural barriers to achieve climate neutrality.

In April 2022, the European Commission selected 112 Mission Cities to lead the transition to climate neutrality by 2030. These cities receive tailored support to accelerate their climate transition from NetZeroCities to plan, implement and monitor their Climate City Contract (CCC). Beyond the 112 Mission Cities, NetZeroCities also supports all EU cities that are committed to reducing emissions and aim for climate neutrality aligned with the EU Green Deal, which are named Mission-minded cities (MMC).

What is this handbook

This handbook is designed to support participants throughout the Online Planning Lab. It includes reading support materials for each module, introducing key concepts, links to resources, case studies, and tools. Designed as a practical reference, this handbook helps participants prepare in advance to engage confidently in live discussions and revisit essential information throughout their learning journey.

To ensure accessibility for participants across Europe, this guide is available in multiple EU languages.

Structure of this handbook

The Online Planning Lab is structured in six modules, each composed of multiple topics and a glossary. For each topic, a series of resources is provided: videos, readings, interactive tools, methods and case studies from Mission Cities and other cities.

Module 1: What is a Climate Action Plan and why it is useful
Module 2: Transition Team
Module 3: Governance & Policy
Module 4: Portfolio of Actions
Module 5: Sector-Based Emission Reduction Solutions
Module 6: Financing Solutions

NetZeroCities contacts for cities:
NetZeroCities support for all cities
Helpdesk: 1:1 booking meeting link

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Useful resources:

Online planning lab online page
NetZeroCities Learning Hub: learning opportunities for all cities
Mission Portal
Mission Cities

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Module 1 - What is an Action Plan and why is it useful

Topic 1.1 How can NetZeroCities support my city's climate transition goals?

Authors: Ermioni Chatzimichail, Ida Jusic

NetZeroCities: Support offer for Mission-minded cities

Cities are at the heart of tackling climate change. Across Europe, local governments are working to reduce emissions, improve quality of life, and build more sustainable communities. The EU Cities Mission supports cities in reaching climate neutrality by 2030, while ensuring that they act as innovation hubs for all European cities by 2050. This topic introduces the NetZeroCities programme, which supports the implementation of the Mission. It provides an overview of the available services, tools, and learning opportunities, and shares insights from cities already progressing towards climate neutrality.



The EU Missions

The EU Missions are a key novelty of the Horizon Europe programme. They deliver concrete solutions to some of the greatest challenges facing society by 2030, through a coordinated approach that combines research, innovation, and policy action.

There are five Missions: adaptation to climate change, restoration of oceans and waters, soil health and food, cancer, and climate-neutral and smart cities. These Missions are designed to be ambitious, measurable, and time-bound, while engaging citizens and stakeholders across Europe.

The EU Cities Mission

Launched in 2022, the EU Cities Mission "100 Climate-Neutral and Smart Cities by 2030" supports European cities in achieving climate neutrality.

The first objective of the Cities Mission focuses on 112 Mission cities, providing tailored support on their path to climate neutrality. It also aims to ensure that these cities act as experimentation and innovation hubs, enabling all European cities to follow suit by 2050. In this context, the second objective focuses on all cities beyond the 112 Mission cities, the so-called **Mission-minded cities**. A dedicated page on the portal outlines the different categorisation of cities.

NetZeroCities

The NetZeroCities programme is the support system behind the EU Cities Mission. While the Mission sets the vision, NetZeroCities provides the tools and guidance to help cities achieve it, supporting cities in the design, implementation, and monitoring of their climate actions. It provides cities with access to technical expertise, capacity-building activities, and guidance on financing and governance. It also facilitates collaboration and knowledge exchange between cities, helping to accelerate progress and scale up solutions.

A systemic approach to climate neutrality

Achieving climate neutrality requires a systemic transformation across multiple sectors, including energy, mobility, buildings, and waste. The Mission promotes a systemic approach that recognises the interconnections between these sectors and encourages coordinated action.

Systemic and systematic: in addition to applying a systematic process, cities are invited to take a systemic perspective. A **systematic** approach provides a structured, step-by-step method for planning and implementation. A **systemic** approach helps cities identify interdependencies, anticipate unintended consequences and design mutually reinforcing actions across the whole urban system.

Cities are supported in developing Climate Transition Pathways, which outline routes to climate neutrality. These pathways help cities plan and prioritise actions, align stakeholders, and ensure coherence across policies and investments.

Support available to cities through NetZeroCities

Mission Portal

A central entry point is the Mission Portal (https://netzerocities.app/), this is the one-stop platform for cities. It brings together practical guidance, tools, and examples that can support both early planning and implementation. Whether a city is just starting out or already advancing its strategy, the platform provides structured resources that can be used directly by city teams.

Capacity-building activities

In addition to online resources, cities can take part in capacity-building activities, outlined in the Learning Hub, designed to strengthen their ability to plan and deliver climate actions. The aim is to ensure that cities not only have ambitious goals, but also the practical knowledge and skills needed to achieve them.

Peer learning opportunities

Peer learning is another key element of support available. At national level, cities can engage in collaborative networks that bring together different levels of government and a wide range of stakeholders, from industry to civil society. These networks help align efforts and create a shared understanding of priorities and solutions within each country.

At European level, cities can connect through Online Discussion Groups, Group Study Visits, and the Twinning Learning Programme. These formats allow cities to learn directly from each other's experiences to understand what has worked, what has not, and how challenges have been addressed in practice.

Self-Assessment tool.

Test your city's readiness and capacity for climate neutrality with the Self-Assessment tool.

NetZeroCities Helpdesk

Cities can receive tailored support, guidance, and resources through the dedicated helpdesk via infocities@netzerocities.eu. The helpdesk is the primary contact point for navigating tools, accessing peer-learning opportunities, and receiving expert recommendations.

City cases

Mission City: Porto, Portugal

The City of Porto is actively engaged in climate action through the Porto Climate Pact, aligned with the broader framework of the EU Mission for Climate-Neutral and Smart Cities. The city has been developing greenhouse gas emissions monitoring over time to support its climate strategy and decision-making.

Porto aims to reach climate neutrality by 2030, a target that requires coordinated action across public institutions, private organisations, and civil society. This goal is part of a wider transformation effort supported by the Climate City Contract approach, which brings together multiple stakeholders to define and implement climate solutions.

The Porto Climate Pact is designed to mobilise citizens, organisations, and institutions, building a community focused on climate action, learning, knowledge sharing, and mutual support. It emphasises collaboration, participation, and co-creation as key drivers of change.

Regarding partner involvement, around 50 institutional signatories are engaged with the Pact and have committed to its climate objectives. These partners maintain close collaboration with the city through awareness-raising activities, participation in municipal initiatives, involvement in co-creation processes, and connection to broader national networks. This reflects an ongoing effort to strengthen engagement and collective action, rather than a fixed or exhaustive figure.

Mission City: Umeå, Sweden

The City of Umeå is working on a long-term climate transition supported by policy, planning, and cooperation across different actors. A key focus is reducing emissions from transport and lowering consumption-based emissions over time.

The city's climate work is guided by several milestones, including updated climate goals, a climate and environmental action plan for the municipal group, and the Umeå Climate Roadmap developed with a broad partnership of local actors. Umeå also participates in the Swedish Climate City Contract 2030, aligned with national and European frameworks.

Priorities include fossil-free transport and smart mobility, circular systems and resource flows, and managing residual emissions. The approach also includes scenario-based planning to address uncertainty and future risks.

Key learnings highlight the importance of working across all levels of society, combining incentives, regulations, and advisory support for citizens. Engagement of businesses and associations is essential, as well as coordination between municipal planning, developers, and utility companies. Alignment between local, national, and international frameworks is important, while maintaining strong local support.

Social justice is also a central principle, focusing on fair distribution of costs and benefits in the transition, including access to energy systems, affordability, and inclusive decision-making.

Useful Resources

1. Dedicated Topic page on the portal
2. Presentation: Online Planning Lab - Module 1 - NetZeroCities Session Slides (2025)
3. Further reading: Overview of all 112 Mission Cities

4. Further Read: Climate Transition Map on the Mission Portal.
5. Further Read: NetZeroCities support for all cities
    - Mission Portal Tools
    - NetZeroCities Tool Training Series on Finance and Funding
    - Mission-minded cities newsletter here.
    - Helpdesk: 1:1 booking meeting link
6. External Link: European Commission – EU Missions
7. External Link: EU Mission: Climate-Neutral and Smart Cities

Related group on the Mission portal

Mission Portal group for Mission-minded cities (orientation)

Related EU/international projects or initiatives

- European Green Deal
- Fit for 55
- Horizon Europe
- UN Sustainable Development Goals (SDGs)
- Covenant of Mayors for Climate and Energy
- European Urban Initiative
- Driving Urban Transitions Partnership (DUT)
- New European Bauhaus
- European Climate Pact
- Urban Agenda for the EU

Topic 1.2 The Mission Approach

Authors: Ermioni Chatzimichail, Ida Jusic

The transition towards climate neutrality in cities requires a fundamental shift in how urban systems are planned, governed, and transformed. The EU Cities Mission supports cities in this transition by promoting systemic, integrated and mission-oriented approaches that enable structural change across sectors and governance levels, in line with the objectives of the European Green Deal.

The Mission Approach

The Mission Approach recognises that achieving climate neutrality requires systemic transformation rather than incremental change or infrastructural solutions alone. It aims to tackle complex urban challenges through coordinated cross-sectoral action, aligned with the ambition of achieving climate neutrality by 2030 and supporting the broader objectives of the European Green Deal, including climate neutrality by 2050.

The approach is mission-oriented – it focuses on clearly defined, time-bound and measurable objectives that require action across policy domains and governance levels. It promotes alignment of research and innovation, regulation, public procurement, finance and investment frameworks, and encourages the active engagement of public authorities, private sector actors, research organisations and citizens.

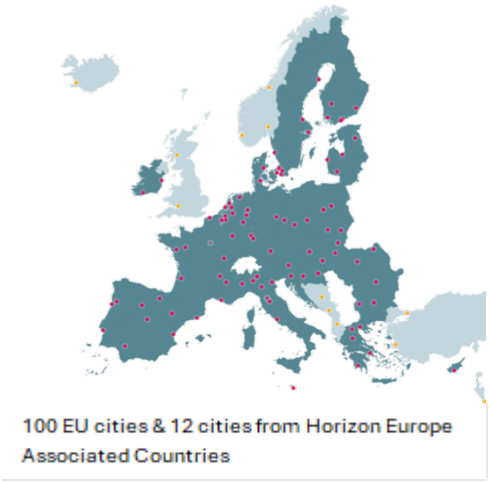
Within the EU Cities Mission framework, political commitment and strategic planning are a core foundation. This is expressed through the development of Climate City Contracts, which bring together a city's vision, implementation strategy and investment plan for climate neutrality, ensuring coherence and multi-level alignment.

The Mission Approach is inherently systemic and holistic. Cities are encouraged to understand interdependencies across urban systems and to develop portfolios of actions that combine multiple measures to maximise impact, co-benefits and long-term transformation.

A key principle of the Mission Approach is deep collaboration across sectors and stakeholders. Delivering climate neutrality requires coordinated action between local authorities, regional and national administrations, industry, research and innovation actors, and civil society. This requires dedicated coordination capacity, often supported through a transition team, to ensure coherence, stakeholder engagement and alignment of action.

The approach also promotes innovation and learning through pilot projects and knowledge sharing. Replication is enabled through peer learning, twinning and structured knowledge exchange between cities.

Mission Cities



Mission Cities are select European cities that have committed to achieving climate neutrality by 2030. They act as experimentation and innovation hubs for all European cities on the pathway towards climate neutrality by 2050. They are supported through the EU Cities Mission implementation framework and associated support structures, including the Mission Platform. The selection process was launched through an open call for expression of interest in 2021. Eligible cities were those with more than 50,000 inhabitants. The selection ensured geographical balance, diversity in city size and typology, and variation in starting points and levels of preparedness. From 377 applications received, 112 cities were selected.

Mission Cities are required to develop a CCC, which integrates a city's overall vision, implementation strategy and investment plan. The process follows a multi-actor, participatory and place-based approach, involving local authorities, citizens, businesses, utilities and relevant regional and national stakeholders. This ensures ownership and legitimacy of the transition pathway.

Mission Cities function as testbeds for innovation and systemic transformation. They pilot new approaches in areas such as governance, urban planning, climate-neutral infrastructure, social innovation and financing models. They also contribute to strengthening the evidence base for urban transformation through monitoring, evaluation and learning processes.

Beyond their local implementation role, Mission Cities play a wider systemic role in supporting replication and scaling across Europe. They act as reference cities, share good practices, engage in twinning and peer-learning activities, and contribute to the development of national and European networks supporting the climate-neutral transition. In doing so, they help accelerate uptake of solutions and approaches across the wider urban landscape.

Their experience highlights that achieving climate neutrality requires not only technological and financial solutions, but also sustained coordination, stakeholder engagement and governance innovation across all levels of the urban system.

City cases

Mission City: Aachen, Germany

The City of Aachen applies the mission approach as part of theCities Mission, using the CCC as a key instrument for coordinating the transition towards climate neutrality by 2030. The approach brings together local government, businesses, universities, civil society organisations, and citizens around a shared roadmap and investment plan.

A key element of this process is the coordination structure supporting implementation, including the Climate Transition Team and the broader governance framework established through the Aachen CCC. The city emphasises collaboration across sectors and continuous stakeholder involvement, with more than 130 local

actors already engaged in the process. The CCC is also described as an evolving and flexible instrument, allowing additional partners and actions to be integrated over time.

Mission City: Milan, Italy

The City of Milan uses the CCC process as a framework to engage stakeholders in its transition towards climate neutrality by 2030. The approach brings together the city administration, businesses, universities, utilities, civil society organisations, and other local actors around shared climate objectives.

Milan's CCC was developed together with stakeholder signatories, creating a common commitment to climate action and decarbonisation. The process includes coordinated actions and investment plans aimed at accelerating implementation across sectors.

A central aspect of Milan's approach is testing collaborative governance under the CCC framework. The city also promotes a "molecular strategy" for urban regeneration, based on smaller-scale, low-impact neighbourhood interventions that can be replicated and scaled across the city. These projects are intended to act as catalysts for broader urban transformation while supporting climate neutrality goals.

Useful Resources

1. Topic Page: Mission Cities Systemic Approach
2. Presentation: Online Planning Lab - Module 1 - Systemic Approach Slides (2025)
3. Further Read:
    a. Climate City Contract
    b. Climate City Contracts quick reads
    c. Climate City Contracts submitted

Related group on the Mission Portal

- Climate City Contracts Group

Topic 1.3 How can I create a compelling climate narrative that engages stakeholders?

Authors: Carlotta Fontana Valenti

European cities increasingly recognise that achieving climate neutrality is not only a technical or policy challenge, but also a social and cultural one. A compelling narrative helps translate complex climate strategies into stories that resonate with people's everyday lives, making climate action feel relevant, fair, and achievable.

This topic introduces practical strategies to craft engaging climate narratives, combining insights from research and real-world city experiences. It also highlights how communication connects with participation, co-creation, and long-term trust-building.

Climate narratives

Effective climate narratives cannot be reduced to communication techniques alone. While messaging is important, what cities often experience in practice is that resistance to climate policies rarely comes from a lack of information. Instead, it emerges when people feel excluded from decision-making, when their concerns are not acknowledged, or when policies are perceived as unfair.

For this reason, climate narratives should be understood as part of a broader trust-building infrastructure. They are closely linked to how participation is organised, how dialogue is facilitated, and how conflicts are navigated. Designing spaces where different perspectives can coexist, and where people feel genuinely heard, is just as important as crafting the narrative itself. In this sense, communication, participation, and legitimacy are deeply intertwined.

Key Strategies for Building Compelling Climate Narratives

1. Focus on benefits, not sacrifices

Effective climate narratives highlight what people gain, not what they lose. Framing policies around co-benefits—such as better health, lower costs, and improved quality of life—makes them more relatable and appealing. For instance, sustainable mobility can be presented not only as emissions reduction, but as safer streets, quieter neighbourhoods, and more vibrant public spaces.

2. Take citizens' concerns seriously

Listening is central to narrative-building. People often have legitimate concerns about affordability, jobs, or daily disruptions. Ignoring these can increase resistance. Instead, cities should acknowledge these realities and show how climate actions respond to them. When people feel heard, they are more likely to engage and support change.

3. Tell stories that move people

Facts alone rarely inspire action. Storytelling helps make climate change tangible and meaningful by connecting it to lived experiences. Through stories—whether local examples, personal testimonies, or cultural narratives—cities can build shared understanding and motivate engagement.

4. Highlight success stories and frontrunners

Showcasing real examples helps turn ambition into something concrete. Highlighting successful initiatives—locally or elsewhere—demonstrates that change is possible and already happening. These examples provide both inspiration and practical guidance.

5. Use clear, transparent and accessible data

Trust depends on clarity and transparency. Cities should communicate data in simple, accessible formats, using visuals where possible, and clearly explain decisions and progress. Data becomes more impactful when linked to real-life benefits and combined with storytelling.

6. Engage unexpected allies

To reach wider audiences, cities need to go beyond traditional communication channels. Working with actors such as schools, sports clubs, cultural organisations, or businesses helps bring climate conversations into everyday contexts and connect with new groups.

7. Empower local changemakers

Local actors—community leaders, grassroots initiatives, civil society—are often trusted voices. Supporting and amplifying them strengthens credibility and creates a more inclusive and distributed narrative around climate action.

8. Co-create narratives with communities

The most effective narratives are built with people, not for them. Involving citizens in imagining futures and shaping solutions fosters ownership and makes climate action a shared endeavour. Co-creation helps ensure that policies reflect real needs and are more widely supported.

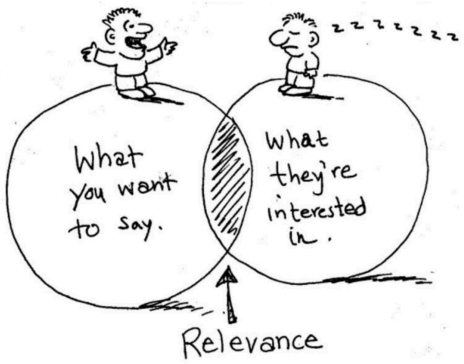
Cross-cutting principles

For climate narratives to be effective, they must be **fair, audience-focused, and action-oriented**.

Fairness is essential: people are unlikely to support policies they perceive as unjust. Narratives must clearly show how climate action improves quality of life for all.

Understanding the audience is equally critical. Messages should reflect different groups' concerns, values, and ways of engaging.

Finally, strong narratives go beyond informing—they **build trust and enable action** by combining communication with participation, storytelling, and co-creation.



City case

Mission City: Valencia, Spain

Valencia focuses on **enabling citizen-led action**, particularly in the energy transition. Its communication connects climate policies to everyday practices and local identity, making the transition more accessible and inclusive.

Additional city cases

- **Copenhagen**: Positions cycling as part of city identity and lifestyle (read their strategy here or watch this video)
- **Ghent**: Uses temporary "Living Streets" to allow citizens to experience change directly (read here)
- **Barcelona**: Engages residents in redesigning public spaces (Superblocks, here)
- **London**: School Streets programme demonstrates clear local benefits (safety, air quality, community life)

Useful Resources

1. Topic Page: Shaping Climate Narratives
2. Presentation: Online Planning Lab - Module 1 - Shaping Narratives Slides
3. Tool: Persona Template - A step-by-step guide to creating personas tailored to your specific context and challenges.
4. Further Read: Shaping Climate Narratives: 8 Tips for Building Trust and Driving Change
5. External resource:
    a. C40 Cities Article: How cities can tackle climate disinformation
    b. Disinformation in the City: Response Playbook
    c. Toolkit for Human Rights Speech of the Council of Europe

Related group on the Mission portal

Climate Communication Group

Topic 1.4 What are Climate City Contracts?

Author: Francesco Palmia

How have European cities used Climate City Contracts as innovation and governance tools?

Climate City Contracts (CCCs) are used by Mission Cities as an innovation and governance tool to support their transition towards climate neutrality. Built on key principles of collaboration, commitment, and shared ownership, CCCs are developed and adapted through an iterative co-creation process involving local, regional, and national stakeholders. By aligning ambitions, actions, investments, and responsibilities across different levels of governance, CCCs help cities strengthen collaboration, foster innovation, and accelerate climate action. Drawing on practical examples from across Europe, this topic highlights actionable insights from the implementation of CCCs and demonstrates how the approach is being adapted, replicated, and scaled across diverse national contexts.

What is a Climate City Contract?

A CCC is a governance tool used by Mission Cities and Mission-minded cities to support implementation of the Cities Mission. All Mission Cities have submitted a CCC to the European Commission and received the Mission label. The Action Plan and Commitment Documents of the CCCs are publicly available on a dedicated portal page. Mission Cities are now implementing the actions listed in their CCCs.

For all other cities, writing a CCC is optional. It can be useful to support integrated climate planning and experimentation. Beyond Mission cities, Viladecans, Bilbao, Constanta and Iași are examples of Mission minded cities that have created and submitted a CCC. All cities can develop a CCC and submit in the portal by creating an account for their city. They can receive technical support from the NetZeroCities helpdesk and support from their national ecosystems.

Climate City Contracts are both a collaborative governance process and a living document.

As a **collaborative governance process**, CCCs aim to accelerate progress towards climate neutrality by bringing together relevant stakeholders. The process looks different in every city, depending on the local context. However, its key components help cities to:

- build a stronger mandate for climate action;
- develop a shared understanding of the current situation and the complexity of local challenges;
- co-create, from a city-wide perspective, a portfolio of actions that can overcome barriers and make the most of opportunities for climate neutrality.

Navigate the Climate Transition Map on the Mission Portal to explore the systemic and iterative proposed approach



As a **living document**, the CCC is a written contract supported by concrete Action Plans. It is composed of three interlinked components:

- **Commitments Document.** This document captures the outcomes of a co-creation process with local, regional, and national stakeholders. It helps establish new ways of working together to achieve climate neutrality faster. It includes a shared ambition for 2030, a strategy to achieve it, and written and signed commitments to action from stakeholders.

- **Climate Neutrality Action Plan.** The Action Plan identifies the emissions reduction gap in existing strategies, policies, and plans. It then uses key levers of change, including governance and policy, democracy and participation, finance, technology, social innovation, and capacity-building, to create a coordinated portfolio of interventions across emission sectors. These interventions aim to bridge the gap to climate neutrality by 2030.

- **Climate Neutrality Investment Plan.** The Investment Plan explains how public resources can be strategically mobilised and organised, and how private capital can be attracted to fund and finance the city's pathway to climate neutrality. In this handbook, we focus on providing guidance specifically for developing the Action Plan.

All CCC resources, including guidance documents and available CCCs developed by Mission Cities, can be found on the dedicated page in the portal's Knowledge Repository



How have cities used the Commitments Document?

- **Set a climate target and accelerate the journey towards climate neutrality.** Cities begin their journey to climate neutrality at different starting points and levels of maturity. Some updated their existing climate targets, while others set their first target.

- **Define priorities and principles to guide the planning and implementation phase.** Strong principles support both the planning and implementation phases of CCCS. Cities have adhered to principles such as co-creation, open innovation, transparency, sufficiency, or Just Transition.

- **Leverage co-benefits to strengthen the case for climate action.** CCCs emphasise the importance of implementing climate actions to improve air quality, increase employment rates, boost local business, and foster attractiveness of the city. Read more about the use of co-benefits in CCCs in the CCC Highlights - Co-Benefits and Indicators

- **Adopt a whole-city approach** and secure commitments from different levels of government and the local ecosystem of actors. Read more in the CCC Highlights – A Diverse Ecosystem of Supporters

Learn from Cities

Experts from the Mission Cities of Valencia, Leuven, Valladolid and Turku, together with the Mission-minded city of Eskilstuna, present how they are using the CCC process to set ambitious climate neutrality targets and secure signed climate commitments from local actors and different levels of government. They also explain how they have built a strong narrative around the CCC, combining transparent priorities and principles with a compelling case for climate action that highlights co-benefits such as health, job creation and improved air quality.

You will learn more about the commitment document in:

- Module 2 - Transition Team
- Module 3 - Governance & Policy

How have cities used the Climate Neutrality Action Plan?

- Define a GHG emissions inventory.
- Systemically explore barriers and opportunities.
- Identify the climate neutrality emissions gap by analysing existing relevant policies and plans at different levels of government that contribute to the increase or decrease in GHG emissions.

- Develop a theory of change and a portfolio of actions. Define concrete actions linking emission domains with systemic levers and indicating outcomes and long-term impact.
- Define a monitoring, evaluation, and learning framework with quantitative and qualitative indicators to measure and describe process, outcomes and impacts.

City case

Mission City: Valladolid, Spain

The City of Valladolid outlines how it developed its CCC through a comprehensive systemic mapping of the current landscape. This process involved reviewing existing policies, planning documents, and actions implemented across different levels of government, complemented by a detailed greenhouse gas (GHG) emissions inventory and an assessment of the key barriers to climate neutrality.

You will learn more about how to develop an Action Plan in:

- Module 4 - Portfolio of Actions
- Module 5 - Sector-Based Emission Reduction Solutions

You will learn more about how to develop an Investment Plan in:

- Module 6 - Financing Solutions

Useful Resources

1. Presentation: Online Planning Lab - Module 1- Climate City Contracts Slides (2025)
2. Portal page: All Climate City Contracts resources including all available CCCs from Mission Cities and Mission-minded cities
3. CCC Guidance and Templates
    a. 2030 Climate Neutrality Commitments Guidance | Template
    b. 2030 Climate Neutrality Action Plan Guidance | Template
    c. 2030 Climate Neutrality Investment Plan Guidance | Template
    d. Climate City Contract – Checklist Editable Word version
4. Further Read: **CCC Highlights**
    a. CCC Highlights – Bold Commitments to 2030
    b. CCC Highlights – A Diverse Ecosystem of Supporters
    c. CCC Highlights – Sustainable Energy Systems
    d. CCC Highlights – Barriers to Climate Neutrality
    e. CCC Highlights – Diverse Perspectives on Climate Justice
    f. CCC-Highlights – Residual Emissions Strategies
    g. CCC-Highlights -- Co-Benefits and Indicators

Related group on the Mission portal

Join the Climate City Contracts portal group

Glossary Module 1: Climate Action Plan

Capacity building: Developing the skills, knowledge, resources and organisational capability needed for effective climate action.

Climate City Contract (CCC): A strategic framework and collaborative governance process that outlines a city's vision, actions and investment plan for achieving climate neutrality.

Climate neutrality: Achieving a balance between greenhouse gas emissions and reductions, resulting in no net contribution to climate change.

Climate transition: The process of moving from current practices to more sustainable, low-emission ways of operating.

Climate Transition Pathway: A strategic plan outlining the steps a city will take to achieve climate neutrality.

Demonstrators/pilot projects: Real-life initiatives used to test and validate innovative solutions before scaling and replication.

Co-creation: Collaborative processes where citizens and stakeholders contribute to shaping solutions.

Climate neutrality: Achieving a balance between greenhouse gas emissions and reductions, resulting in no net contribution to climate change.

Mission-minded cities: Cities beyond the 112 Mission Cities that are working towards climate neutrality and can use the EU Cities Mission approach, tools and learning resources.

Mission-oriented approach: An approach focused on achieving ambitious, time-bound objectives through coordinated action across sectors, actors and governance levels.

Portfolio of actions: A coordinated set of complementary actions designed to work together and generate systemic impact.

Replication: The transfer and adaptation of successful approaches, solutions or practices to other cities and contexts.

Storytelling: Using real-life examples and narratives to make complex topics relatable.

Systemic approach: Understanding how different parts of a system interact and designing integrated solutions that address interconnected challenges rather than isolated issues.

Transition team: A dedicated coordination function or team that supports collaboration, stakeholder engagement and implementation across sectors.

Module 2 - Transition Team

Topic 2.1 How might we build effective, collaborative cross-department teams and that will lead the climate transition?

Authors: Alex Anghel and Carlotta Fontana Valenti

Leading your city in the transition towards climate neutrality requires moving beyond traditional project management, moving towards orchestration and building the soft infrastructure. Cities need to build a team with authority to act on the transition, with the skills needed to navigate complexity, and with stronger relationships that can support long-term change.

What is a Transition Team — and what does it actually do?

A Transition Team is a dedicated coordinating function — a small team, or even one or two people — whose role is to act as the engine of the climate transition process inside a city administration. It is not a new department, and it does not replace existing teams. Its job is to connect, coordinate, and activate.

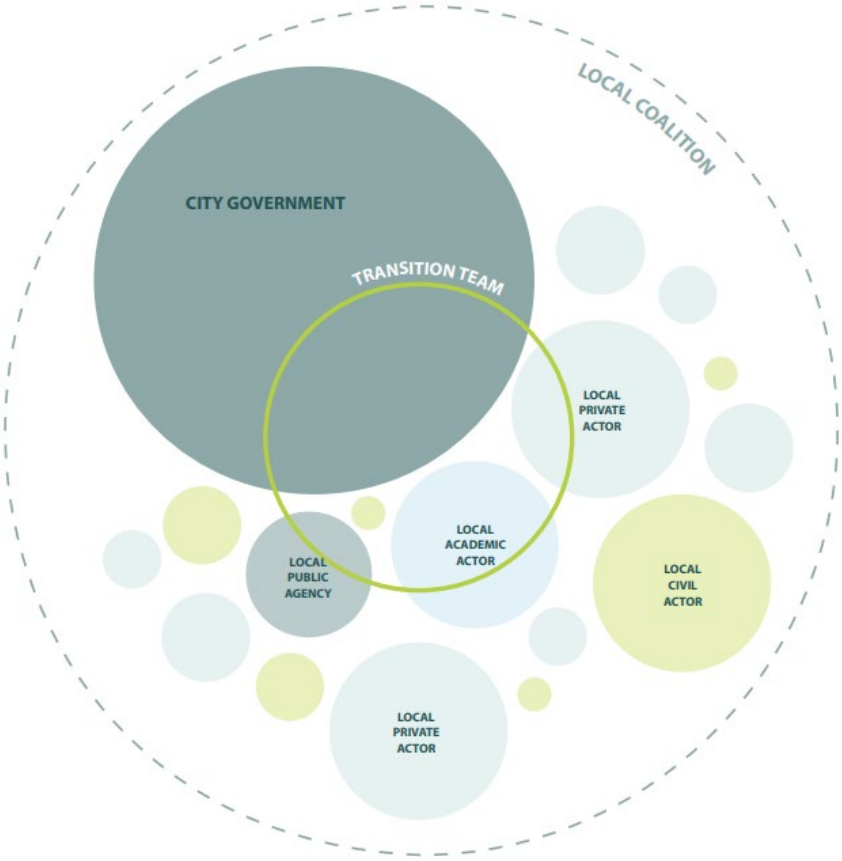
This topic identifies four core functions that any Transition Team needs to fulfil:

- **Coordination:** Overseeing the overall process, inviting stakeholders, facilitating joint work, and ensuring the transition stays on track.
- **Co-creation:** Bringing different actors together to jointly develop plans and projects — not just consulting them but making them genuine partners.
- **Anchoring:** Ensuring that stakeholders and municipal departments move beyond sharing ideas to take real ownership — committing resources and following through.
- **Learning:** Continuously reflecting on what is working, what is not, and adjusting accordingly. This is a long process, and the team needs to treat it as an ongoing experiment.

The Transition Team should have a clear mandate to act — ideally backed by political support from senior leadership — and access to key decision-makers across departments. The team's most important skills are not technical expertise in climate science, but coordination, process design, relationship-building, and strategic thinking.

How to get started — even without perfect conditions

The Transition Team Playbook provides practical guidance on how to develop a transition team.



Four practical moves are suggested:

- **The Reality Check:** Before acting, map what already exists — projects, people, mandates — that are relevant to climate, even if they are not labelled as such. Understand your system before trying to change it.

- **Reprogram What You Have:** Rather than creating new structures, look at existing teams and mandates with fresh eyes. How could a housing department also be a lever for energy poverty? How could procurement become a driver of low-carbon markets? Reframe what is already there.

- **Connect and Weave:** Build relationships across departmental boundaries. You do not need all the power, just the right connections. Set up small recurring moments for cross-departmental exchange.

- **Celebrate Progress:** Transitions need more than strategy. Recognising and sharing progress — including small wins — builds momentum, trust, and collective narrative. It is not a luxury; it is part of how change gets sustained.

Assuming vs. Getting a Mandate

A core challenge for city transition teams is the perceived lack of formal power. Rather than waiting for top-down assignments, effective leaders **assume a mandate** by being proactive:

- **Moving beyond the "Job Description":** Integrate collaboration-building and the translation of strategic goals into concrete departmental actions.

- **Embed Climate into Existing Cycles:** Legitimise the work by linking climate targets to established city processes like annual budgeting and urban planning.

- **Identify Co-benefits:** Frame climate actions through the priorities of other departments, such as public health, cost reduction, or social equity.

The Skills Needed for the Transition

Leading the transition requires a broad set of "green skills" that go beyond technical expertise:

- **Cognitive Skills:** Continuous learning and understanding of the impact of the transition.
- **Ethical Skills:** Practising empathy, compassion, and supporting a just transition.
- **Change Skills:** Systems thinking, critical thinking, and the resilience to adapt to new tasks.
- **Social Skills:** Political agency, initiative, and the ability to foster constructive dialogue.

Building the Soft Infrastructure

Change happens within a system of people. Transition teams must act as "weavers" of networks within municipalities:

- **Analysing Resistance:** Understanding that opposition to change is often driven by deeper factors: **Needs** (e.g., "I need clear priorities"), **Fears** (e.g., "I won't learn new skills"), or **Losses** (e.g., "My expertise will no longer be valued").

- **Relationship Mapping:** Identifying allies (enthusiastic changemakers), blockers (who might impede change), and key decision-makers like the mayor or department managers, and how they can be brought along in the transition journey.

- **New Rituals:** Creating informal moments for trust-building, such as "Climate Coffee Chats" or formal quarterly rituals to celebrate collaborative wins.

City case

Mission City: Turku, Finland

Turku aims to be one of the world's leading climate and nature cities, targeting climate positivity from 2029 onwards. Key lessons from their leadership journey include:

The Power of Middle Management: Tactical-level managers are critical; they best understand departmental culture and the resources needed to translate strategy into daily work.

Governance Integration: Turku embedded climate goals into the "New Turku" governance model, using collaborative steering groups and climate budgeting to ensure cross-functional leadership.

Persistence: Systemic change is a long-term pathway. Turku's current progress is the result of work spanning multiple council terms.

Useful Resources

- Presentation: Online Planning Lab - Module 2 - Climate Leadership Slides
- NetZeroCities Transition Team Playbook
- Viable Cities - Transition Leadership
- Governing Together
- Inner Development Goals (IDG)
- Liberating Structures (Tools for distributed teams)

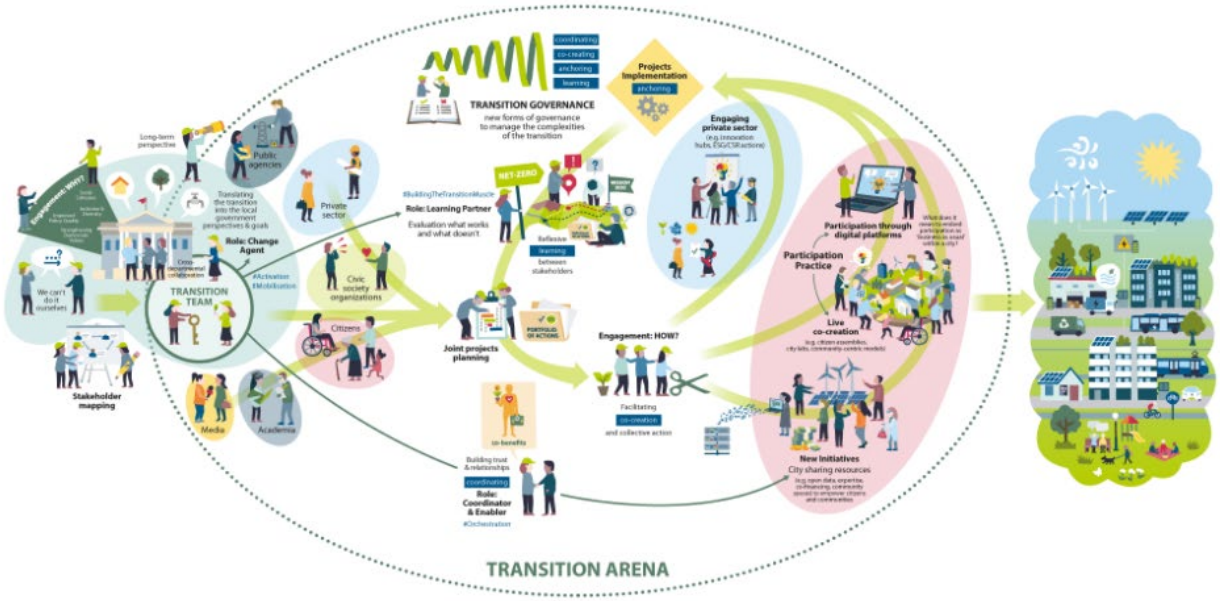
Related EU/international projects or initiatives

- URBACT

Topic 2.2 Mapping and activating the ecosystem

Authors: Carlotta Fontana Valenti

This topic focuses on one of the most practical and pressing questions for any city embarking on a climate transition: How do you build the internal capacity to lead Climate Transition work — and how do you bring the wider city ecosystem on board?



Why cities cannot lead climate transition alone

Cities are responsible for a large share of greenhouse gas emissions — but the city administration itself typically has direct control over only a small fraction of them. In Budapest, for instance, the city administration directly influences around 5% of total city emissions. This makes one thing clear: climate transition cannot be driven by a municipality alone or delivered by a single department. Instead, it requires mobilising businesses, research institutions, civil society organisations, and citizens to plan and act together.

Achieving this transition calls for a fundamental shift in urban governance. Rather than relying on a traditional model in which the city develops plans and implements them through a top-down approach, cities need to embrace a model of shared governance. In this approach, a wide range of stakeholders work together to co-create, align, and implement actions, building collective ownership of the transition and ensuring that change is driven across an entire urban ecosystem.

Building a portfolio of decarbonisation projects

One of the Transition Team's central tasks is to identify, prioritise and align a set of projects that together deliver significant emissions reductions across the city — what this topic calls a transformative portfolio. Since resources are always limited, the team must make strategic choices by prioritising projects that have a high potential impact relative to the effort required and resources available. Projects should also reinforce one another rather than overlap and compete, and together address the full range of major emitting sectors in the city.

Engaging the private sector is a key focus. This involves mapping the key emitting sectors, identifying the right organisations to approach, designing tailored value propositions (i.e. making clear what they gain from joining), and finding the right engagement methods for each type of actor.

Key takeaways for practitioners

- **Climate transition is a collective effort, not a city project.** The city administration's role is to coordinate and facilitate, not to plan and deliver alone. Bring in businesses, academia, civil society and citizens as genuine partners — not just consultants.

- **You need a dedicated coordinating function.** Without someone — or a small team — whose explicit job is to hold the whole process together, the transition will fade. This does not have to be large or perfectly designed from the start; what matters is that the function exists and has a mandate.

- **Political backing and a clear mandate are critical.** Vitoria-Gasteiz's experience shows how much difference strong political support makes — and what happens when it shifts. Securing a mandate early, and anchoring commitments in formal decisions where possible, helps the transition survive political change.

- **Soft skills matter as much as technical expertise.** Building a transition is fundamentally about relationships. The people in the team need to be able to listen, build trust, navigate tensions, and bring others along — these are not optional extras.

- **Start where you are.** You do not need a perfect team, a full budget, or ideal conditions. Map what exists, activate what is already moving, connect who is already working on related things, and prototype small actions. Momentum builds from small starts.

- **Engagement requires tailoring.** Different stakeholders have different interests and motivations. The team needs to understand what each type of actor stands to gain, and design outreach accordingly — generic invitations rarely build genuine commitment.

- **Learning and monitoring are not afterthoughts.** The process must include regular reflection on what is working. This is a long-term experiment, and the team needs to be honest about what needs to adjust.

City case

Mission City: Victoria Gasteiz, Spain

Key lessons learnt:

-Without a **dedicated coordinating function**, climate work remains fragmented across departments and the transition loses momentum. Their Transition Team is what provides the system-wide view needed to coordinate, accelerate and anchor progress as well as learn from it.

-Political mandate is decisive. Strong backing from senior leadership made cross-departmental collaboration significantly more effective. When that support shifted after elections, coordination capacity shrank considerably.

-Anchoring commitments in formal institutional decisions helps the transition survive political change. Having the climate plan formally approved by the full city council created an obligation that outlasted the political mandate that produced it.

-Soft skills are as important as technical expertise — and if they are not found within the municipality, they need to be actively sought elsewhere. The ability to build relationships, listen, navigate tensions and bring people along is what makes it possible to anchor the transition both inside the administration and with external stakeholders. Affection, gratitude and joy within the team are not soft extras but a key part of what sustains the Transition Team work.

-Stakeholder engagement works better when it is personal and relationship-based. Approaching actors individually and making each feel genuinely included as a partner builds deeper commitment than generic, broad outreach.

Mission City: Budapest, Hungary

Budapest is one of the largest cities in Central-Eastern Europe, with governance shared between the capital municipality and 23 districts. The municipality directly influences only about 5% of the city's total emissions — making broad stakeholder engagement a structural necessity and a clear illustration of why the climate transition cannot be driven by a city administration alone.

Key lessons learnt:

- **Leveraging existing networks and platforms**, rather than building new ones from scratch, proved more efficient and built on already-established trust relationships.

-Tailored value propositions for different actor types (mostly large companies) — connecting their interests, such as ESG goals or CSR priorities, to the city's climate agenda — were more effective than generic approaches.

-Recognition and visibility matter. A formal cooperation programme with a branded recognition tool (Green Budapest Label) helped sustain company engagement beyond initial contact.

-Communication gaps are both a challenge and an opportunity. Many stakeholders were unaware of the municipality's ongoing climate work. Making that work visible is itself a powerful first step toward building wider coalitions.

-Collaboration with universities and NGOs was embedded in the CCC: the Budapest Degrowth Donut brought together external experts, academia and civil society to integrate social justice aspects into climate planning, while the Green Budapest Working Group served as an ongoing platform for dialogue on the transition.

-The **municipality** learned through practice that its **role is to act as a facilitator** between stakeholders, enhancing collaboration between different actors rather than driving the transition alone.

Useful Resources

- Topic Page: Climate Transition Team
- Presentation: Online Planning Lab - M2 - Transition Team Session Slides
- Tools:
  - Transition Team Playbook
  - Canvases and Toolkits on the green transition designed by the Danish Design Centre
  - Moderation and Meeting Tools including Ice Breakers, Teambuilding, Team Reflections etc.

Topic 2.3 Engaging the Private Sector

Author: Beatriz Martínez Martín

Cities cannot achieve climate neutrality without active engagement of the private sector. This topic explores how cities can strategically engage businesses of all sizes in urban decarbonisation. It presents practical strategies, incentive frameworks, and a phased engagement process to move from initial trust-building to co-investment and collaborative climate action.

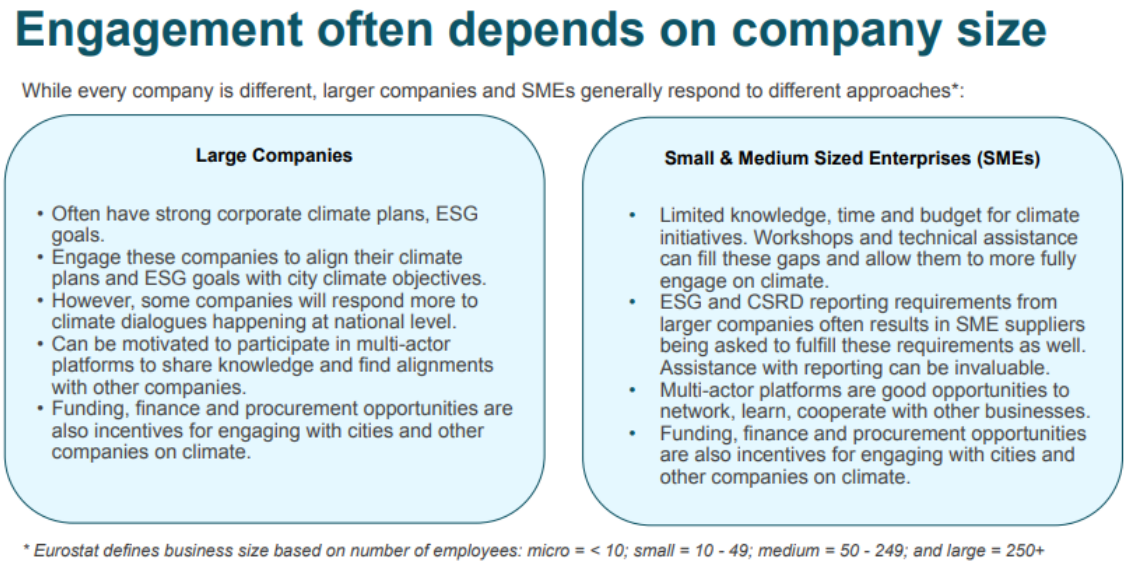
Why engage the private sector? Governance has shifted from traditional top-down municipal planning to shared governance models involving businesses, public organisations, academia, and citizens. Engagement means enabling others by shaping the conditions for shared action, coordination, and learning.

Three primary engagement approaches for all companies:

- Asset Decarbonisation: encouraging companies to reduce emissions from buildings, fleets, and production through bilateral discussions, financial incentives, regulations, and technical support;
- Public Procurement: using the city's purchasing power to drive decarbonisation, from green day-to-day procurement to large sectoral projects like electrifying public transport;
- Multi-Actor Platforms: the city acting as facilitator, bringing together companies around a sector or theme to support peer learning and joint climate initiatives.

Successful engagement requires a well-prepared incentive portfolio combining hard incentives (funding opportunities, procurement, financing assistance)) and soft incentives (technical assistance, capacity building, reputational benefits). Cities must also clearly communicate the value proposition: financial benefits (energy savings, new business), reputational gains, strategic alignment (e.g. with ESG targets), and market advantage in emerging green sectors.

Designing an engagement strategy follows a logical sequence: identify the sector, choose the engagement method, build an incentive portfolio, select stakeholders, define the value proposition, and develop a project portfolio.



Company engagement evolves through three stages:

- Stage 1 (Build Trust and Show Value) through generic climate pledges, workshops, GHG inventory support;
- Stage 2 (Maturing Engagement) through established Transition Arena, local Climate City Contracts, indicators and reporting;

- Stage 3 (Collaborate and Co-Invest) through joint projects, co-investment, mature governance with dedicated leadership and funding.

City case

Mission City: Guimarães, Portugal

Guimarães (pop. 156,830) is one of Portugal's most industrialised cities, with 30% of emissions from industry (textiles, footwear, metalwork) and an estimated 17,000 companies. The city partnered with the Landscape Laboratory (founded 2014) to run a methodical engagement process: the municipal transition team mapped stakeholders, held initial meetings with frontrunners, launched a high-profile Climate Pact ceremony (Guimarães 2030), organised rapid mass engagement events, and now counts 150 company signatories.

The city emphasises recognition and reward; companies receive visibility via branding, Green Week ceremonies, and social media. Direct SME support includes carbon footprint calculations, tailored decarbonisation plans, CSRD reporting guidance, and sector-specific networking (textiles, mobility, construction). Guimarães was selected as 2026 European Green Capital. Future priorities include more regular strategic engagement, attracting more SMEs to use Landscape Laboratory services, facilitating access to EU and private financing, and improving monitoring and carbon footprint tracking.



Useful Resources

- Presentation: Online Planning Lab - Module 2 - Private Sector Slides
- NetZeroCities - Detailed Summary: Private Sector Engagement in the EU Cities Mission
- Report: Governance Innovation and Implementation in the Cities Mission SGA-NZC-D1.4-Case-Study-Anthology.pdf
- Doci et al., 2025 Frontiers | Urban transition governance in practice: exploring how European cities govern local transitions to achieve climate neutrality

Related EU/international projects or initiatives

- URBACT – Let's Go Circular (circularity in textiles, involving Guimarães)
- Guimarães Landscape Laboratory: Laboratório da Paisagem
- EU Green Deal – Corporate Sustainability Reporting Directive (CSRD)

Topic 2.4 Citizen engagement for systemic climate action

Author: Carlotta Fontana Valenti

Cities across Europe increasingly recognise that achieving climate neutrality is not only a technical challenge, but a **societal transformation**. While many cities have developed strong climate strategies, citizen engagement often remains fragmented — organised around one-off consultations or individual projects.

To support systemic change, engagement needs to move beyond isolated initiatives and become a **long-term, structured approach**. This means building continuous relationships between citizens, institutions, and local actors. And embedding participation into how cities operate and govern.

This topic introduces three complementary approaches that help cities strengthen citizen engagement as a **driver of long-term climate action**: Participation Practice, City as Enabler, and Transition Governance.

From one-off participation to long-term engagement

In many cities, participation still happens on a project-by-project basis. Each new initiative often starts from scratch, with limited continuity, and valuable knowledge is lost when staff change or funding ends. This fragmentation makes it difficult to build trust, maintain engagement, and learn over time.

Moving beyond this requires a shift in perspective: participation should be seen not as a one-time activity, but as a **system**. A system that:

- Builds long-term relationships
- Enables continuous learning
- Strengthens collaboration between citizens and institutions

Such an approach allows cities to move from consultation to **co-ownership of the transition**, making climate action more resilient and widely supported.

Three approaches to long-term citizen engagement

1. Participation Practice – embedding engagement into everyday work

Participation Practice focuses on professionalising and systematising how cities engage with citizens. Rather than treating participation as an ad hoc activity, it becomes part of the city's daily operations.

This involves developing shared standards, documenting lessons learned, and creating opportunities for continuous learning across departments. It also means ensuring that knowledge is retained and built upon over time, rather than lost between projects.

A strong example is **Participation.Brussels**, a dedicated support team that acts as an internal consultancy for civil servants. It provides guidance on participation methods, training opportunities, and access to a shared knowledge base. This helps city staff feel more confident and supported, while ensuring consistency and quality across engagement processes.

By embedding participation into routine practices, cities can turn engagement into a **durable institutional culture**, rather than a series of isolated efforts.

2. City as Enabler – shifting from control to partnership

The "City as Enabler" approach redefines the role of local government. Instead of acting primarily as a provider or controller, the city becomes a **facilitator that empowers citizens and communities to take initiative**.

This shift involves sharing resources, knowledge, and decision-making power, and recognising citizens as active contributors to climate solutions. It also requires openness to taking direction from citizen-led ideas and initiatives.

Valencia offers a strong example of this approach through its **Local Energy Communities**. The city supports residents in producing and managing their own renewable energy by offering technical guidance, legal tools, and financial support. Special attention is given to inclusion, ensuring that vulnerable groups can participate.

Through this approach, citizens move from being passive consumers to **active co-creators of the energy transition**. The result is not only technological change, but also stronger community ownership and engagement.

3. Transition Governance – building long-term collaboration structures

Systemic climate challenges require new forms of governance that go beyond individual projects or consultations. Transition Governance focuses on creating **ongoing structures for collaboration, dialogue, and experimentation** between citizens, institutions, and other stakeholders.

These structures support long-term engagement and help navigate complexity, uncertainty, and change over time. They also play a key role in building trust and legitimacy, especially in transitions that extend beyond political cycles.

The **Lyon Climate Hall** is an example of this approach. Designed as a platform for collaboration, it brings together citizens, organisations, and public authorities to co-develop climate solutions. Through spaces like the School of Resilience and city-wide experimentation hubs, the initiative fosters continuous learning, innovation, and collective action.

Transition Governance demonstrates that achieving climate neutrality requires not only policies and projects, but also **new democratic infrastructures** that sustain engagement over time.

Key takeaways for practitioners

Citizen engagement becomes most effective when it is:

- **Structured and professionalised**, with systems that ensure continuity, quality, and learning
- **Empowering**, enabling citizens and communities to take initiative and shape solutions
- **Embedded in governance**, through ongoing dialogue and collaboration structures

By combining these approaches, cities can move from one-off participation to **long-term engagement ecosystems**, where citizens are not just consulted but actively involved in shaping the transition.

City cases

Mission City: Kosice, Slovakia

Košice is a city in eastern Slovakia, close to the Ukrainian border, with a diverse and multilingual population. The city's long-term approach to citizen engagement traces back to its preparation for the European Capital of Culture in 2013, an experience that shaped how the city works with communities to this day and generated a lasting ecosystem of over 160 NGOs active across culture, creativity and increasingly climate-related topics.

Key lessons from their experience:

- Citizen engagement works best when it is built as **a long-term system** rather than a series of one-off initiatives. Košice's current capacity is the result of over 15 years of continuous investment in relationships, structures and community infrastructure.

- Reaching all citizens requires **going beyond digital tools** and **meeting people where they are**. The city uses mobile units, in-person interviews and community centres to engage groups, particularly older residents and non-Slovak speakers, who are systematically underrepresented in digital participation processes.

- A diverse ecosystem of NGOs, academia and community organisations is a critical asset. Groups rooted in culture and the arts are particularly effective at translating complex topics into accessible language for broader audiences.

- Establishing **a common language across stakeholders is foundational.** Košice found that different institutions often interpreted the same concepts in entirely different ways, making early investment in shared understanding essential before any substantive collaboration could begin.

- Multi-level, multi-stakeholder engagement is more effective than engaging any single group in isolation. Bringing together citizens, companies, universities and NGOs — even when it is slow and sometimes repetitive — consistently produces better outcomes than narrower processes.

- Gaps in inclusion must be acknowledged. Košice acknowledged that Ukrainian refugees and Roma communities remain significantly underrepresented in their participation processes — a challenge they are still working to address.

Mission City: Gothenburg, Sweden

Gothenburg is a Swedish city with an explicit institutional commitment to integrating citizen participation into policy development and decision-making across all city departments. The city's engagement work sits within a broader strategic framework that links democratic participation to sustainability goals, with political steering documents requiring all committees to actively create conditions for citizen influence.

Key lessons from their experience:

- Moving from consultation to genuine **co-creation requires matching the city's capacity to engage with citizens' actual needs and willingness to participate**. Gothenburg developed a **participation map** — an evolution of the classic participation ladder — to help identify the right level and form of engagement for each issue, rather than defaulting to familiar methods regardless of context.

- Uneven participation is a structural challenge. Gothenburg identified that some groups consistently do not take part in city dialogues, that language and format create barriers, and that engagement levels vary significantly across city districts — all of which produce an incomplete picture of citizens' needs.

- Citizens need to be able to see how their input influences decisions. A recurring obstacle is the difficulty participants face in understanding how their contributions are used — which undermines trust and long-term engagement.

- Citizen assemblies can help politicians make braver decisions. Gothenburg's experience with climate-focused citizen assemblies showed that when politicians receive clear recommendations from a representative group of citizens, they feel more supported in taking difficult but necessary steps.

- Long-term structures for influence are needed alongside individual processes. Short-lived participation processes are not sufficient — the city recognises the need for ongoing mechanisms that allow citizens to engage continuously with climate and environmental issues.

Useful Resources

- Presentation: Online Planning Lab - Module 2 - Citizen Engagement Slides
- Valencia Energy Communities
- Citizens and urban stakeholders' engagement page is a key comprehensive landing page collecting all NetZeroCities resources on citizen and urban stakeholder participation. It is organised around nine sections, each selecting different types of resources (articles, tools, methods and case studies) about engaging different actors
- Some highlights from this page:
- Key Articles
    - *A* short overview of key concepts
    - An article proposing eight actionable strategies for building a compelling climate narrative for citizens and stakeholders
    - Beyond One-Off Participation article

- Key Tools to start
    - Tool for Understanding Context: Key Questions for Citizen Engagement Processes

  - Canvas to Identify Priority Groups
  - Engagement building blocks

- Key tools to go deeper
  - Tool for Building Distributed Networks for Urban Transformation
  - Tool for Embedding Stakeholder Engagement in Urban Projects

Glossary Module 2: Transition Team

Citizen engagement: The process of involving citizens and stakeholders in decision-making, design, and implementation of policies and actions.

City as Enabler: A model where the city acts as a facilitator, supporting citizen-led initiatives by sharing resources, knowledge, and power.

CSRD (Corporate Sustainability Reporting Directive): EU regulation requiring larger companies — and increasingly their SME suppliers — to disclose sustainability information.

ESG (Environmental, Social, and Governance): A framework used by companies to assess and report on sustainability performance.

(LCCC) / Local Green Deal (LGD): A bilateral agreement between a city and a specific company, outlining shared climate goals, decarbonisation activities, planned investments, and progress monitoring.

Mandate: The authority or agency required to take action and influence city systems.

Participation Practice: An approach that embeds participation into everyday city operations through systems, standards, and continuous learning.

Quadruple Helix: Collaboration between the city administration, private sector, academia/research actors, and citizens or civil society.

Relationship Map: A visual representation of the internal and external relationships with stakeholders.

Systemic change: Transformational change that affects multiple systems (social, economic, institutional) rather than isolated actions.

Soft Infrastructure: The relational and organisational foundations that enable the transition - the relationships, skills, routines, and mandates that allow people and teams to collaborate effectively and drive lasting change.

Transition Governance: Long-term governance structures that enable ongoing collaboration, experimentation, and dialogue for systemic change.

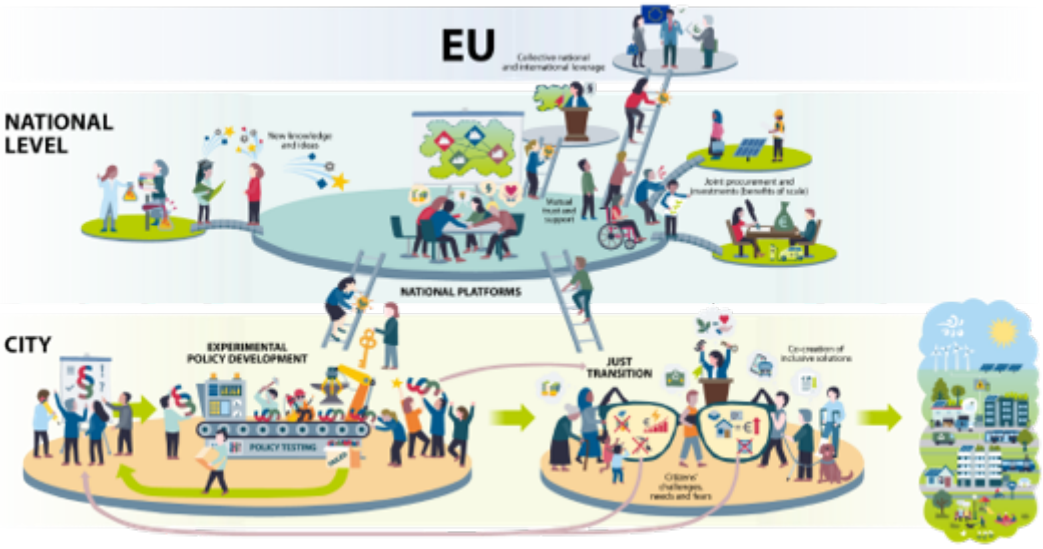
Transition Team: The individuals responsible for coordinating and enabling change across city departments and with the local ecosystem.

Module 3 - Governance & Policy

Topic 3.1 Multilevel governance, national Mission ecosystems and platforms and policy strategies

Authors: Cristina Robledano Noreña, Beatriz Martínez Martín

Cities have a major role to play in reaching climate neutrality, but this will only happen if relevant players work together in a coordinated way. Success depends on clear goals, shared decision-making, and long-term cooperation between governments, businesses, and communities. Existing city networks help cities learn from each other, though they tend to place less emphasis on national priorities. To build on this, countries are creating National Mission Ecosystems that bring cities together within the same country, supporting the alignment of policies, shared learning, and collective progress toward common goals.



European local authorities are responsible for implementing **70% of climate mitigation measures** and 90% of adaptation. However, their actions are heavily constrained by regulations and policies decided at national and European levels. The necessity for coordinated, mission-driven action arises because isolated local efforts are insufficient to achieve climate neutrality by 2030.

Multi-level Governance (MLG) is the framework required to align local, regional, national, and international policies to accelerate climate ambition. Looking toward the **Multi-annual Financial Framework (MFF) post-2027**, the European Commission has proposed a centralisation of Cohesion Policy, which could significantly affect how funds reach local territories. Strengthening MLG and adopting **place-based investment strategies** is therefore vital to ensure that EU resources effectively support a robust and just transition.

In more and more countries, support structures like National Mission Ecosystems and national platforms, such as Viable Cities in Sweden and citiES2030 in Spain, facilitate "collective action" by providing stable, safe spaces for trust-building, shared learning, and strategic alignment. These structures operate as a "shared software," leveraging a shared vision and common ways of working to solve complex, connected problems that cross city boundaries. By integrating diverse stakeholders, cities are helped to overcome regulatory and financial barriers through systemic approaches like Climate City Contracts. Crucially, being part of a National Mission Ecosystem or a national platform provides enabling conditions for multi-city projects, allowing cities to collaborate on large-scale initiatives that would be impossible to solve alone. Universities are valued as "neutral conveners" that provide institutional stability, interdisciplinary expertise, and evidence-based learning processes to these structures.

While national platforms and National Mission Ecosystems offer a shared national perspective, city networks allow cities to actively engage with other European and non-European cities. **The value of city networks** like ICLEI, Eurocities, Energy Cities, and the EU Covenant of Mayors lies in their role as critical enablers that provide essential financial and technical support to test and scale innovative solutions. Participation in

these networks allows cities to move beyond local implementation and engage actively in city diplomacy and international climate governance. By having a "stronger voice together," cities (including small and mid-size cities) ensure that the realities of local urban planning are systematically considered in high-level decision-making processes. These external partnerships are perceived by Mission Cities as one of the most powerful drivers for advancing their climate-neutrality goals.

City case

Mission-minded city: Alba Iulia, Romania

Through city networks, Alba Iulia serves as a success story, having secured **over €350 million in external funds** since 2007 for mobility, public lighting, and building rehabilitation through robust governance.

Multi-city projects

- **Spain (UrbanNew+EMC3):** Seven cities have joined forces to advance a large **energy-efficient housing rehabilitation** programme, using a portfolio approach to manage risks and attract investment.
- **Italy (Let's GOv):** Nine cities are exploring enhanced governance models to manage local energy transitions and improve access to data.
- **The Netherlands (City Deals):** These involve concrete cooperation agreements between the national government, cities, and private companies across 11 different themes, such as circularity and urban accessibility

National platforms and national Mission ecosystems cases

The development of national support structures and communities of cities and other stakeholders is reported and continuously updated in the National Mission Ecosystems portal page.

- The case of **Portugal** national platform: Cities for Climate Network (*Cidades pelo Clima*)
- Portuguese Mission Ecosystem portal Mission page. The *Cities for Climate* network connects 47 cities representing 40% of the national population to accelerate the transition
- The **M100 hub** is a strategic inter-ministerial initiative that supports 13 Romanian cities, including three Mission Cities, in developing their Climate City Contracts.

Useful Resources

1. Topic Page: NetZeroCities - Focus on: National Mission ecosystems including National Platforms
2. Presentation: Online Planning Lab Module 3 - Multilevel Governance
3. Further Read:
    a. National Platforms to Transform Cities Using Collective Experimentation and Scale: The Case of Sweden and Spain
    b. Mapping of governance actors and core elements in core countries
    c. Extract from the book "Higher Education and SDG11: Sustainable Cities and Communities", edited by Julio Lumbreras and Jaime Moreno-Serna, published in Emeral Editorial. Extract- Chapter 8- National Platforms to Transform Cities Using Collective Experimentation and Scale- SW-ES.pdf
    d. Strengthening Just Transitions Through the Core Functions of National Platforms

Related group on the Mission Portal

- National Mission Ecosystem pages
- Groups per country

Related EU/international projects or initiatives

- The EU Covenant of Mayors
- CapaCITIES
- Driving Urban Transition (DUT) for a sustainable future
- C40

Topic 3.2 A Mission-driven approach for policy innovation

Authors: Angelica Gomez, Marzia Mortati

Complex challenges like climate transition often exceed the limits of traditional policy approaches, especially when responsibilities are fragmented across actors and governance levels. When existing tools can't cover this complexity, a mission-driven approach offers a systemic way to drive meaningful change.

When a new approach is necessary

Responsibilities for climate action are often shared across multiple actors and governance levels, creating complexity that can hinder progress and innovation. Traditional policy approaches may be insufficient to address the scale and systemic nature of the climate transition. When existing tools and processes fail to deliver the pace of change required, new policy innovation approaches may be needed. A mission-driven approach offers a way to reframe these challenges, align stakeholders around common goals, and accelerate systemic transformation.



Image source: Online Planning Lab - Module 3 - Policy and Regulatory Innovation Slides

What a mission-driven approach can offer

- **Multi-actor:** offers diverse perspectives from different actors (public, private, academia, civil society, etc.) that allows for co-creation, instead of just consultation.
- **Multi-instrument:** explores and combines different types of policy instruments into an orchestrated policy mix, addressing whole systems rather than isolated sectors.
- **Multi-level:** navigates the complexity of multiple layers of governance by aligning action across local, regional, national, and European levels. Continuous exchange (Learning loops) creates policy learning ecosystems.

When a dedicated policy space is best used

- **Policy Studios** are long-term sustained efforts (six months or more) that work through a full policy innovation arc: from identifying and framing challenges to building coalition and early intervention design. The approach is deliberately open-ended and exploratory, enabling better understanding of the problem and exploring opportunities before committing to a specific course of action.
- **Policy Labs** are more focused and shorter processes (two to three months) that begin when a problem space is sufficiently understood. Labs focus on testing and developing specific policy instrument mixes rather than diagnosing the broader landscape.

- **Regulatory Sandboxes** create a controlled space in which new regulatory frameworks can be tested under real-world conditions before being adopted more broadly. It requires national-level approval and delegation mechanisms, making it a highly resource-intensive and politically complex format.



Image source: Online Planning Lab - Module 3 - Policy and Regulatory Innovation Slides

City cases

Romania: A Policy Studio involving **Bucharest and Alba Iulia** was initiated and co-developed by Romania's M100 National Platform. Both cities have been investing in active mobility infrastructure and also faced a common challenge of creating the institutional, governance, and policy conditions needed to enable innovation in the first place.

Finland: Mission Cities have been working together to address policy innovations around transport and urban logistics emissions. These are systems that require a multi-level, multi-actor approach across municipal, regional, and national policy competences, involving different actors from operators and logistics companies to residents and national regulators. This process began as a Policy Studio and transitioned into a Policy Lab as the challenge became more clearly defined.

Useful Resources

1. Topic page: Policy and Partnerships
2. Presentation: Online Planning Lab - Module 3 - Policy and Regulatory Innovation Slides
3. **Hamburg's waterway-integrated logistics** is an integrated decarbonisation strategy with a multi-actor process that includes port operations, urban delivery, and hinterland supply chains. The multi-instrument approach combines legislative/regulatory, financial, operational and informational tools.
4. **GreenLab Energy Test Zone-** In 2021, the Danish Energy Agency appointed GreenLab as a regulatory test zone; in 2024, the test zone was officially activated. This enables GreenLab to co-locate energy production and consumption within the green industrial park without negatively impacting the existing collective energy grid. By creating a "feed-in zone" for green electricity, it is possible to test new facility possibilities and innovative business models.

Related group on the Mission Portal

- Policy Labs

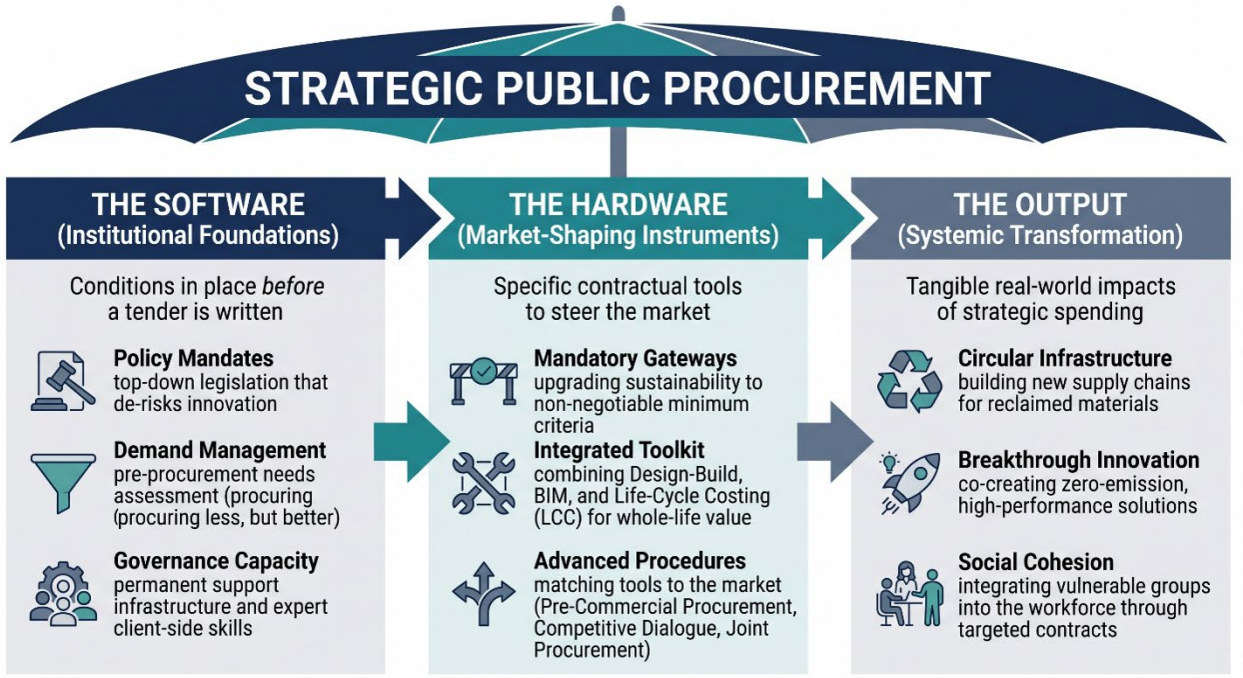
Topic 3.3 Public Procurement to Achieve Climate Neutrality

Authors: Francesco Palmia

Government expenditure on works, goods, and services represents approximately 14% of total EU GDP, equating to €1.8 trillion annually, and is linked to 15% of global greenhouse gas emissions. In the context of exceeding planetary boundaries, where the construction sector alone accounts for over 50% of extracted materials and energy consumption, public purchasing must evolve from an administrative function into a strategic policy instrument. This topic explores how cities can transition from transactional, lowest-price purchasing to strategic, market-shaping procurement to deliver climate-neutral, circular, and socially inclusive infrastructure.

Strategic Public Procurement

The European Union has established clear legislative frameworks, such as the Energy Efficiency Directive (EED) and the Energy Performance of Buildings Directive (EPBD), mandating the public sector to lead in energy efficiency and adopt Zero-Emission Building (ZEB) standards. However, a significant gap remains between these goals and practical implementation due to fragmented regulations, lack of specialised capacity, and market readiness challenges. To overcome these barriers, public authorities must actively utilise specific procurement levers: utilising selection and exclusion criteria to evaluate supplier suitability, setting ambitious technical specifications as minimum compliance gateways, and leveraging award criteria and contract performance conditions to recognise performance that exceeds baseline requirements.



The "Software": Foundations of Market-Shaping Procurement. Strategic procurement requires foundational organisational readiness before a tender is launched. This foundational "software" relies on two key principles:

- **Policy Mandates:** Top-down legal frameworks provide political cover, transforming innovation from a risk into a compliance requirement. For instance, the City of Niort (France) successfully procured circular, upcycled workstations because a national law mandated that 20% of public furniture contain reused materials, effectively de-risking the innovative approach. Similarly, the Walloon Region (Belgium) mainstreamed social procurement by legally mandating social clauses for workforce integration in all public works.

- **Demand Management:** The most sustainable purchase is often the one avoided. By prioritising rigorous pre-procurement needs assessments, authorities shift from asking "What should we buy?" to "What do we actually need?. By analysing actual usage data rather than defaulting to one-for-one replacements, the City of Barcelona reduced a municipal vehicle fleet by 67% before initiating a tender for the remaining mobility needs.

The "Hardware": Models for High-Performance Infrastructure. To deliver complex, climate-neutral projects, cities must move beyond traditional, prescriptive, price-centric tenders and deploy advanced contractual "hardware":

- **Setting Mandatory Standards:** To build new markets, sustainability must shift from optional bonus points to non-negotiable requirements. The City of Tallinn catalysed a regional market for reclaimed materials by disqualifying any bid that did not meet strict circularity prerequisites for a new public building.

- **Unlocking Breakthrough Innovation:** For complex challenges, the procurement procedure must match the market's innovation readiness. When innovation is constrained by rigid processes, collaborative models like Design & Build (D&B) transfer design responsibility to the market, as seen when Tampere unlocked circular road construction. For entirely new solutions, such as North Holland's circular, energy-neutral Cruquius Bridge, Competitive Dialogue allows the public client and bidders to co-create solutions prior to awarding a contract based purely on quality.

- **The Integrated Toolkit for Public Buildings:** To prevent the procurement of assets that are cheap to build but expensive to operate, public authorities must focus on whole-life value. The Czech Supreme Audit Office in Prague delivered a net-zero building by synthesising Design & Build contracts, mandatory Building Information Modelling (BIM) for performance verification, and Life-Cycle Costing (LCC) weighted at 25% of the evaluation criteria, forcing competition on long-term efficiency rather than upfront cost.

City cases

Mission City: Oslo, Norway

Oslo operationalises its ambitious 2030 Climate Strategy through centrally determined, standardised green requirements targeting high-emission sectors like transport and construction. Margrethe details how Oslo uses preliminary market dialogues to assess market readiness before selecting the appropriate procurement levers (technical specifications, award criteria, or contract clauses). This strategic market engagement enabled Oslo to progressively phase in requirements, moving from fossil-free machinery to mandating entirely zero-emission construction sites.

Mission City: Aachen, Germany

Aachen strives for climate neutrality by 2030 and utilises the EU-funded GRIP (Green Responsible Innovative Procurement) project to systematically integrate climate targets into its procurement procedures. Kristine explains how Aachen is building permanent institutional capacities, networking for knowledge transfer, and testing the market through highly specific pilot procurements. These pilots include planning of a low CO_2 road construction project, an energy-efficient timber-frame daycare, and procurement of reclaimed building parts for urban mining.

Useful Resources

1. Presentation: Online Planning Lab - Module 3 - Public Procurement Slides
2. External Links:
    a. Procura+ Manual
    b. Sustainable Procurement Platform - RESOURCE CENTRE
    c. EIC Innovation Procurement Toolkit
    d. Making socially responsible public procurement work

Related group on the Mission Portal

- **Join the related group on the Mission Portal:** Strategic Public Procurement (SPP)

Related EU/international projects or initiatives

- **GRIP** (Green Responsible Innovative Procurement): An Enabling Cities Transformation (ECT) funding programme supporting cities like Aachen and Oslo integrating climate targets into procurement.
- **Big Buyers Working Together (BBWT)**: An initiative connecting public buyers across Europe to aggregate demand and drive market innovation.
- **CircularPSP:** A pre-commercial procurement project where multiple European cities pooled resources to invest in R&D to accelerate the circular economy transition.

Topic 3.4 Social Innovation for climate neutrality

Author: Sabrina Bresciani and Angelica Gomez

The European Commission defines Social Innovations as "new ideas that meet social needs, create social relationships and form new collaborations. These innovations can be products, services or models addressing unmet needs more effectively". Social innovations are new ideas (products, services and models) that simultaneously meet social needs (more effectively than alternatives) and create new social relationships or collaborations. When social innovation is applied to climate neutrality, it is defined as actions that innovate social practices to address the challenge of achieving climate neutrality with a collaborative, bottom-up, holistic, and people-centred approach that enhances society's capacity to respond to the climate challenge collectively. In doing so, Social Innovation emerges as a critical lever for systemic urban change toward sustainability. It effectively accelerates the pace of systemic change by activating diverse communities to the Mission and empowering them with platforms to co-create, share knowledge and expertise, and even co-finance innovation. It enables prototyping and quick experimentation to create new products or services, or can implement innovative business models that improve community wellbeing and promote behavioural change by responding to local needs and acting within a cultural context. Within the systemic approach, social innovation complements technical innovation, ensuring economic development and overall well-being while reinforcing the co-benefits of climate mitigation like public health, job creation, and public budget savings.

For a brief introduction, you can check the **video**: Creating an Ecosystem for Change: The NetZeroCities Approach to Social Innovation

City cases

Several examples of Social Innovation in action are already underway in cities. A collection of 50 cases is available on the Mission portal and in the book chapter "Ten Social Innovation Case Studies to Address Cities' Challenges: Citizens Engagement, Energy and Behavioural Change". Examples include:

- EcoHouse Antwerp in Belgium that shows the efficacy of establishing a one-stop shop that unburdens citizens' decision-making about starting building renovations.

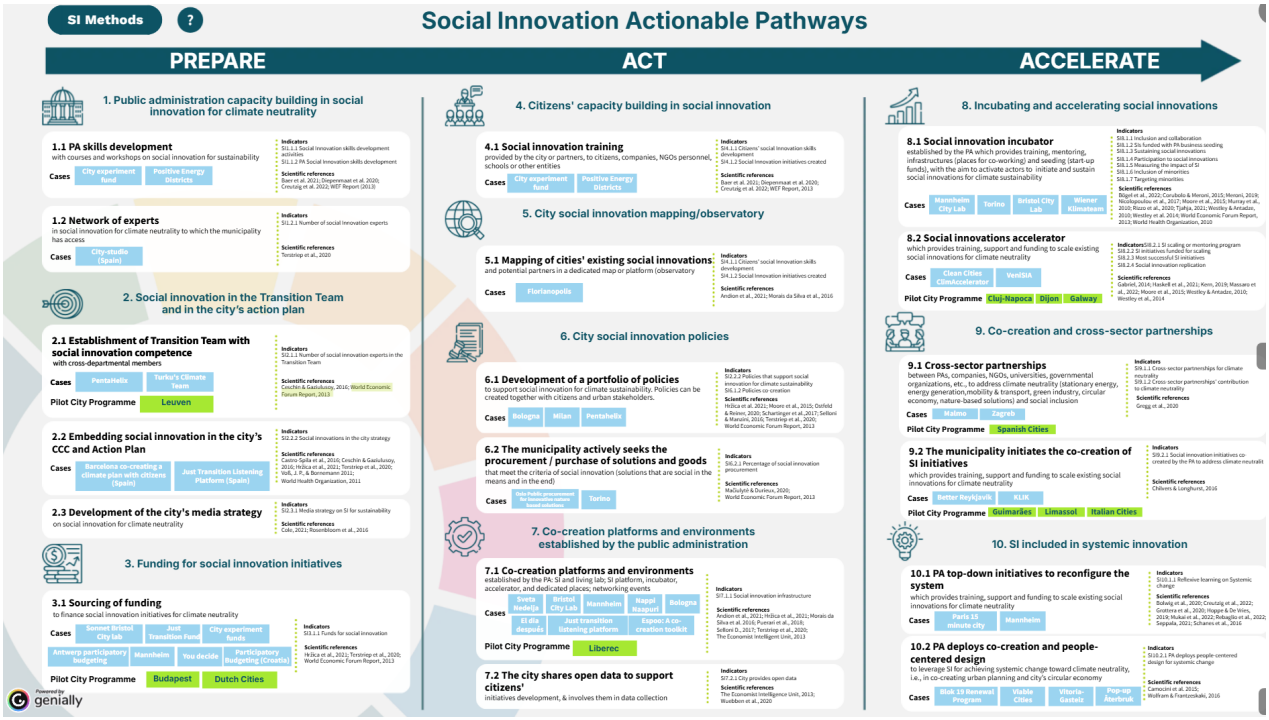
- The Energy cooperative KLIK (Križevci Climate Innovation Laboratory), in Croatia, that brings forth the same strategy, demonstrating the possibility of direct management of change by citizens themselves.

- The Valencia City Council (Spain) highlights an organisational innovation strategy that incentivises establishing a network of energy communities on the city territory.

- The SONNET City Lab in Bristol (U.K.) suggests an additional engagement strategy based on co-designing crowdfunding investment instruments for citizens.

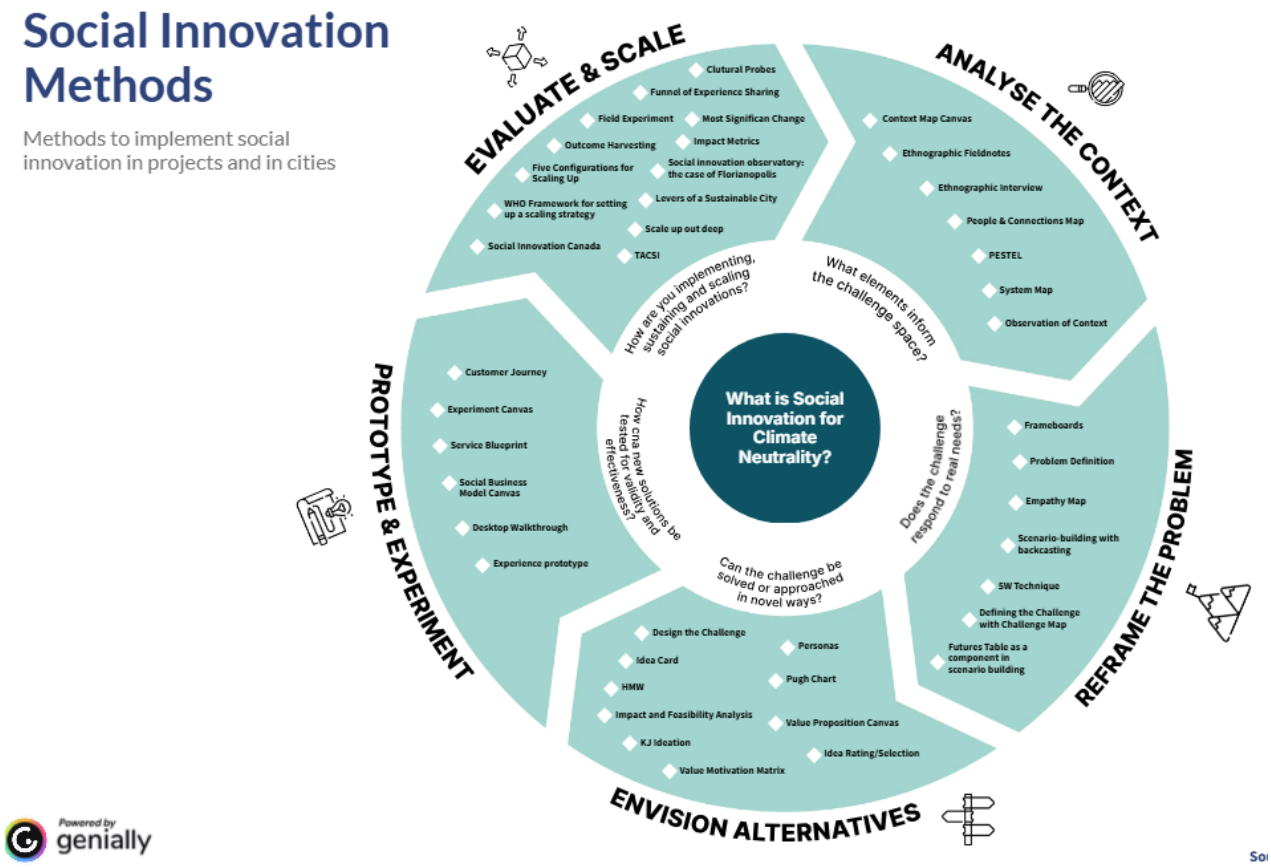
Social Innovation Actionable Pathways interactive Tool

Social Innovation cases can be explored in the interactive tool of actionable pathways, where they are categorised by a sequential typology of actions from the preparation of the enabling condition to scaling. Explore the interactive tool at the dedicated portal page or read the methodological details in the dedicated book chapter.



Methods

You can explore the portal page on social innovation methods with the interactive graph, download the Social Innovation for Climate Neutrality toolkit (pdf), or read the dedicated book chapter.



Useful Resources

1. Portal page: Social Innovation
2. Book: "Social Innovation Projects for Climate Neutral Cities - Making Municipalities Sustainable with People-Based Solutions" (to download for free)
3. Webinars:
    a. People-Based Solutions for Climate-Neutral Cities
    b. Social Innovation CoP Webinar Behavioural Change & Social Innovation in Systemic Climate Transition

Related group on the Mission Portal

- Social Innovation in cities

Related EU/international projects or initiatives

- Seed2Scale
- SISCODE

Topic 3.5 Just Transition

Author: Alex Anghel

This topic introduces the principles of a Just Transition and explores their relevance for Cities working on urban climate action. Part of the module on Multi-Level Governance offers a foundational overview of why addressing social risks matters in the decarbonisation process, and how cities can integrate equity, inclusion, and justice into their climate strategies.

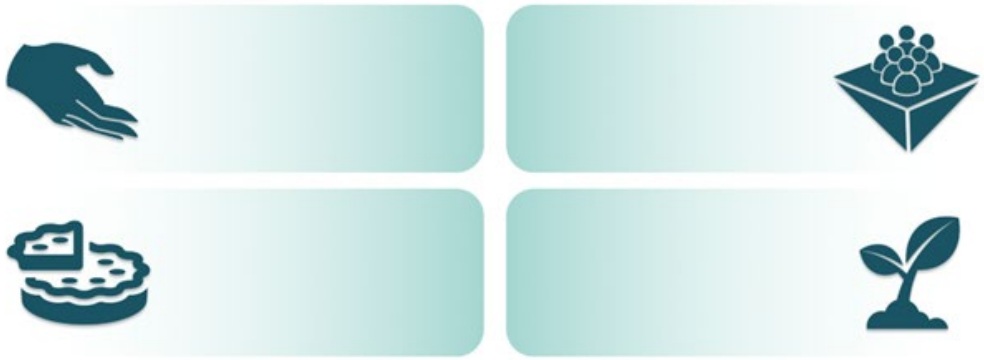
The topic includes presentations from two Mission Cities: Stockholm and Valencia, showcasing how the just transition considerations are being applied in their practice. A recurring theme throughout the topic was that delivering a just transition is not only a technical challenge, but also an organisational and governance challenge requiring coordination across sectors, mandates, and levels of government.

What is a Just Transition?

The concept of Just Transition has roots in labour movements and energy justice advocacy. It has since been recognised in international frameworks including the Paris Agreement and the European Green Deal. Today, many Climate City Contracts directly reference just transition principles.

At its core, a Just Transition recognises that moving to a low-carbon economy is not a neutral process. In cities, where systems are deeply interconnected, the transition requires multiple simultaneous shifts, all having significant impacts on how people live, work, and move. Those impacts are not evenly distributed. People who have contributed least to climate change are often the most exposed to its effects and the least able to benefit from the transition. A just transition means actively designing for equity: not only reducing emissions but building systems that are fairer and more inclusive than those being left behind.

Four dimensions of justice



A just transition can be understood through four complementary lenses:

Justice as recognition
Whose lives, needs, and lived impacts are acknowledged and made visible in the evidence, goals, and narratives we use

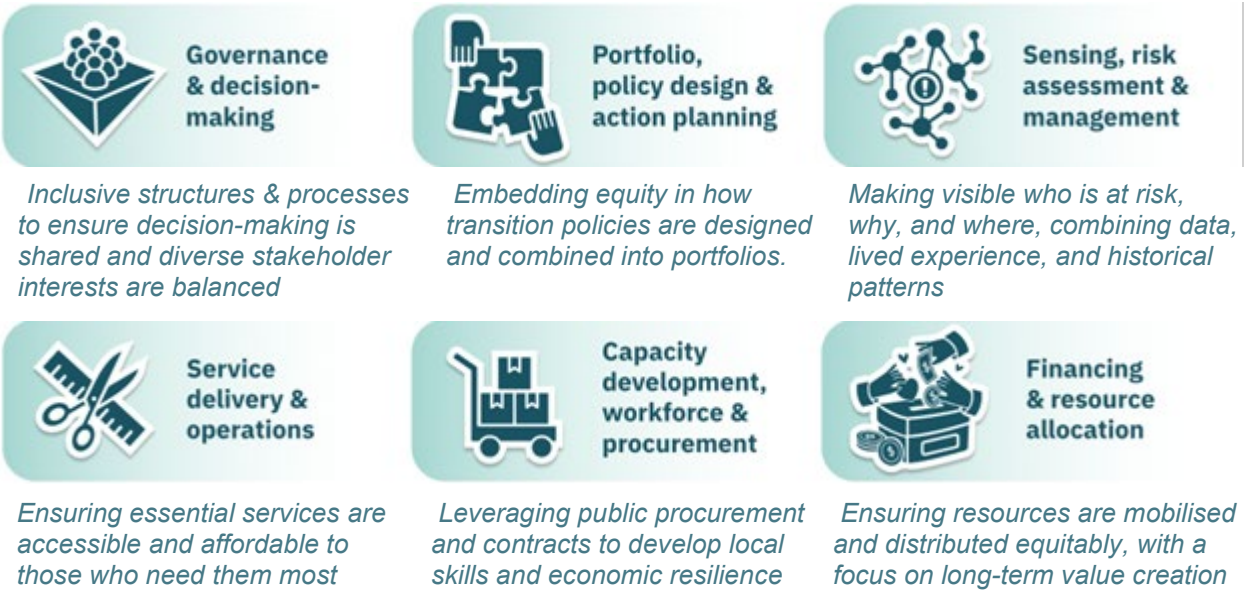
Procedural justice
Who can access decision-making processes, be heard, and meaningfully influence outcomes

Distributive justice
How the gains and risks of the transition are shared across communities and generations

Restorative justice:
Rectifying past and present harms, and ensuring new systems do not recreate them

Where Just Transition shows up in Cities' practice

Just transition considerations can be applied across six areas of municipal work:



Inclusive structures & processes to ensure decision-making is shared and diverse stakeholder interests are balanced

Embedding equity in how transition policies are designed and combined into portfolios.

Making visible who is at risk, why, and where, combining data, lived experience, and historical patterns

Ensuring essential services are accessible and affordable to those who need them most

Leveraging public procurement and contracts to develop local skills and economic resilience

Ensuring resources are mobilised and distributed equitably, with a focus on long-term value creation

City cases

Mission City: Stockholm, Sweden

Björn Hugosson presents how Stockholm approaches just transition within its climate strategy, followed by a focus on the Royal Seaport — a brownfield regeneration project that illustrates how just transition principles apply in a large-scale urban development context.

Mission City: Valencia, Spain

Victoria Pellicer introduces what just transition means in Valencia's context, structured around three priorities, with practical examples of how the city is working across each of them.

Useful Resources

1. Topic Page: Just Transition
2. Presentation: Online Planning Lab - Module 3 - Just Transition slides
3. Community of Practice: Orchestrating a Just Transition in the Built Environment
    a. Recording
    b. Slides
4. Further Read:
    a. Accelerating Just Transitions: Insights for Cities and National Platforms
    b. CCC Highlights - Diverse Perspectives on Climate Justice
    c. Bridging the Energy Transition: Energy Communities & Combating Energy Poverty in European Cities

Glossary Module 3: Governance and Policy

Building Information Modelling (BIM): A digital platform used not just for 3D design coordination, but as a verifiable data repository for calculating long-term performance and managing the asset over its lifecycle.

Carbon Tunnel Vision: The tendency to focus narrowly on emissions reduction at the expense of wider social, environmental, and systemic considerations. A just transition perspective counters this by keeping equity, health, access, and community resilience in view alongside climate goals.

Competitive Dialogue: A multi-stage procurement procedure used when the optimal solution is unknown. It facilitates structured discussions with pre-qualified bidders to co-develop solutions and allocate risks before final tenders are submitted.

Demand Management: The data-driven analysis of internal needs before a procurement process, shifting focus from acquisition of a specific product to the optimisation of a service.

Design & Build (D&B): A project delivery model that creates a single point of responsibility for both the design and construction phases, incentivising the contractor to find holistic, lifecycle-optimised solutions.

Just Transition: A framework for managing the shift to a low-carbon economy in ways that are fair and inclusive, ensuring that costs and benefits are shared equitably, that vulnerable groups are not left behind, and that the transition actively works to reduce rather than reproduce existing inequalities.

Life-Cycle Costing (LCC): An evaluation method that calculates the long-term costs of a project over its lifespan, including energy, renovation, and maintenance expenses, moving away from lowest-initial-price awarding.

Mission-Driven Policy Innovation (MDPI) is defined as the pursuit and utilisation of innovative policy interventions to create pivotal points of change that accelerate and amplify a city's trajectory towards becoming climate-neutral, smart, and just by 2030. At its core, a mission-driven approach relies on a systemic, "multi" perspective that reveals opportunities and synergies often missed by traditional, siloed policymaking. The concept builds on the broader academic literature on Mission-Oriented Innovation Policy (MOIP).

Multi-annual Financial Framework (MFF): The European Union's long-term budget framework, setting spending priorities and funding limits for a multi-year period (usually seven years).

Multi-level Governance (MLG): An approach to governance that coordinates action and decision-making across different levels of government—local, regional, national, and international—to ensure policy alignment and effective implementation.

Sustainable Energy and Climate Action Plan (SECAP): A local strategic plan developed under the Covenant of Mayors that outlines actions to reduce greenhouse gas emissions, adapt to climate change, and strengthen local resilience.

Synonyms of social innovation: People-based solutions; Stakeholder-led solutions.

Transition risks: Risks that arise from the decarbonisation process rather than from climate change directly. These include rising energy costs, job losses in fossil-fuel dependent sectors, green gentrification driven by retrofitting programmes, and unequal access to new green technologies and services.

Vulnerability: The degree to which a person or group is susceptible to harm from climate change or from the transition process itself. Vulnerability reflects compounding factors including income, housing quality, health, access to services, and historical disadvantage, not only physical exposure to hazards.

Module 4 - Portfolio of Actions

Topic 4.1 Integrating the Action Plan into the urban planning system

Author: Carolina García Madruga

Many cities have established clear climate targets. Strategic plans and projects related to climate neutrality — including energy, adaptation, mobility, and urban renewal — have been substantial and ongoing for many years, driven by European mandates across various sectoral policies. This cascade of plans and strategies, which converge in the Climate City Contracts (CCCs) and the corresponding Climate Action Plan, faces several barriers to implementation and execution: technical barriers, economic barriers, operational barriers and governance-related barriers.

This topic focuses on overcoming barriers specifically related to aligning the CCCs with the regulatory and instrumental frameworks required by urban planning (e.g., Urban Development Plan, Master Plan, Urban Regulation Plan) and pursues several objectives. First, it aims to promote the definition of a comprehensive process for **integrating climate objectives into urban planning** and regulatory instruments, thereby facilitating the implementation and development of the Climate Action Plan. Second, it seeks to stimulate reflection and discussion on urban planning processes from a different perspective, **moving beyond traditional working methods** in the field of urban planning. Finally, it proposes and identifies **potential innovations in urban planning** to integrate climate neutrality through adaptive planning approaches.

Why integrate Climate City Contracts and the urban planning system?

Aligning CCC Action Plans (APs, which are one of the three components of a Climate City Contract) with existing urban planning instruments is crucial to ensure their effectiveness and long-term implementation. Most CAPs lack legal enforceability, making them vulnerable to political changes unless embedded within local planning systems. Many climate actions depend on coordinated decisions about land use, infrastructure, and the built environment—areas often beyond the scope of standalone CAPs. Because urban form shapes local climate challenges, city-level action differs from national approaches. When integrated into urban planning, CAPs can act as powerful coordination tools, driving more ambitious goals and stimulating innovation in local planning frameworks.

The case for integrating

Explanation of the objectives, structure, and systematisation of Climate City Contracts (CCCs) and Action Plans (APs) or their understanding as a meta-strategy for Mission Cities, to integrate and harmonise existing sectoral plans, based on a GHG reduction target for 2030. Key elements of the AP include:

- The baseline: GHG emissions inventory and assessment of existing policies and plans that impact GHG emissions.
- The emissions target and gap.
- Barriers and opportunities: systemic analysis across different emissions areas.
- Theory of change and portfolio of actions: concrete actions that link emissions areas to systemic levers and indicate long-term results and impact.
- Monitoring, Evaluation, and Learning (MEL) framework.

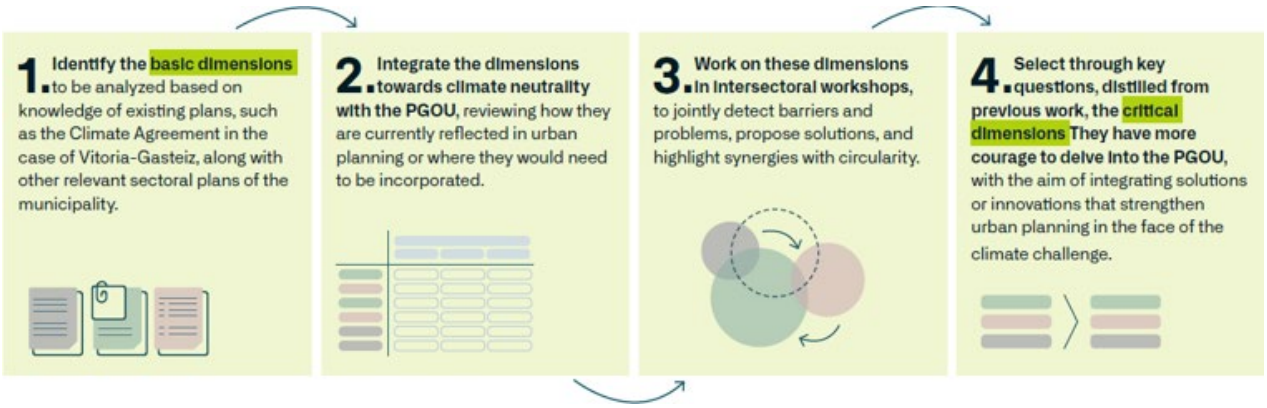
Unlike the CCC's vision as a meta-strategy, it is important to reflect on how urban planning extensively influences GHG emissions and mitigation options, especially in buildings and transport. And reflect on how it can integrate climate action into local regulatory frameworks.

Why urban planning innovations?

Aligning Climate Action Plans (CAPs) with existing urban and spatial planning systems is essential to ensure effective and durable climate action. As most CAPs lack legal enforceability, embedding them within planning frameworks helps protect implementation from political change, enabling coordination across land use, infrastructure, and the built environment—areas critical to urban climate action. Achieving this requires transformative change within spatial planning, including organisational alignment, a systemic rather than purely instrumental approach, and the use of shared data as a common language for learning.

A guide to integrated planning

A booklet for supporting municipalities in integrating climate action into their General Urban Ordinance Plan (PGOU) has been developed on request of the city of **Vitoria-Gasteiz, which guides the overall process, motivation and the application to the specific city (47 pages)**



City case

Mission City: Vitoria-Gasteiz, Spain

Embedding climate neutrality as a core dimension of urban planning through a specific methodology: General Urban Ordinance Plan (PGOU)

General key elements How can we identity basic dimensions?
Example of Vitoria-Gasteiz

Alignment matrix

Climate Agreement Priorities	General Urban Ordinance Plan: Aims	General Urban Ordinance Plan: General Regulations	General Urban Ordinance Plan: Special Regulations
Eco-rehabilitation	✓ × →	✓ × →	✓ × →
Renewable Energy	✓ × →	✓ × →	✓ × →
Mobility	✓ × →	✓ × →	✓ × →
Circularity	✓ × →	✓ × →	✓ × →
Green Infr.	✓ × →	✓ × →	✓ × →
Intelligent City	✓ × →	✓ × →	✓ × →

The basic dimensions of Vitoria-Gasteiz are the priorities of its Climate Agreement, but they can also be extracted from other documents such as the Climate and Energy Action Plan, the Covenant of Mayors for Climate, the Municipal Green Infrastructure Master Plans, sectoral plans (water, agroforestry, etc.), circularity plans, etc.

1. **Identification of basic dimensions and alignment with the PGOU**
   In the case of Vitoria-Gasteiz, the priority areas of its Climate Agreement are selected. Circularity is not addressed because its objectives in the CA are cross-cutting from the PGOU, nor is the smart city, as it is considered to be a dimension outside the regulatory scope of the PGOU.
2. To recognise the potential of each of the basic dimensions, an **alignment matrix** is used, which allows their relationship with urban planning to be analysed.
3. **Cross-sector workshops**.
   In these sessions in Vitoria-Gasteiz, the alignment matrix was used as a basis for identifying the key aspects of municipal climate action and ways to address them through planning, as well as to detect where other instruments might be necessary. This work focused exclusively on the **four selected dimensions.**

Other city cases

- **Mannheim** / Strengthening urban climate concerns in urban development planning
- **Lyon /** Make the climate-air-energy criteria part of the development and building operations in applications for urban planning permits and in urban planning documents
- **Aachen** / Building the city differently: Local urban planning scheme (PLUi) and bioclimatic buildings
- **Heidelberg** / Heat concept for urban land use planning
- **Trondheim** / The governance of land use must strive for area neutrality and in time positivity

- **Leuven** / Green heat in urban planning tools

Useful Resources

1. Topic Page: Developing an Action Plan
2. Presentation: Online Planning Lab – Module 4 - Climate City Contract into urban planning slides
3. Guide: Recommendations for supporting cities in integrating Climate Action into the urban planning system

Related EU/international projects or initiatives

- Biodiversity value in spatial policy and planning leveraging multi-level and transformative change

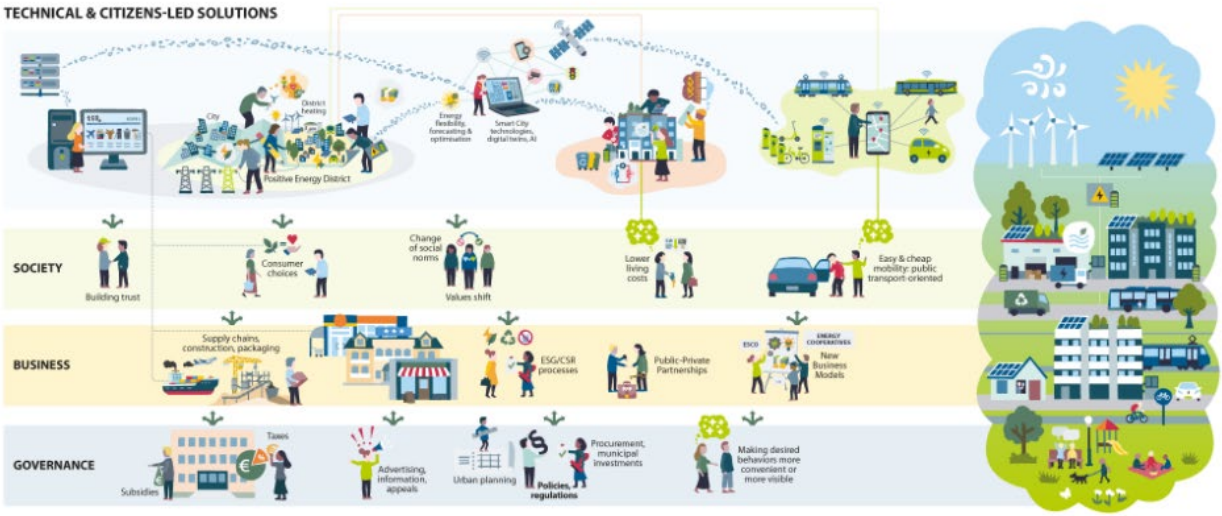
Topic 4.2 Emission domains and levers of change

Authors: Rohit Mondal, Sabrina Bresciani, Piotr Magnuszewski, Justyna Figas-Skrzypulec, Sophia Ruiz, Angélica Gómez

How might we leverage technical solutions, citizen-led solutions and partnerships with the private, civic and academic sectors to reduce emissions?

NetZeroCities Impact Pathways

The impact pathways (Theory of Change) framework was designed by the project NetZeroCities to support municipalities in having a shared understanding of how climate actions planned by a city, how change is planned and is expected to unfold, and how different stakeholders and actions can collectively contribute to desired impacts. Unlike conventional linear Theory of Change models, the NetZeroCities framework sets out a theory of action that captures multi-dimensional impact pathways across 6 standard emission domains with corresponding subdomains, and 6 systemic levers that connect short- and medium-term outcomes to long-term impacts and co-benefits. An interactive version of the impact pathways is available on the portal.

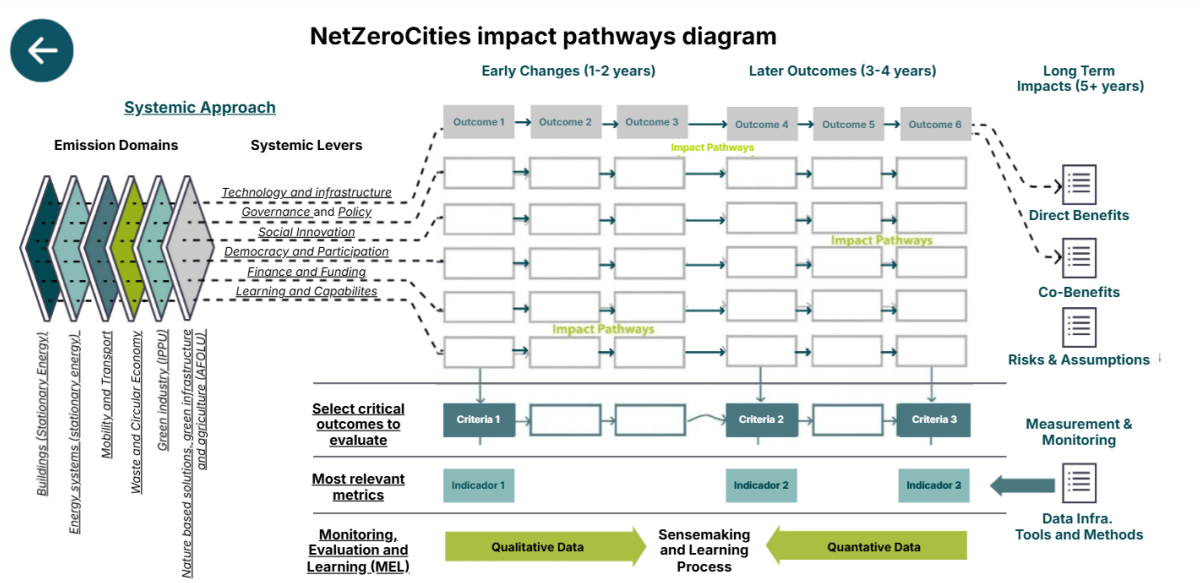


In accordance with international standards, emission domains cover: Stationary Energy and Buildings, Transportation, Waste and Circular Economy, Industrial Processes and Product Use (IPPU), Agriculture, Forestry, and Other Land Uses (AFOLU) and other scope 3. Levers of change, also known as enablers, are: Social Innovation, Democracy and Participation, Finance and Funding, Technology and Infrastructure, Governance and Policy, and Technical-Digital Solutions.

Systemic transformation is inherently complex and non-linear. It is shaped by interdependent relationships, co-evolving feedback loops, and connections across disciplines, governance structures, organisations, cultural and contextual conditions, and people. While classical linear Theory of Change models are useful

for explaining how planned activities produce sequential outputs that contribute to desired outcomes, they are less effective at capturing the dynamic and interconnected nature of systemic transformation.

This process starts with the entry points for each action, followed by Early Changes, which represent expected outcomes within the first one to two years. These are followed by Later Changes, anticipated within three to four years, before ultimately contributing to long-term impacts over a timeframe of five years or more. By developing these impact pathways following a 7-step process, cities can identify critical leverage points within the system and use them to monitor, evaluate and learn from the progress of their climate actions.



These pathways are especially useful for cities' strategic learning, as they help measure and analyse key GHG and non-GHG indicators, identify gaps, and support knowledge exchange with peer cities through sensemaking processes embedded within the process. In this way, the framework not only provides a multi-dimensional and interconnected way of describing a portfolio of actions, but also enables iterative adjustments to impact pathways through monitoring, evaluation and learning, as well as strategic reflection around key leverage points in the system.

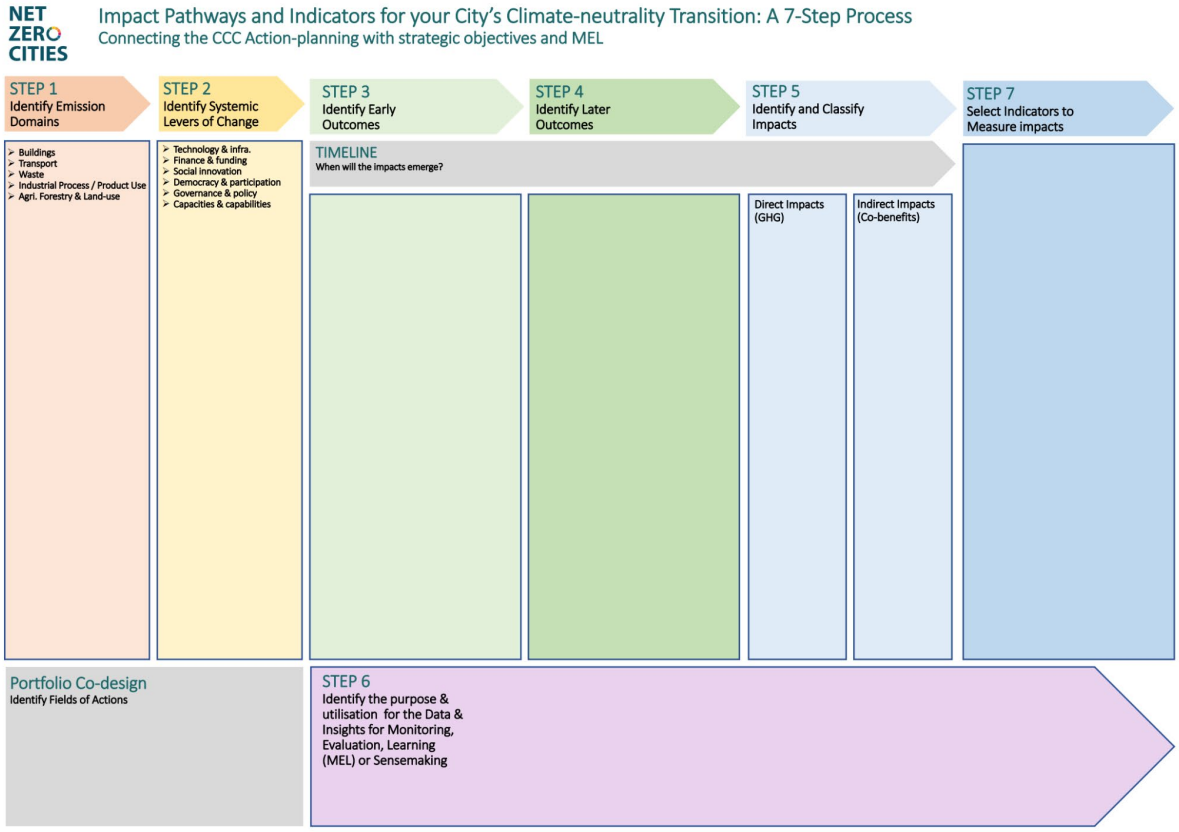


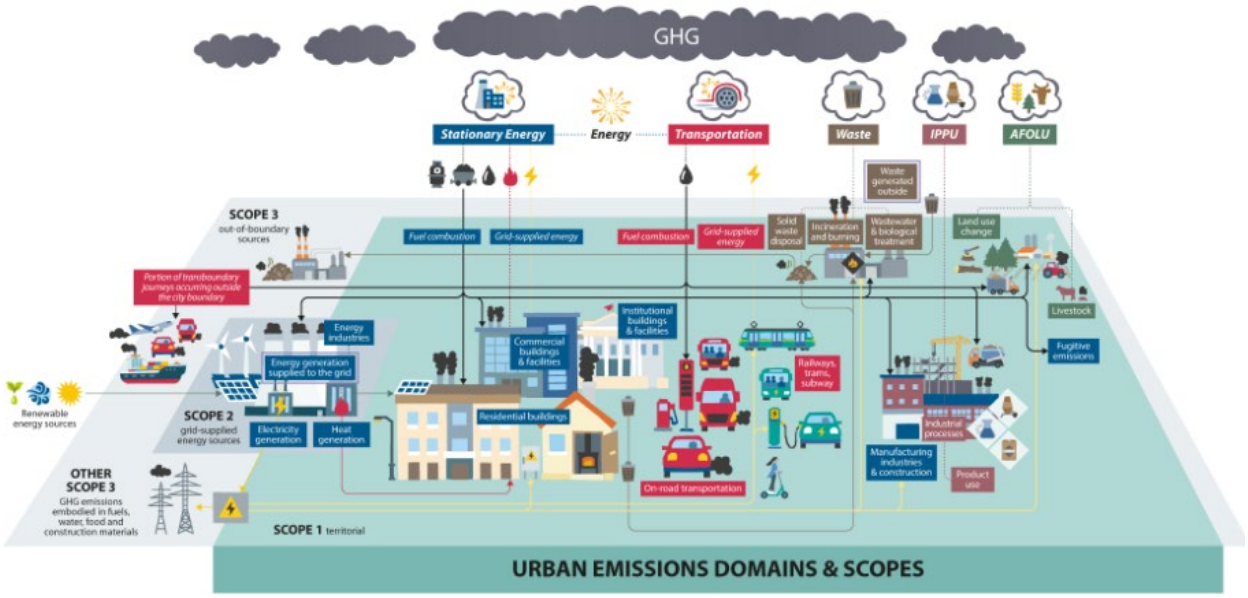
Image source: Impact Pathways and Indicators for your City's Climate-neutrality Transition: A 7-Step Process

Emission domains and impact domains

The impact pathways framework enables cities to structure and categorise their impact pathways across six standard emission domains. These domains help cities locate where emissions are generated, identify relevant intervention areas, and assess how different actions contribute to climate-neutrality objectives:

- **Buildings (Stationary Energy):** Emissions from energy use in buildings and fixed infrastructure, including heating, cooling and electricity.
- **Energy systems** (Stationary Energy): Emissions from the generation, conversion, storage, and distribution of electricity, heat, and fuels through city-wide energy infrastructure
- **Transportation:** Emissions from the movement of people and goods across ground, air and water transport, including private vehicles, public transport, logistics, aviation and shipping.
- **Waste and circular economy:** Emissions from waste collection, treatment, disposal, recycling and wastewater management.
- **Industrial Processes and Product Use (IPPU):** Emissions from industrial processes and the use of products such as refrigerants, solvents and construction materials.
- **Agriculture, Forestry and Other Land Use (AFOLU):** Emissions and removals related to agriculture, forestry, land use, green infrastructure and carbon sequestration.
- **Other Scope 3 sectors:** Indirect emissions linked to consumption, supply chains, food systems and other activities beyond city boundaries.

Reducing GHG emissions in a city requires a combination of technical and social solutions.



Levers of Change

The NetZeroCities impact pathways recognise that reducing emissions requires more than technological solutions or isolated projects; meaningful transformation depends on aligning different parts of the urban system. To support this process, the framework identifies six key levers of change that help cities determine where action is needed:

- **Technology and infrastructure:** Physical and digital systems, tools and infrastructures that enable low-carbon transitions.
- **Finance and funding:** Financial resources, investment models and funding mechanisms that support the implementation and scaling of climate actions.
- **Social innovation:** New social practices, behaviours and relationships that enable communities to adopt and sustain low-carbon ways of living.
- **Democracy and participation:** Inclusive processes that involve citizens and stakeholders in shaping, implementing and legitimising climate action.
- **Governance innovation:** New institutional arrangements, policies, partnerships and coordination mechanisms that support systemic transformation.
- **Learning, skills and capacity building:** Knowledge, capabilities and competencies that help cities, organisations and communities design, implement and adapt climate actions over time.

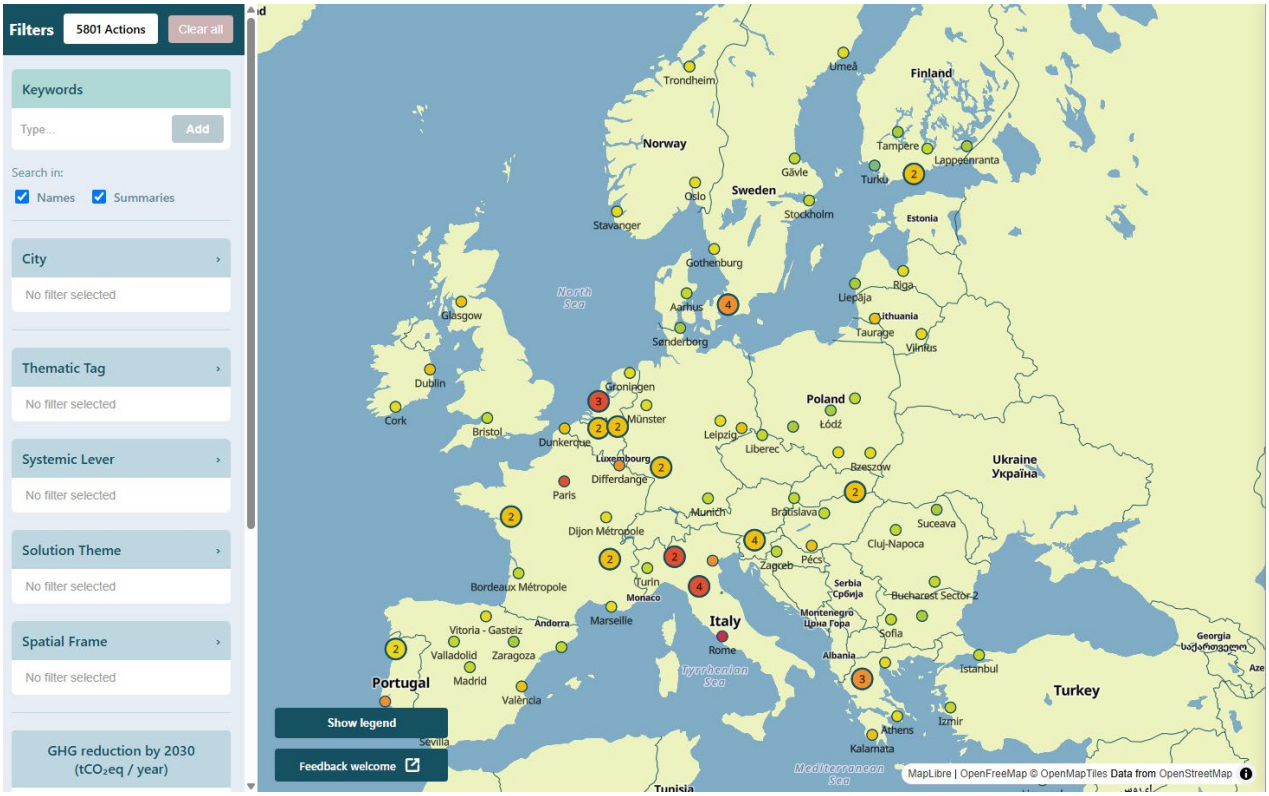
City cases

Mission City: Kalamata, Greece

City representative Vassilis Papaefstathiou shares how Kalamata addresses climate risks such as heatwaves and flooding through its Climate City Contract. After identifying buildings (58.2%) and transport (25.3%) as its main sources of energy consumption, the city developed 77 actions to reduce greenhouse gas emissions by 94%. Collaboration with universities, public and private organisations, NGOs, and capacity-building initiatives like **Green Skills for a Green Lifestyle** and **Youth Council: Kalamata Futuremakers are** central to driving data-driven, community-led climate action, placing the citizens not only as recipients, but also as co-authors of change.

Which emission domains are Mission cities targeting?

The Action Explorer is a freely available tool in the portal that provides an interactive map of Mission Cities' planned actions. It allows users to select solution domains and systemic levers of change, in addition to more specific subcategories of actions (tags).



Scope 1, 2, 3

Greenhouse gas (GHG) emissions resulting from human activities are classified by the GHG Protocol, one of the most widely used GHG accounting methodologies, into three categories: **Scope 1, Scope 2, and Scope 3**. This framework distinguishes between emissions released directly within a city boundary (**Scope 1**), emissions associated with the use of grid-supplied electricity, steam, heating, and/or cooling (**Scope 2**), and emissions generated outside the city boundary as a consequence of activities occurring within the city (**Scope 3**).

There is growing interest in incorporating all three scopes into city-level GHG inventories. Scope 3 emissions have become particularly important because as much as 85% of the emissions linked to goods and services consumed in cities may occur outside the city boundary.

Scope 3 emissions and consumption-based emissions are sometimes treated as interchangeable because both may include emissions occurring outside the city boundary. However, the distinction between them is important. **Scope 3** includes emissions generated outside the city that are associated with activities taking place inside the city, but these emissions are not necessarily linked directly to household or resident consumption. One example is the embodied emissions from building materials manufactured elsewhere but used in construction projects within the city.

Consumption-based emissions, by contrast, focus specifically on the consumption activities of the city's residents. These emissions may arise within the city boundary or elsewhere. For example, emissions associated with a resident travelling or consuming goods and services while on holiday in another country may still be included in the city's consumption-based inventory.

Scope 1: Emissions produced within the city - direct GHG emissions from sources located inside the city boundary. Examples include fuel burned in buildings, emissions from cars and buses operating within the city, emissions from local factories, and emissions from waste-management facilities located within the city.

Scope 2: Emissions from grid-supplied energy used within the city - emissions associated with electricity, heating, steam, or cooling consumed within the city but generated outside its boundary. For example, electricity used by homes and businesses is classified as Scope 2 when the power station producing it is located outside the city.

Scope 3: Other emissions occurring outside the city boundary - other indirect emissions generated outside the city as a result of activities, consumption, or demand within the city. Examples include emissions from the production of imported food and construction materials, flights taken by residents, the transportation of goods into the city, and the treatment of city-generated waste at facilities located elsewhere.

GHG inventories

The guide "How to prepare a greenhouse gas emission inventory" describes the Covenant of Mayors' general approach to preparing GHG inventories, including key concepts, scope and boundary selection, and methodological choices. It details how to prepare a GHG emission inventory under the CoM framework, and provides technical guidance on activity data collection and treatment, including potential data sources and methodological alternatives, and on calculations used to estimate the associated GHG emissions.

Useful Resources

1. Portal Page: Impact pathways, Monitoring, Evaluation and Learning framework and indicators
2. Presentation: Online Planning Lab - Module 4 - Levers of Change Slides
3. Guide: Impact Pathways and Indicators for your City's Climate-neutrality Transition: A 7-Step Process
4. Further Read:

Chaudhary, N., Hawkins, P. and Alvial Palavicino, C. (2022) 'Chaudhary, N., Hawkins, P., & Alvial Palavicino, C. (2022). NetZeroCities Theory of Change. Deliverable 2.14. NetZeroCities EU H2020 Grant Agreement n°101036519.European Union, Brussels.' EU H2020 European Union, Brussels.

Mondal, R., Bresciani, S., & Rizzo, F. (2025). Behavioural change assessment in 39 cities of the EU Mission aiming at climate-neutral and smart cities. IADIS International Journal on WWW/Internet, 23(2), 1–18.

Mondal, R., Bresciani, S., Ricard, M., Piergallini, I., Chaudhary, N., & Rizzo, F. (2026). From metrics to meaning: Enabling iterative design for multi-stakeholder engagement and behavioural change in systemic climate transitions with quali-quantitative assessment and sensemaking. In L. Simeone, C. M. Gray, A. Verhoeven, A. de Götzen, Y. Bakırlıoğlu, H. Zohar, M. Stead, & P. Buwert (Eds.), DRS2026: Edinburgh, 8–12 June, Edinburgh, United Kingdom. Design Research Society. https://doi.org/10.21606/drs.2026.1462

Mondal, R., Bresciani, S., & Rizzo, F. (2024). What cities want to measure: Bottom-up selection of indicators for systemic change toward climate neutrality aligned with Sustainable Development Goals (SDGs) in 40 European cities. Climate, 12(3), 41. https://doi.org/10.3390/cli12030041

Topic 4.3 Co-Designing a Climate Portfolio of Actions, Actors and Assets

This topic introduces portfolio thinking and portfolio mapping as a way to make sense of, coordinate and accelerate climate action. The challenge it addresses is a familiar one: how can we get everyone on the same page about what climate actions are happening in our city, who is involved, and what support is needed to make progress? The aim is to achieve a working understanding of the three elements of a portfolio — Actions, Actors and Assets — and hands-on experience mapping.

Challenge

How can we get everyone on the same page about what climate actions are happening, who's involved, and what support is needed to make progress? How might we develop a holistic and shared understanding of our city's climate actions, actors and enabling conditions to accelerate and align the transition towards climate neutrality?

A portfolio is more than a list of actions — it includes the relationships between actions, actors and resources.

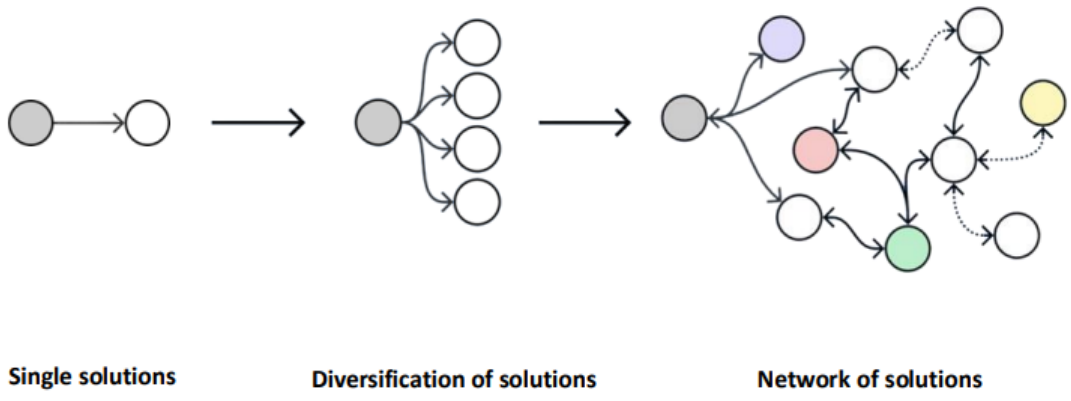


Image source: Portfolio Mapping guide



Image source: Portfolio Mapping guide

The value lies in the process of co-creating the portfolio, not in producing a finished document.

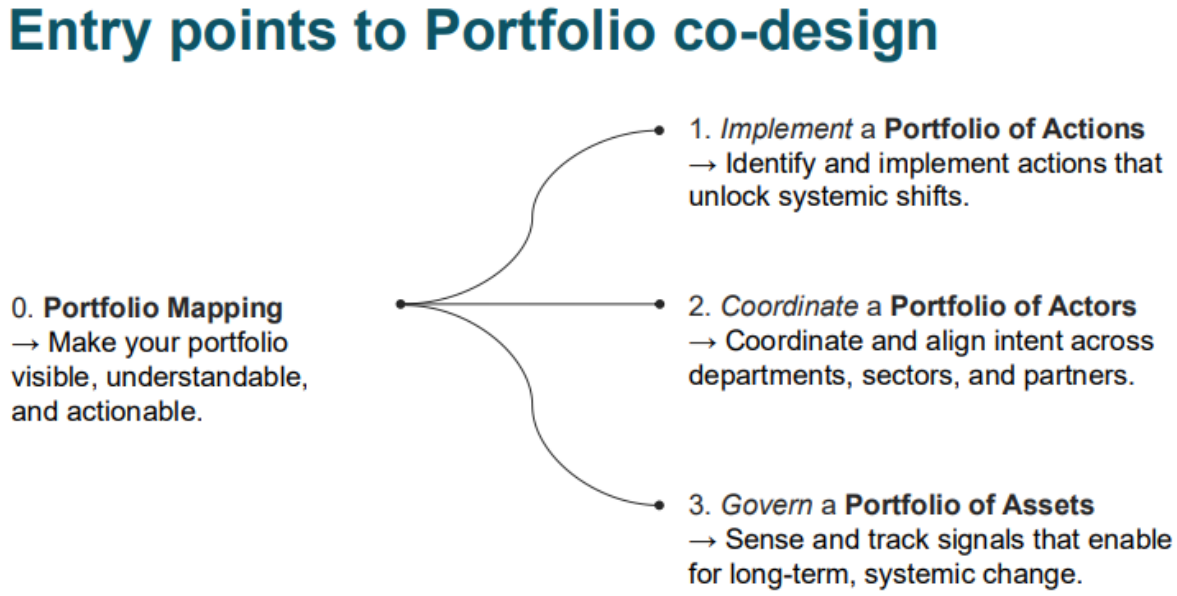


Image source: Portfolio Mapping guide

Collaborative tools and visualisations help make complexity visible, enabling coordination and shared understanding across departments and partners.

A guide with a step-by-step introduction to Portfolio Mapping is available on the portal, with an accompanying Portfolio Mapping Miro board. The guide outlines a process to coordinate the actions, actors and resources that will enable your city's just transition to climate neutrality,

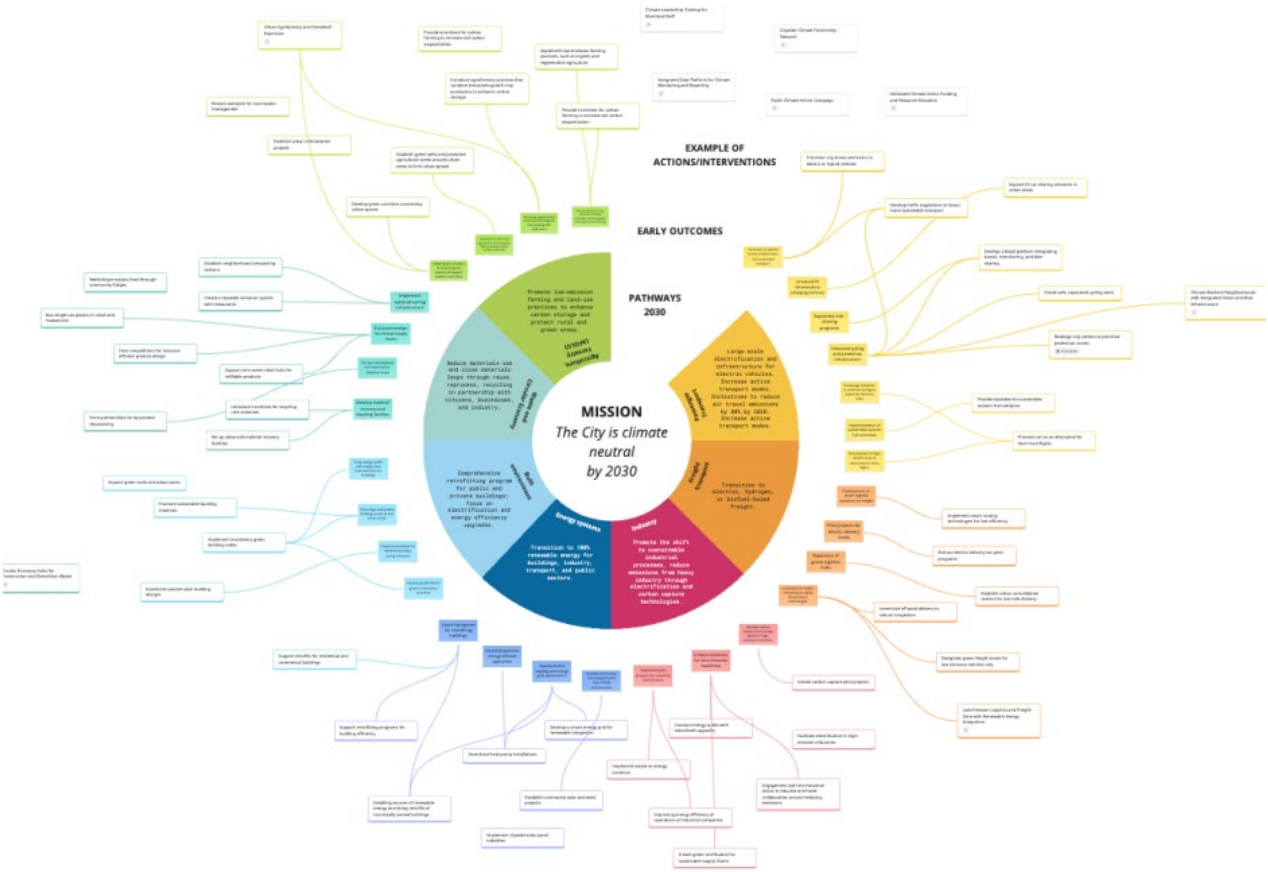


Image source: Portfolio Mapping guide

City cases

Mission City: Lund, Sweden

The city of Lund shared how it has used portfolio mapping in practice to move from plans to implementation: unpacking the Climate City Contract Action Plan (37 actions across 6 domains) into a visual portfolio, running a workshop series across pathways, and connecting the mapping to financial and operational planning, climate budget and follow-up.

Source: Portfolio Mapping guide

Useful Resources

1. Presentation: Online Planning Lab - Module 4 - Co-Designing a Portfolio Slides
2. Tools:
    a. Portfolio Mapping Guide step-by-step companion document
    b. Portfolio Mapping Miro board — generic city template used in the live exercise.
    c. NetZeroCities Climate Transition Map — references the "Co-design a Portfolio" and "Activate an inclusive ecosystem for change" blocks of the framework.

Related group on the Mission Portal

Formulating an integrated portfolio of actions, using NetZeroCities tools

Topic 4.4 Using planning tools to Support Climate Planning, MEL, and Implementation Management to Achieve Net Zero Goals: the NetZeroPlanner

Author: Idoia Pérez Fernández, Sean Murray

To achieve climate neutrality, cities must develop a strong climate action plan. However, planning alone is not enough. It is equally important to continuously monitor, evaluate, and learn from results to effectively manage implementation and stay on track towards climate goals. Digital tools are available to support cities in climate action planning, providing guidance on sectors and sub-sectors of intervention, and expected reductions of GHG emissions.

Several tools are available to support cities in creating their Action Plan, including NetZeroPlanner, Climateview, SuperUrbanity, Kausal and others (see the dedicated portal page for more details).

The iterative process to achieve net-zero

Achieving climate neutrality is not a one-off planning exercise, but an **iterative process** that includes:

- Climate planning (defining actions and targets)
- Monitoring results (tracking progress)
- Evaluation and learning (understanding what works and what does not)
- Implementation management (adapting actions to stay on track)

This continuous cycle allows cities to improve their strategies over time and ensure they achieve their climate goals.



Figure 1. Iterative cycle of climate action planning

What is NetZeroPlanner

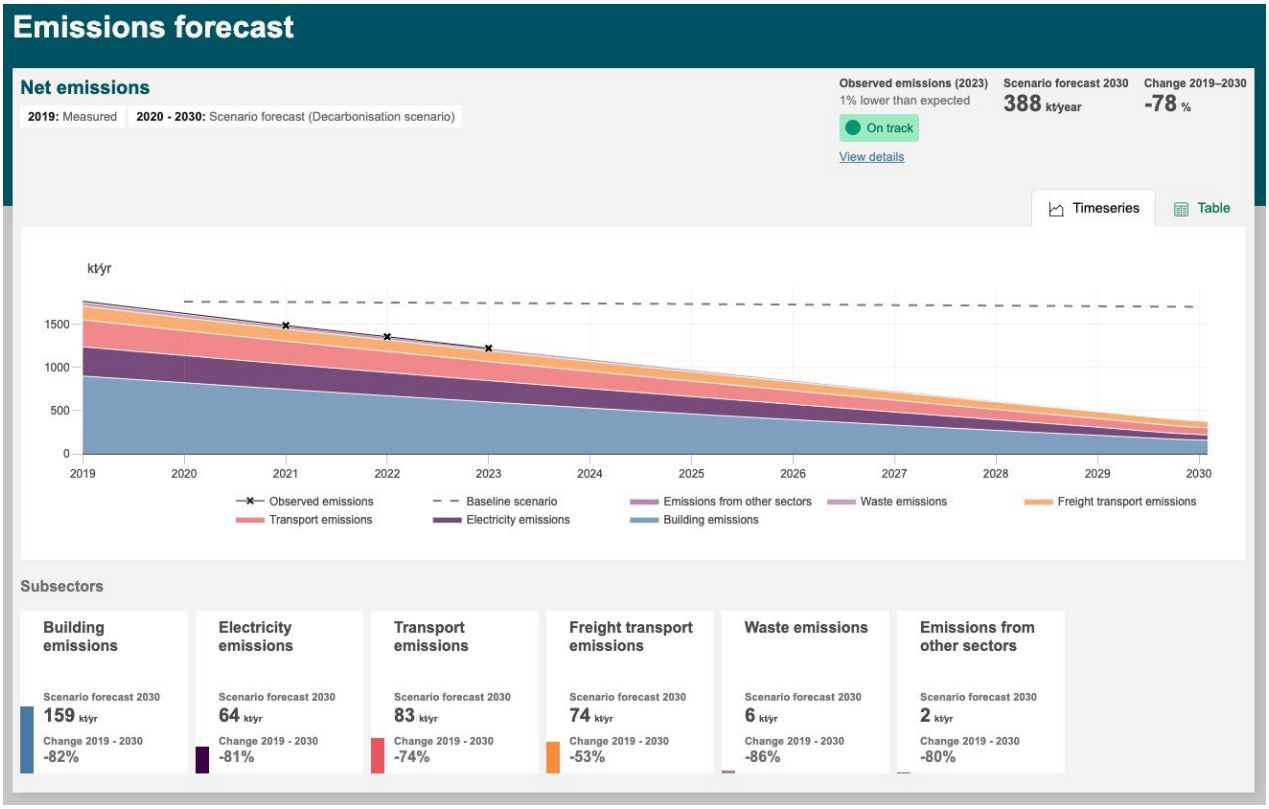
This section introduces the NetZeroPlanner - the free tool developed in NetZeroCities to support climate planning, monitoring, evaluation and learning (MEL), and implementation management within the Climate City Contract (CCC) framework. NetZeroPlanner is a free online tool developed within NetZeroCities to support this process by helping cities evaluate and improve their plans, measure results, and manage implementation to achieve net-zero success.

NetZeroPlanner is a free online tool developed in the NetZeroCities project that helps cities analyse and enhance the effectiveness of their Climate Action Plans (CAPs), ensuring they stay on track to achieve their decarbonisation goals. It is freely available on the Mission portal; to access the NetZeroPlanner tool, a user must be logged in.



Tailored to each city's specific context, the tool generates a **data-driven roadmap** to guide emissions reductions through 2030. It supports decision-making by:

- Assessing how climate measures contribute to emissions reductions
- Allocating costs, benefits, and co-benefits across key sub-sectors and stakeholders
- Identifying where investments can maximise both emissions reductions and financial returns
- Providing annual performance management



How NetZeroPlanner works and supports cities

NetZeroPlanner combines:

- A research-based database and assumptions
- City-specific inputs (baseline data and AP assumptions provided by cities)
- Outputs such as dashboards and downloadable tables

Based on this, **the tool enables cities to:**

- Identify key sectors driving emissions reductions
- Assess whether planned actions are sufficient to reach net-zero
- Support investment planning
- Monitor deviations between planned and actual performance
- Reflect on results and adjust actions during implementation based on data-driven insights

The tool models 13 key sub-sectors relevant for city decarbonisation (e.g. transport, buildings and heating, electricity), enabling a systemic understanding of pathways to net-zero.

Cities can get started by accessing NetZeroPlanner through the Mission Portal (Act → NetZeroPlanner). From the homepage, users can begin by clicking on *"Go to NetZeroPlanner"* and creating a new plan. The tool guides users through a set of initial questions about their city, which helps NZP provide a tailored starting point by generating default values from comparable cities in Europe. The homepage also provides practical support through four key sections: a Quick Start Guide, an introduction to the tool, access to the learning programme, and technical support.

NetZeroPlanner has been used in practice by more than 75 cities, with over 100 plans created using the tool.

City cases

Mission City: Barcelona, Spain

Representatives from the city of **Barcelona** utilise the NetZeroPlanner for this iterative process to improve their plans, identify key emission drivers, and monitor progress towards 2030. They share how this process helped the city identify gaps between planned and actual progress, including in areas such as reduction of car use and electrification of transport, as well as the role of building renovations as a key contributor to city-level emissions reductions. This highlights the importance of data-driven decision-making, prioritisation, and continuously reflecting on and adapting implementation over time.

Useful Resources

1. Presentation: Online Planning Lab - Module 4 - NetZeroPlanner slides
2. Tool: Digital tools for climate planning
3. NetZeroPlanner tool access and support materials: https://netzerocities.app/netzeroplanner
4. NetZeroPlanner Technical Helpdesk: https://app.smartsheet.com/b/form/3feb65b4134e40cfa0d90306a8cfc91e

Related group on the Mission Portal

NetZeroPlanner: Building a Strong Economic Case

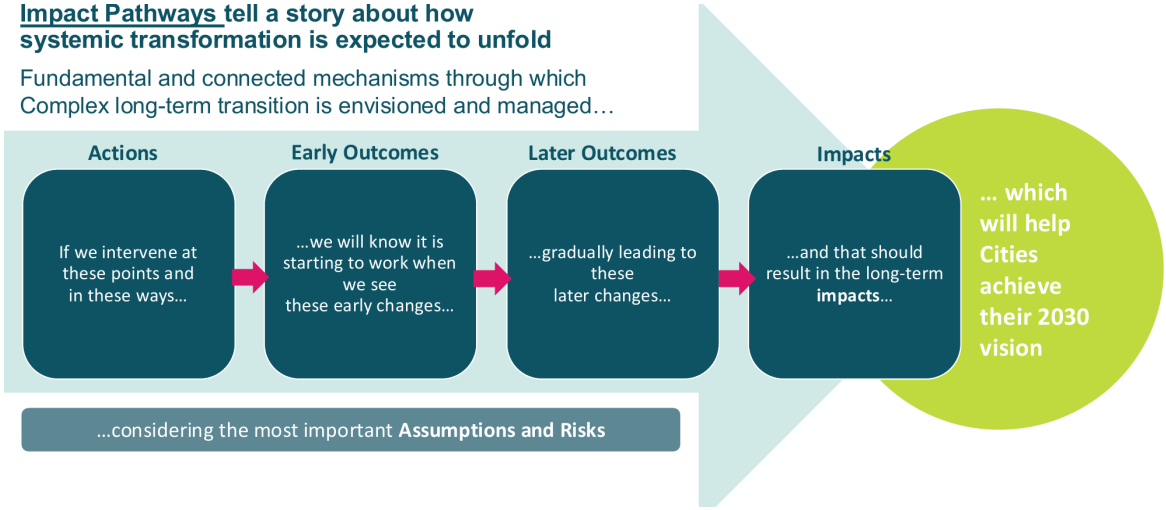
Topic 4.5 Measuring What Matters - Strategic Monitoring, Evaluation, and Learning processes for Climate Action Plans

Author: Mira Conci, Nikhil Chaudhary

Monitoring, Evaluation and Learning (MEL) can be a strategic practice rather than a compliance exercise. A robust MEL process tracks systemic outcomes, GHG reductions and co-benefits resulting from climate actions, and refines ambition and actions based on evidence.

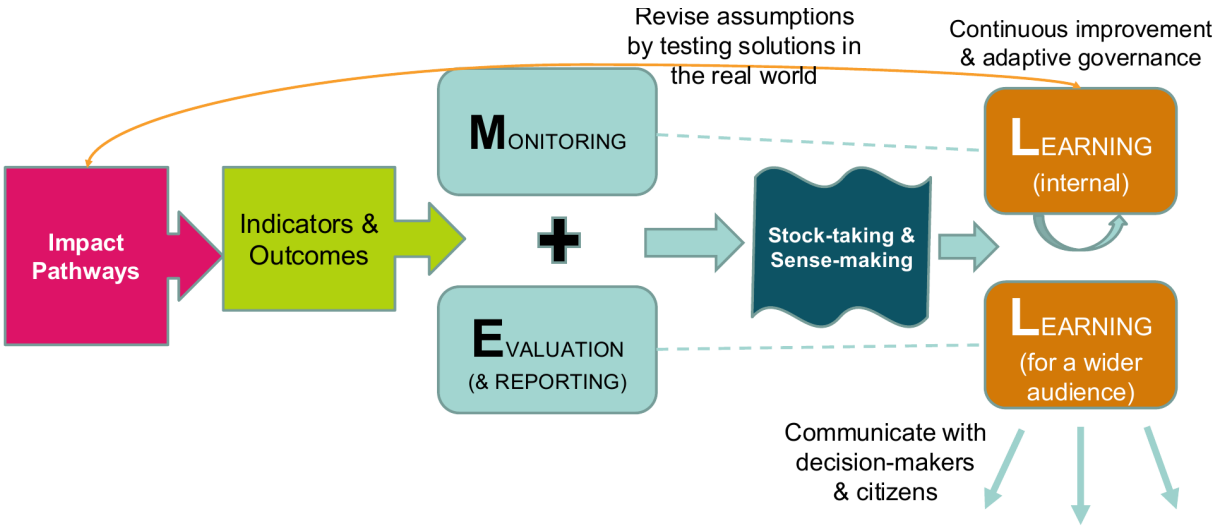
Impact pathways

An impact pathway tells the story of how systemic transformation is expected to unfold: if we intervene at these points and in these ways, we will see early changes (years 1–2), which give rise to later outcomes (years 3–4), which should lead to the long-term impacts sought by 2030 — all while making assumptions and risks explicit. Traditional monitoring and evaluation focuses on actions and final impacts; systemic MEL focuses on the "messy middle" of early and later outcomes, allowing cities to evaluate progress as it happens rather than only judging whether the final target was met. Plans rarely unfold linearly, so MEL should capture expected and unexpected changes, distinguishing between what lies within the city's direct mandate, its wider influence, and its vision.



An integrated MEL framework

Impact pathways generate indicators and outcomes; monitoring and evaluation feed a stock-taking and sense-making process; learning flows back both internally (continuous improvement and adaptive governance, revising assumptions by testing solutions in the real world) and externally (communicating with decision-makers and citizens). Combining qualitative evidence (how change is happening, strategy, risk management) with quantitative evidence (targets, indicators, accountability) gives a fuller diagnostic picture — much as clinical judgement synthesises different types of medical evidence.



GHG accounting

GHG inventories help cities understand where emissions come from, provide a baseline, and support target setting (net zero in the Cities Mission context means a minimum 80% reduction/mitigation, with residual emissions compensated).

Core elements:
- emission sectors (stationary energy, transport, waste, AFOLU, IPPU);
- scopes 1–3;
-the main greenhouse gases and their global warming potentials;
- the basic accounting logic of activity data × emission factor.

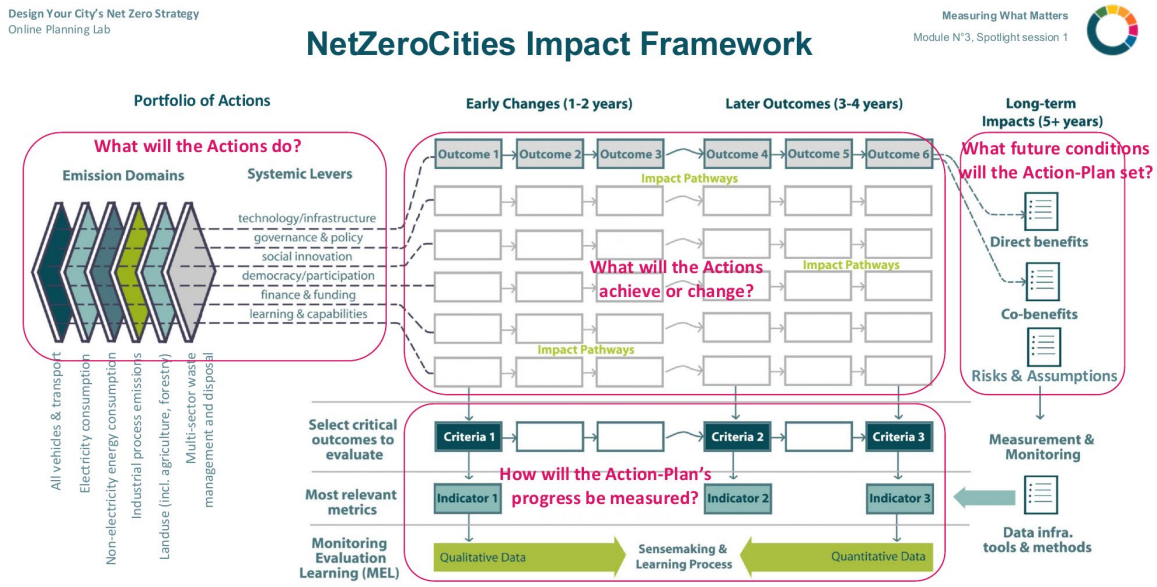
Reference methodologies include the GPC and the Global Covenant of Mayors Common Reporting Framework / SECAP approach, alongside national frameworks. The guide "How to develop a Sustainable Energy and Climate Action Plan (SECAP)" (2025) provides municipalities with the context, objectives, methodological principles, procedures and best practices to develop their sustainable energy and climate action plan (SECAP). As the main part of the Covenant of

Mayors for Climate & Energy - Europe (CoM EU) Guidebook, the document guides readers through the entire SECAP process. It is accompanied by a set of complementary documents providing concrete and detailed technical guidance on specific steps and components of the SECAP process.

Indicators and co-benefits

Co-benefits are the additional beneficial impacts of emission-reduction strategies — improved air quality, health, jobs, resilience — and are central to policy and investment cases, though attribution and equitable distribution remain challenges. The session distinguishes activity indicators ("what did we do?") from co-benefit indicators ("what changed for people or the planet because we did it?"), and covers types of impact indicators (direct GHG, activity, financial, co-benefits, reflection and learning), plus social/just transition and climate-risk lenses. Indicator systems should be tailored to audience — from international frameworks (SDGs, NECPs) through urban-scale narratives (SECAP, SUMP) to project-scale KPIs and stakeholder interests — and each indicator should carry minimum metadata: linked outcome, responsible project/stakeholder, baseline and target values, reporting framework, calculation methodology, and data frequency.

Analysis of CCCs shows that indicator selection often skews towards lower-priority actions relative to where emission-reduction effort is concentrated; realigning indicators with action prioritisation strengthens the case for climate action with funders and the public.



City case

Mission City: Leuven, Belgium

Leuven 2030 (presented by Director Katrien Rycken) illustrates a full pathway from GHG inventory and gap analysis across five emission domains to 86 breakthrough projects, each documented through an impact framework covering financial highlights (CAPEX, financing type, IRR, risk), direct impact (tCO_2 reduced and underlying activity metrics) and co-benefits (economic, health, social justice, ecological). The framework — inspired by IRIS+, the NetZeroCities indicator set and the local context — serves as the basis for target setting, reporting, scenario building for business cases, and developing narratives to build support among the financial sector, political level, and communities. Valladolid's timetable of actions and Turin's centralised data dashboards offer further examples of making MEL visible and governable.

Useful Resources

1. Portal Page: Impact pathways, Monitoring Evaluation and Learning framework and indicators
2. Presentation: Online Planning Lab - Module 4 - MEL Slides
3. Tools:

   a. Indicators for capital/finance needs and replication potential
   b. Evaluation report for CCC
   c. Methodology and Tools for GHG and Economic Accounting
   d. NZC Comprehensive Indicator | Framework – A comprehensive set of indicators for monitoring Climate City Contracts, covering direct GHG emission impacts and indirect co-benefits or risks.
4. Further Read: Quantification of impacts for a Climate Action Portfolio - A model for the City of Leuven

5. External Links:
   a. Reporting via CDP-ICLEI Track and MyCovenant – Guides cities on how to report progress using one of our partnered platforms for streamlined and transparent data sharing.
   b. BASTOS, J., BEZERRA, P., DAVIDE, M., HERNANDEZ MORAL, G. and MELICA, G., How to prepare a greenhouse gas emission inventory - Covenant of Mayors Guidebook Complementary document 1, Publications Office of the European Union, Luxembourg, 2025, https://data.europa.eu/doi/10.2760/9321889, JRC142296.

Related group on the Mission Portal

Capability Building Programme: Setting up a baseline for action

Related EU/international projects or initiatives

- **CLMS-Cities** (2022-2024) leverages Copernicus satellite data for Mission Cities. It provides Earth observation services, GHG monitoring, and digital applications to support local governments in implementing climate action plans. The project enhances data-driven decision-making for climate-neutral and resilient urban development.

Glossary Module 4: Portfolio of Actions

Action Plan (CCC AP): A city's roadmap outlining actions to achieve climate neutrality.

Baseline year: Reference year used to measure emissions reductions over time.

BAU (Business as Usual): A scenario that assumes no additional climate actions are implemented beyond current policies and trends.

Climate Action Plan: A framework document for measuring, tracking, and reducing greenhouse gas emissions, which may also include the adoption of climate adaptation measures. These plans typically include: a greenhouse gas (GHG) inventory, demonstrated commitment to emissions targets, a comprehensive roadmap with effective measures to meet targets, and monitoring mechanisms for measuring progress.

Climate Transition Map: The NetZeroCities framework that situates portfolio co-design within the wider transition journey.

Comparable City Value (CCV): Reference values based on cities with similar characteristics, such as population, climate, and share of zero-carbon electricity. They are used to validate data inputs or fill gaps when city-specific data is not available.

Emission domain: A sector or source category that contributes to a city's greenhouse gas emissions, such as buildings, mobility, energy, or waste.

Emission drivers: Key sectors or factors that contribute most to greenhouse gas emissions or emissions reductions within a city.

Impact pathway: A logical description of how actions are expected to lead to outputs, outcomes, and climate impacts over time.

Infrastructure and zoning regulations: Includes the planning of essential infrastructure, such as transport and utilities, and the enforcement of zoning laws that control land use, building density, height, and setbacks.

KPI (Key Performance Indicator): A measurable value used to track progress and assess performance towards climate goals.

Legal compliance and enforcement: Urban planning is implemented through statutory mechanisms, including development approvals, building codes, and enforcement procedures to ensure compliance with approved plans and regulations.

Lever of change: An enabling condition or intervention area, such as governance, policy, finance, participation, technology, or capacity-building, that helps actions achieve impact.

MEL (Monitoring, Evaluation and Learning): A process used to track progress, assess results, and adapt actions.

Portfolio: In this context, a coordinated set of actions, actors, and enabling conditions designed to achieve a shared mission, such as climate neutrality. It is more than a list of projects: it also includes the relationships between them.

Portfolio mapping: The practice of laying out actions visually so that connections, gaps, and opportunities become legible.

Public participation and policymaking: Involves community engagement in the creation of statutory plans, such as General Plans and Local Plans, that shape long-term development goals and regulatory policies.

Sensemaking: Within NetZerocities, it is a peer-to-peer reflexive learning process through which cities come together and interpret evidence, reflect on progress (or challenges), identify gaps and share insights, which enables them to iterate their impact pathways over time.

Strategic land use and development: Urban planning involves the organised use of land for residential, commercial, industrial, and public purposes, guided by legal frameworks and development policies.

Theory of Change: A framework that explains how and why a set of actions is expected to contribute to desired outcomes and long-term impacts, including the assumptions, risks and causal pathways that shape the change process.

Urban Planning System: The set of plans, regulations, policies, procedures, and participatory processes through which a city shapes land use, buildings, mobility, infrastructure, and development.

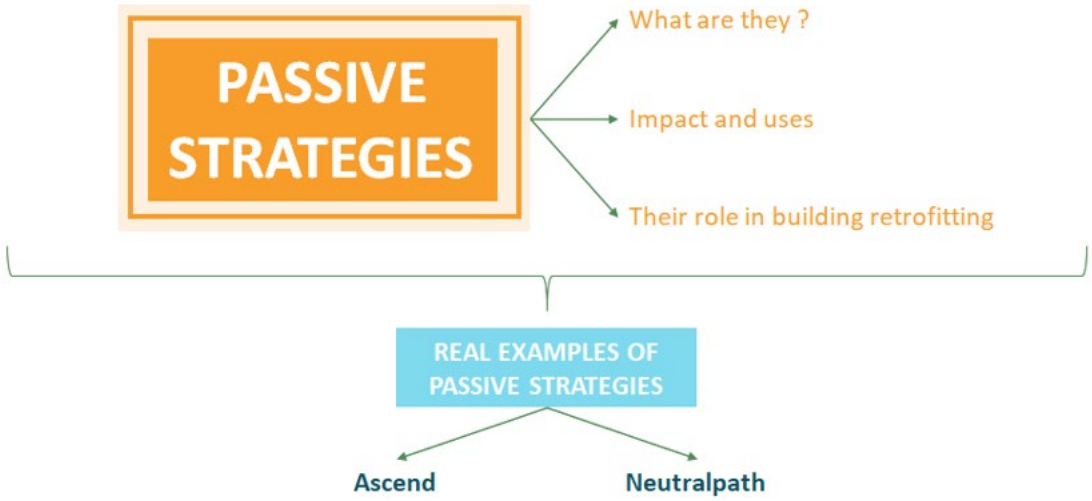
Module 5 - Sector-Based Emission Reduction Solutions

Topic 5.1 Stationary energy: Passive solutions to reduce energy demand in buildings

Author: Ana Belén Gómez

This topic introduces passive design strategies to reduce the energy demand of buildings by using local climatic conditions instead of mechanical systems. It focuses on how temperature, solar radiation, humidity, and wind influence indoor comfort and decrease energy demand in buildings. Participants learn how to apply these strategies across different European zones and understand their role in building retrofitting through real examples and interactive activities.

The topic explores how passive strategies improve energy efficiency and indoor comfort by adapting buildings to their environmental surroundings.



What are passive strategies?

Passive strategies are design actions that do not rely on mechanical systems. They use building surrounding characteristics to reduce the need for energy use in buildings.

Key technical concepts

- **Local Climate conditions:** Include temperature, humidity, solar radiation, wind direction and speed. These parameters determine which passive strategies are effective in each location.
- **Comfort temperature:** The temperature range where most people feel comfortable, depending on factors such as humidity, clothing and activity, among others.
- **Givoni psychrometric chart:** A bioclimatic tool used to analyse climate conditions and identify the most suitable passive strategies.

Types of passive strategies

SUMMER

GIVONI CATEGORY	PASSIVE ACTIONS	OBJETIVE
Natural ventilation	Cross ventilation	Warm air is removed and airflow is promoted
Evaporative cooling	Evaporative cooling	Air temperature is lowered through evaporation
Mass cooling	Thermal mass	Indoor temperature is stabilised
Mass cooling + Night ventilation	Night Ventilation	Heat is stored at night
Shading devices	Solar protection	Overheating and glare are prevented

WINTER

GIVONI CATEGORY	PASSIVE ACTIONS	OBJETIVE
Active Solar Heating	Thermal Mass	Store and release solar heat
Passive Solar Heating	Solar Gains	Capture solar radiation
Internal Gains	Thermal Insulation	Conserve internal heat
Humidification	Humidification Systems	Improve indoor comfort

In a nutshell

Passive strategies depending on climate:

- **Cold climate:** Focus on heat retention and insulation
- **Temperate climates:** Balance between solar gains and cooling
- **Hot Climates:** Focus on shading, ventilation and passive cooling

City cases

Examples from European projects:

ASCEND project (Positive Clean Energy Districts): Demonstrates how passive strategies are integrated within Positive Clean Energy Districts (PCEDs).

- **Lyon, France: Standard 2226** demonstrates how buildings can maintain stable indoor temperature without conventional heating or cooling systems, ensuring thermal comfort with very low energy demand.
- **Munich, Germany:** The **prefabricated refurbishment case** illustrates an innovative approach to building retrofitting based on prefabricated façade and roof modules, enhanced insulation and Passivhaus principles.

NEUTRALPATH project (Zaragoza, Dresden): Demonstrates how passive strategies are integrated within PCEDs.

Useful Resources

The following resources could help improve understanding of passive strategies and their impact on building environmental performance.

1. Topic Page: Buildings and Housing (Stationary Energy)
2. Presentation: Online Planning Lab - Module 5 - Passive Solutions Slides
3. Portal page factsheet: ***Passive building design strategies: Building orientation, passive heating and cooling***.
4. External Links:
   a. ***Passive Cooling and Natural Ventilation: Traditional Techniques for Modern Designs***
   b. ***Passive Design Strategies for Building in a Hot and Dry Climate***
   c. ***Passive Cooling Systems For Sustainable Architecture***

Related EU/international projects or initiatives

- ***ASCEND project***
- ***NEUTRALPATH project***
- ***EuroPHit***

Related Interactive applications

- **Genially Passive Strategies**

This interactive learning tool introduces key concepts in sustainable building design through a game-based approach. Users navigate different questions that help them understand how buildings can achieve thermal comfort using passive strategies.

- **Genially Ascend project**

This interactive learning tool, developed within the ASCEND project, is designed as a game to introduce key concepts related to energy-efficient building renovation. Users navigate through a series of questions based on real case studies, such as the Munich retrofit project, exploring topics like indoor comfort ranges, façade systems, prefabricated solutions, and construction techniques.

- **Genially NEUTRALPATH project**

This interactive game, developed within the NEUTRALPATH project, introduces the main ideas behind Positive Energy Districts (PEDs). Through a series of questions based on real examples such as the Zaragoza PED, users explore topics like renewable energy use, insulation materials, façade systems, and building performance.

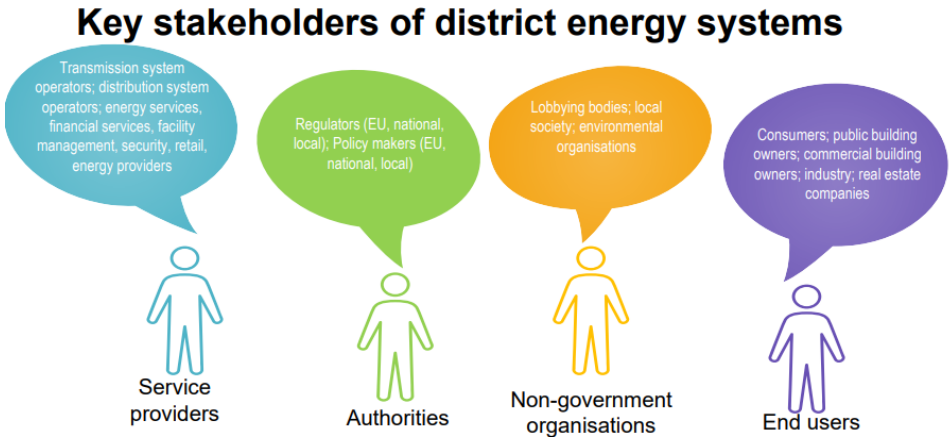
Topic 5.2 Systemic energy transition at buildings, districts and city level

Author: Mari Hukkalainen

How can cities accelerate the energy transition fast enough to reach climate neutrality by 2030? This topic shows why **systemic thinking** is essential and how cities can turn ambitious targets into coordinated action. An example from **Espoo, Finland** showcases how a city can deliver deep emission reductions while supporting urban growth.

Cities' energy systems interconnect electricity, heating and cooling, buildings, mobility, grids and users. Focusing on one element in isolation risks bottlenecks or missed opportunities. This topic introduces a **systemic approach** to urban energy transition. Key messages include:

- **Multi-level action is essential.** Cities provide the strategic framework, planning rules and coordination for energy transition aligned across building, district and city levels.
- **Cities lead through multiple levers of change.** Acting as planner, regulator, enabler and convener allows cities to mobilise utilities, businesses, investors and citizens even when they do not own energy assets.
- **Portfolio-based energy planning.** Rather than isolated projects, cities benefit from coordinated portfolios covering heating and cooling, electricity, flexibility and grids. For thermal energy, this includes phasing out fossil fuels, building retrofits, electrified and low-carbon district heating, waste heat utilisation and thermal storage. For electricity it includes electrification of heat and mobility, efficiency, smart grids, storage and renewable power procurement.
- **Speeding up implementation.** Ambitions exist; the challenge is coordination and delivery. Systemic portfolios help connect actions, anticipate infrastructure needs (especially grids), and sequence investments.



City cases

Mission City: Espoo, Finland

Systemic energy transition in practice: Espoo's experience highlights transferable lessons: plan energy as a whole system, link climate goals to infrastructure decisions, engage key stakeholders early, and use the full set of municipal levers to unlock private and public investment. The key elements include:

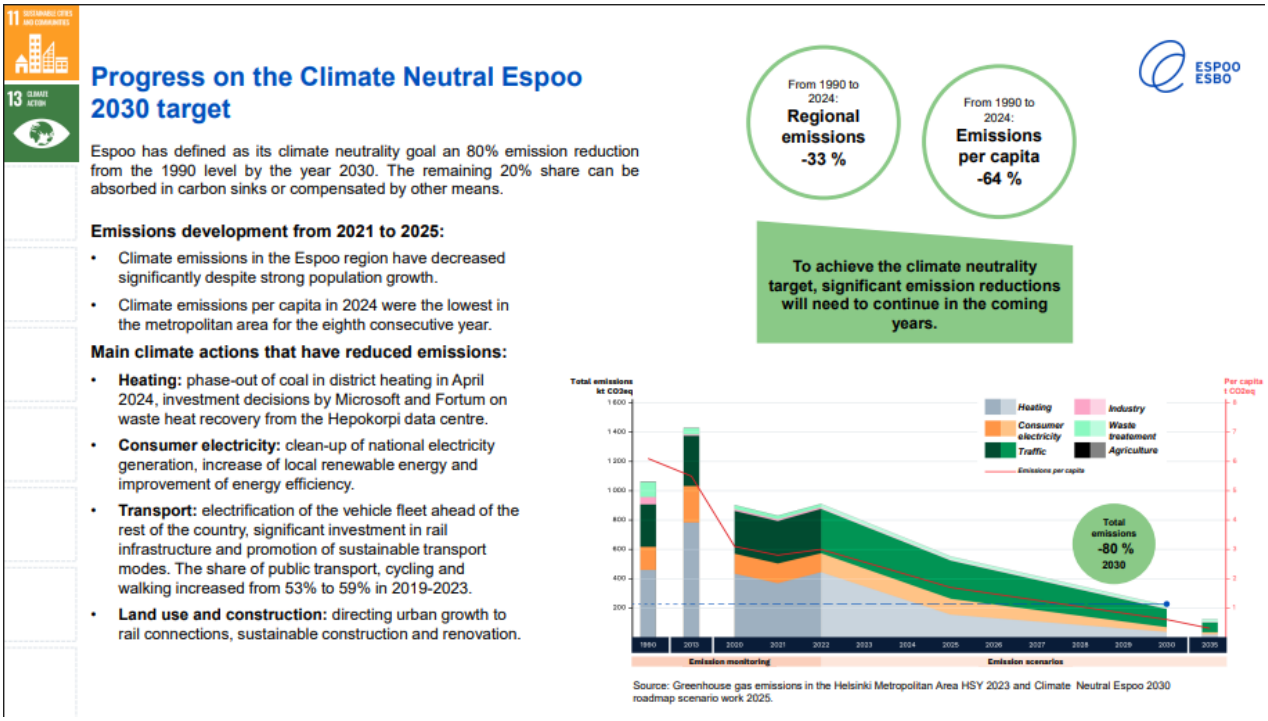
- Decarbonising heating at scale. Coal was fully phased out of district heating in 2024. Electrified heat production, large heat pumps, thermal storage and waste heat from data centres now form the backbone of the system.

- System integration and flexibility. Heating, electricity and data infrastructure are planned together, enabling high shares of carbon-neutral heat while improving system resilience.

- Proactive grid development. Rapid electrification has increased peak power demand, making early investment in transmission and distribution grids essential.

- Strong partnerships and governance. Espoo has driven change by convening utilities, grid operators and businesses around shared climate goals.

- Co-benefits beyond emissions. Energy system investments support economic development, energy security, housing and quality of life.



Source: Greenhouse gas emissions in the Helsinki Metropolitan Area HSY 2023 and Climate Neutral Espoo 2030 roadmap scenario work 2025.

Useful Resources

- Portal Page: Energy Systems (Stationary Energy)
- Presentation: Online Planning Lab - Module 5 - Systemic Energy Transition Slides
- Tool: Solutions Outliner

Related EU/international projects or initiatives

Scalable cities PED projects: SPARCS, ASCEND, NEUTRALPATH, BIPED, EXPEDITE, TIPS4PEDS, ATELIER, POCITYF, RESPONSE; summarised in: The State of European Smart Cities publication; Positive Energy Districts Solution booklet (2026)

Topic 5.3 Data Driven Approaches to Energy Transition in Buildings

Author: Julia Kantorovitch

Buildings play a crucial role in achieving climate neutrality, as they account for nearly 40% of global energy-related greenhouse gas emissions. Additionally, approximately 80% of existing buildings will still be in use by 2050. Through practical examples, this topic supports cities in recognising the value of gathering city data and guides cities through data concepts such as essential datasets, data analytics, Building Information Modelling (BIM) and Digital Twins.



How to get started

Energy transition cannot rely on intuition; data enables evidence-based decision-making. Data can support prioritisation of renovations, monitoring policy impact, investment planning, citizen communication and trust and other activities that help to progress planning and implementation of climate actions towards decarbonising the built environment. **The design and implementation of data-driven tools and services** for enhancing city governance can be done in many ways, and **the following steps can be considered:**

1. ***Stakeholder Needs:*** It is essential to assess the types of information and services that an urban energy data collection platform should provide to facilitate multi-stakeholder governance processes within the city.

2. ***Analytics:*** Determining the most relevant data analyses necessary for current and future urban platforms supports effective city governance and decision-making. This assessment will clarify which data sets must be collected and which stakeholders should participate in the data collection process.

3. ***Data Governance Models:*** Identifying governance models that best promote stakeholder engagement is crucial. Corresponding policies should be established and implemented accordingly.

4. ***Data Infrastructure:*** Considerations should include the nature and location of stored information, methods of data processing, and data sharing mechanisms. Options such as dedicated city

infrastructure, third-party cloud services, or hybrid solutions are available. Interoperability and extensibility are critical. Adherence to relevant EU regulations mandating digital and interoperable building data, such as Energy Performance Directives, is advisable.

5. *Data Security and Privacy:* Ensuring the security and privacy of sensitive information within the chosen data infrastructure is paramount.

What Cities Can Achieve with Data and Analytics

Cities may not need to become AI developers, but it's beneficial for municipal decision-makers to understand essential data concepts, including which data can be collected to boost energy efficiency in the built environment, and the significance of analytics, BIM, and Digital Twins in this field. Research indicates that data-driven building practices can make a substantial difference in energy and cost savings, as well as provide additional benefits such as:

- enhanced thermal comfort and indoor air quality,
- increased productivity,
- greater safety, well-being, and citizen satisfaction,
- improved city attractiveness for talent and investment.

Why Policy Alignment Matters for Cities

EU regulations mandate the adoption of digital and interoperable building data, offering significant benefits to those who comply early. Key frameworks include:

- Energy Performance Certificates (EPCs)
- Building Renovation Passports (BRPs), which will become mandatory by May 2026
- Smart Readiness Indicator (SRI), required for large non-residential buildings beginning July 2027
- Building Digital Logbooks and national databases integrated with the EU Building Stock Observatory. Annual energy data must be submitted by cities for the first time by March 2027.

Data Governance models and Partnerships: What Cities Must Get Right

Data governance serves as a key enabler for establishing a data-driven built environment. Its implementation is frequently hindered by fragmented ownership of building data, dependencies across sectors, limited interoperability between building systems, and insufficient trust among stakeholders. Nevertheless, case studies presented by cities indicate that the adoption of public–private partnerships with shared KPIs, lifecycle service models, defined data governance protocols, and internal capacity-building can enable effective, data-driven climate transitions.

City cases

Mission cities, **Leipzig, Helsinki, Rivne, Bergamo and Krakow** have developed innovative and practical approaches to leveraging data and AI for the energy transition in buildings.

Mission City: Bergamo, Italy

Bergamo demonstrates how **governance platforms** (Superurbanity / ForImpact.AI) can align public administrations, private stakeholders, and citizens around shared climate goals. The city uses a unified digital framework to collect KPIs, manage taxonomies, forecast CO_2 scenarios, and translate complex data into accessible narratives for decision-makers and residents.

Mission City: Leipzig, Germany

Leipzig's Energy Map exemplifies **city-owned, GIS-based decision support** for the energy transition. The city collects and enriches building-level and spatial energy data to assess renewable potential, create scenarios, and prioritise measures internally.

Mission City: Helsinki, Finland

Helsinki uses advanced **3D city modelling combined with real energy data**, enabling analyses of solar potential, heat demand, geoenergy, renovation history, and emissions at building scale. The Energy and Climate Atlas illustrates how digital twins and standards-based city models can support long-term planning, scenario analysis, and communication across departments, while setting a roadmap toward real-time data, IoT integration, and climate adaptation analytics.

Pilot City: Rivne, Ukraine

Rivne presents a pragmatic, scalable **municipal energy management system** focused on real-time monitoring, benchmarking, and decision support for public buildings. IEMS PROFIT enables ranking buildings by performance, identifying risk groups, modelling renovation impacts, and preparing investment-ready data.

Mission City: Krakow, Poland

Kraków's NEEST project addresses deep structural challenges in an inefficient housing stock through **multi-scale data integration**, combining single-building analysis, typology-based clustering, and neighbourhood-level modelling. Using 3D scanning, parametric analyses, social surveys, and scenario modelling, the city links technical renovation options with social and spatial contexts, showing how data-driven tools can guide equitable and strategically phased decarbonisation.

Useful Resources

1. Portal Page: Technical-Digital Solutions
2. Presentation: Online Planning Lab - Module 5 - Data-driven approaches Slides
3. Tools:
    a. Data Tools for Climate Actions Planning, https://netzerocities.app/resource-4876
    b. Data Governance in NetZeroCities, Policy & Partnerships | Linktree

Related EU initiatives

- Open & Agile Smart Cities & Communities (OASC) Network, https://oascities.org/
- Smart Cities Marketplace, https://smart-cities-marketplace.ec.europa.eu/
- Energy Performance of Buildings Directive, Energy-performance-buildings-directive

Topic 5.4 From cars to collective mobility: behavioural change and digital tools to promote public transport

Author: Mayra García-Blásquez

This topic introduces how behavioural change paired with digital tools is a key lever to accelerate modal shift and support more sustainable transport habits such as public transport use. It focuses on European cities' experiences and best practices through projects like UPPER and SPINE, looking at integrating digital tools such as Mobility as a Service, nudging and gamification to encourage a shift from private cars to shared, public and active modes of transport.



Why does mobility matter for climate neutrality?

Transport is responsible for nearly 29% of EU greenhouse gas emissions, of which road transport makes up more than 70%. Passenger cars alone account for 61% of total CO_2 emissions from EU road transport. With most Europeans living in urban areas, cities are central to tackling these emissions. Unlike other sectors, transport emissions have increased by about 23% since 1990, largely due to rising travel demand and car dependency. **To reach the EU's 2050 goal of a 90% reduction in transport emissions, we must fundamentally change how we move**. This means electrification of vehicles, but most importantly, reduction of trips and modal shifts.

In most European cities, private cars represent over half of all trips, even for distances under 5 km. Car dominance leads to congestion, air pollution, noise, and loss of space. And much of it is driven by habits, convenience, and culture, not necessity. Shifting to public transport, walking, and cycling could reduce urban transport emissions by up to 60–70%. These modes are also far more space- and energy-efficient. Cities that make this shift benefit from cleaner air, healthier residents, and more vibrant streets. To this end, behavioural change is essential. Digital tools, from Mobility-as-a-Service apps to gamification and nudging, can make sustainable travel easier, more convenient, and even fun. Human-centred design helps ensure these solutions reach everyone, are easy to use and sustain behavioural change in the long term.

Cities are central to tackling transport emissions; however, mobility is one of the hardest areas for cities to change as it intersects and touches so many systems: transport, energy, land use, culture, and politics. Success depends on governance capacity, coordination across departments, and the willingness to experiment and engage citizens.

Cities' powers over mobility vary widely. Some can own and operate services; others rely on national or regional authorities. Understanding your city's specific competencies is key as it defines what kind of behavioural or digital interventions are realistic in your local context.

Behavioural change in the UPPER project

UPPER aims to strengthen public transport's role as the cornerstone of sustainable and innovative mobility. The project will implement a combination of measures to push people out of private cars and to pull them closer to public transport in cities across Europe.

The MaxSumo approach

The MaxSumo approach is a standardised evaluation methodology used to frame and assess behaviour change actions by categorising individuals' readiness to switch travel modes into four distinct stages. It bridges the gap between the implementation of a mobility management project and its long-term effects by breaking the process down into smaller, measurable assessment levels. This enables planners to set specific targets, indicators, and results at each level, facilitating a structured monitoring process for initiatives aimed at increasing the uptake of public transport.



Source: www.upperproject.eu

STAGE		DESCRIPTION
STAGE 1	Pre-contemplative stage	Individuals typically make most of their trips by car and are quite happy with the way they currently travel (i.e. as car drivers). At the moment, they have no wish, or desire to change to another mode, or feel that it would be impossible for them to do so at the present time.
STAGE 2	Contemplative stage	Individuals typically make most of their trips by car, but are not as content with their current travel behaviour and would like to reduce their level of car use and change to another way of travelling (mode), but at the moment are unsure of which mode to switch to, or perhaps don't have enough confidence to do so.
STAGE 3	Preparation/action stage	Individuals typically make most of their trips by car, but have decided which mode they intend to switch to for some or all of their trips, have the confidence to do so and may have already tried this new mode for some of their trips.
STAGE 4	Maintenance stage	Individuals typically make most or all of their trips by walking, cycling and public transport. These can either be people who do not own or have access to a car for their trips (and therefore are already dependent on non-car modes for travelling), or people who do own/have access to cars but for various reasons use them only for some of their trips, very infrequently, or not at all.

Report http://www.max-success.eu/downloads/MAX_SoA_AnnexB1_1.pdf.

Mobility maps and personas

The mobility mapping tool and personas serve as a strategic framework to bridge the gap between abstract travel data and the lived experiences of diverse citizen groups. It is a participatory visual method that identifies where, why, and how different social groups move within a city, highlighting specific barriers to public transport such as safety, accessibility, or frequency. These findings are then synthesised into a set of personas, archetypal characters representing various user segments (e.g., "The Car-Dependent Commuter"

or "The Mobility-Restricted Senior"), which humanise the data by detailing their specific motivations, daily routines, and pain points. By using these tools together, urban planners can move beyond "one-size-fits-all" solutions and design targeted, inclusive interventions that address the unique psychological and physical requirements of each user group.

U-GOV: A tool for participatory governance (UPPER)

The U-GOV tool is a digital community engagement platform designed to institutionalise democratic governance within public transport planning by fostering continuous, data-driven citizen participation. It operates across four progressive levels of engagement:

- Information/Sensitization;
- Consultation/Dialogue;
- Collaboration/Co-creation;
- Alliance/Decision-making;

effectively moving beyond traditional top-down communication. The platform acts as a centralised "meeting point" for mobility agents and social innovation actors to propose, discuss, and validate new transit solutions, providing city authorities with a structured environment to capture public sentiment and co-design services that align with actual user needs.

City cases

Mission City: Kranj, Slovenia

Mobility as a Service platform Kranj's MaaS Platform Case Study. The MaaS App offers the following innovative features:

- Inter-city routing across the national public transport network.

- Multimodal navigation: integrates walking, cycling, shared bikes, buses, and cars.

- Personalised routing: based on CO_2 emissions, energy use, or shortest time.

- Environmental impact data: showing CO_2 emissions and energy consumption for each option.

Mission City: Valladolid, Spain

Citizen's mobility app and predictive demand tools (created through the SPINE project) Valladolid has shifted to a sustainable mobility model, prioritising non-motorised trips and increasing public transportation usage. They promote cycling, improve pedestrian infrastructure, and aim to reduce emissions and accidents.

Real-time information and integrated ticketing are available for public transport. Valladolid aims to integrate public transportation with other mobility services, prioritise PT through traffic light systems and bus lanes, and improve real-time passenger information. They also plan to implement parking management and offer on-demand mobility services.

Valladolid also focuses on increased customer experience to ensure a better user experience, providing value-added transport services as a critical aspect of being an effective climate action city.

Useful Resources

1. Portal Page: Mobility and Transports
2. Presentation: Online Planning Lab - Module 5 - Mobility slides
3. Tool: Solution Outliner
4. Further Reading:
    a. Mobility as a Service (MaaS)
    b. NetZeroCities Mobility Policy Brief
    c. Cooperative Intelligent Transport Systems and Services (C-ITS)
5. Videos:
    a. What is urban mobility data?

b. Standarising data sharing for mobility
c. Mobility as a Service simply explained
d. Jelbi takes MaaS to the next level

Related group on the Mission Portal

Mobility and Transport in Cities

Related EU/international projects or initiatives

- UPPER
- SPINE
- CIVITAS

Glossary Module 5: Sector-Based Emission Reduction Solutions

Energy flexibility: The ability of energy users and systems to adjust demand or supply in response to system needs, supporting renewables and grid stability.

Givoni Chart: A tool used to identify suitable passive strategies based on climate data.

Natural ventilation: Airflow driven by natural forces such as wind or temperature differences.

Passive design: Design strategies that reduce energy demand using natural environmental conditions.

Positive Energy District (PED): A district with 1) maximised energy efficiency, 2) maximised local renewable energy source (RES) production, targeting the production of more renewable energy than is consumed over a year, and 3) energy flexibility that balances energy demand and production.

Retrofitting: The process of upgrading existing buildings to improve performance.

Solar gains: Heat entering a building through solar radiation.

Systemic approach: Understanding how different parts of a system interact and designing integrated solutions that address interconnected challenges rather than isolated issues. In this context, it means considering interactions across all parts of the urban energy system.

Thermal: Related to heat, temperature, and heat transfer in buildings or energy systems.

Thermal comfort: The condition in which people feel comfortable with the surrounding temperature.

Thermal envelope: The building elements separating indoor and outdoor environments.

Thermal mass: The ability of materials to store heat.

Module 6 - Financing Solutions

*Authors: Kanishk Gupta, Tommaso Buso, Vaneshree Naidoo, Matthew Halstead, Roos van Dooren, Martijn de Wit, Sabrina Bresciani *all authors contributed equally*

Topic 6.1 WHY external financing matters and WHAT can be financed

WHY external financing matters: Municipal budgets are limited, and private capital is essential for the significant investment required to achieve climate goals. The additional advantage in engaging external funders is that they bring a level of due diligence and credibility for project success.

Most climate projects, such as renovating buildings, improving public transport, or installing renewable energy, require significant upfront investment. Public budgets alone are not sufficient: municipalities have available less than 20% of the investment needed to reach carbon neutrality in a city.

This implies that cities increasingly need to take on the novel role of mobilising the private sector, orchestrating investors, working with innovative financing mechanisms and partnerships to turn climate ambitions into implementable projects to achieve the scale and pace required. However, many projects planned by municipalities struggle to mobilise finance. A key reason is that financial fundamentals and constraints are often considered too late or remain unclear to potential financiers. This module is structured as follows:

- ***What can be financed:*** *Decarbonisation projects have been typically classified into five sectors: Energy, Mobility, Built Environment, Waste and Water systems, and nature and adaptation. The handbook goes through the steps of making these projects investment-ready.*

- ***Who finances and through what instruments:*** *(Topic 6.2 and 6.3): Sustainable Infrastructure Projects can be financed through public and private sources. In addition, blended finance exists as a unique solution which leverages public and philanthropic capital to attract private investment. Built environment, mobility, energy, waste and water, and nature & adaptation projects can be financed by blending public and private sources of funds/capital, including grants, bonds, loans, and equity (project finance)*

- **Why this matters**: Many capital-intensive climate actions need appropriate external finance and well-structured, "investment-ready" projects; without these, even well-planned strategies can be delayed or underfunded.

- ***What do investors look for:*** *(Topic 6.4): To attract financing, projects must demonstrate clear financial viability and alignment with investor criteria: External financiers scrutinise projects for strong climate alignment, regulatory credibility, revenue generation potential, appropriate scale (often requiring bundling), and proven technology/ concepts. They also assess the public sector counterparty's creditworthiness and internal capacity.*

- **How to achieve transaction readiness:** (Topic 6.5): *Achieving investment readiness (also referred to as "Transaction Readiness" or bankability) involves a structured journey and comprehensive documentation: This includes progressing through phases of project definition, technical design, economic/financial modelling, financial structuring, and access to finance. Key documents like concept notes, feasibility studies, financial models, and investor pitch decks and term sheets are vital at each stage to make a project "financeable."*

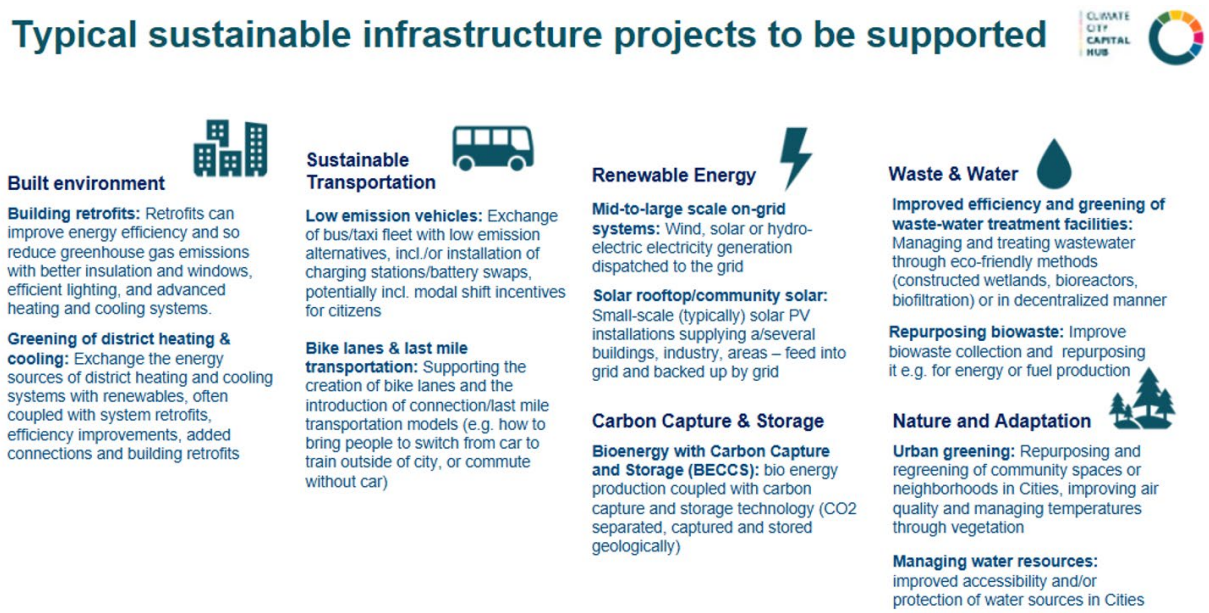
This module aims to strengthen financial awareness of cities early in the project development process. Early financial due diligence and timely engagement with potential investors help clarify risks, improve project design, and keep future financing options open.

WHAT can be financed: typical sustainable infrastructure projects

In this handbook, financing generally refers to the capital required to develop and construct a physical infrastructure asset.

Typical sustainable infrastructure projects eligible for funding include the following:

- Built environment:
  - Building retrofits
  - Greening of district heating & cooling
- Mobility: electric public transport or public vehicles
- Energy: renewable energy generation equipment
- Waste & water systems: eco-waste management
- Nature & adaptation: nature as an asset



The guide "Training materials for cities on attracting private capital" provides detailed examples per sector and per EU country.

Barriers to Financing and How to Overcome Them

City teams often face common **barriers to accessing external finance** for climate projects. Key barriers and potential pathways to overcome them include:

- **Limited Technical and Financial Capacity:** Lack of in-house expertise in both non-financial capacity related to project preparation, governance, and execution and financial capacity such as complex financial structuring, project finance, and investor engagement. **Solution:** Leverage external technical assistance programmes and build knowledge networks. Cities can partner with organisations (like the Climate City Capital Hub or development bank advisory services). Regional collaboration between cities can also help share expertise. Peer learning is valuable: many pioneering cities have found creative solutions to these challenges, and their experiences can guide others.

- **Meeting Investor Expectations:** Some projects struggle to **quantify financial returns or social impact** in terms that investors expect, which makes investors hesitant to provide funding. **Solution:** Develop robust impact measurement and business cases. This means using standardised frameworks to calculate and communicate expected returns (financial **and** social) and possibly

securing third-party validations. Benchmarking against similar successful projects can provide credibility.

- **Small Project Scale:** Some climate actions are relatively small in investment size. Individually, they may not attract big investors due to high transaction costs and lower profit margins. **Solution: Aggregate and bundle projects** to achieve scale. By combining multiple similar projects into a single programme, cities can reach investment thresholds that interest institutional investors.

- **Fiscal and Regulatory Constraints:** Cities can face strict **municipal debt ceilings or lengthy budget approval processes**, which limit their ability to borrow or invest quickly. Additionally, regulatory hurdles can slow down public-private deals (e.g. procurement rules) or make innovative financing legally complex. **Solution:** Work within and around these constraints by innovating in governance. This could involve setting up independent project delivery vehicles or "climate investment units" that operate with more flexibility and off-balance-sheet financing. Streamlining internal procedures and engaging legal/financial experts early can reduce delays.

City cases

Mission Cities in Action: Projects

City Leap Partnership (Bristol)

Model: 20-year concession PPP for District Heating expansion (and Net Zero projects)

Result: ~20% emissions reduction, £424 million leveraged new investment (private)

Fluvius DH & area retrofit (Antwerp)

Model: DH by Fluvius enabled by area-based retrofit, funded through ad-hoc financing facility (banks, guarantee, and property tax exemption)

Result: ~€100 million investment, unlock retrofit

Wind turbines co-development (Glasgow)

Model: JV with renewables developer to build wind turbines in suburban areas

Result: bulk of feasibility studies funded by developer, city saves the resources for investment

Mission Cities in Action: Portfolios

Marseille green bond issuance (Marseille)

Model: drafting of a complete sustainable bond framework for a first issuance of ~€10-15 million

Result: reduced rates conditional on achievement of sustainability targets

Leuven Climate City fund (Leuven)

Model: City fund started with primarily city-led projects, with 86 locally driven "breakthrough projects" showing strong early pipeline building, aiming at a €50 million first close

Result: systematic tool for investment, cross-subsidise adaptation projects

Bristol's Green Growth West Impact Fund (Bristol)

Model: fund cornerstoned by Regional authority (WECA) with experienced fund manager

Result: £100 million to be raised for investments both city-led and commercial (primarily debt)

Useful Resources

1. Portal Page: NetZeroCities - Financing the ambition of NetZeroCities
2. Presentation: Online Planning Lab Module 6 - Intro to Finance Slides
3. Videos:
    a. NetZeroCities - NetZeroCities Capability Building Module Investment Plan | Part A
    b. NetZeroCities - NetZeroCities Capability Building Module Investment Plan | Part B
    c. NetZeroCities - NetZeroCities Capability Building Module Investment Plan | Part C
    d. NetZeroCities - Climate Transition Map Series | NZC Co-create a Portfolio Webinar | 4 October 2022
4. Tool: Capital Hub: Financing Europe's Climate Neutral Future
5. Further Read: Capital idea: How the Climate City Capital Hub aims to make the difference for cities' climate neutrality goals - NetZeroCities

Related EU/international projects or initiatives

- Home | PROSPECT
- Home | EUCF

Topic 6.2 WHO Finances Projects: Sources of Capital and Typologies of Investors

To reach net-zero, city climate projects often require funding beyond city budgets. No single source can finance the net-zero transition. Understanding the finance landscape helps cities see where different sources of capital are typically deployed along a project lifecycle – from early stages of preparation and development to commercial deployment and long-term operation.

This topic shifts perspective from the city to the external financier, and describes how external financiers view those projects and decide whether, when, and how to invest.

Infrastructure projects typically evolve from project definition and feasibility, through financial structuring, to accessing finance and implementation.

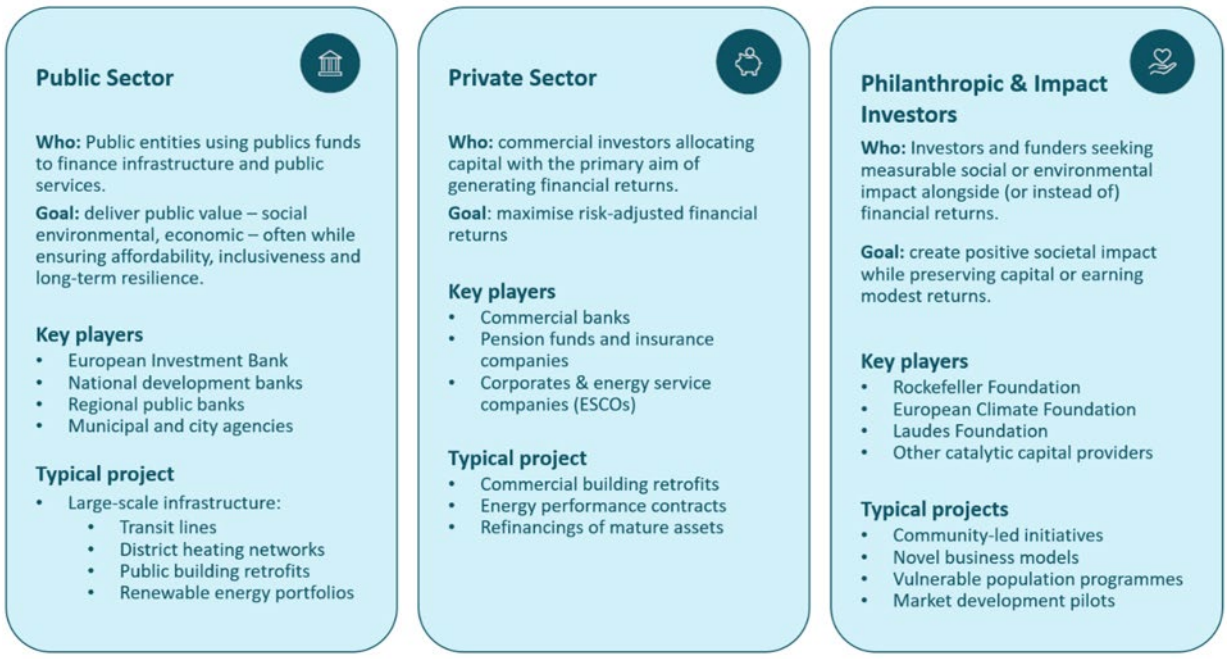
To secure funding for infrastructure projects, cities need to understand investors' investment requirements and reflect these in project design. Reaching out to investors early helps avoid surprises later and makes it easier for projects to secure financing.

Investors are not all the same. Different types of financiers (public institutions, private financiers, philanthropic organisations, and more) have different goals and constraints. Being better informed about which financier is more suitable for a specific project can help cities approach the right partners and avoid wasted effort.

This topic highlights how cities can design projects that fit city priorities and are understandable and attractive to external financiers.

Three Main Investor Groups and Their Characteristics

The financing landscape broadly consists of three distinct groups, each having different goals and priorities that determine where, in what, and how they invest. For cities, understanding these differences is critical: different types of investors are interested in different types of projects, at different stages of development and implementation, and have different expectations. Matching a project to the right investor increases the likelihood of securing funding and helps to allocate resources more effectively and efficiently.



The **three primary investor groups** are:

- **Public funding and Public Sector Investors:**
  - Government grants, national or EU programmes, city budgets, and public bank loans. These usually support early work such as studies (investment concept notes, feasibility studies, etc.), engineering designs, or technical assistance. Public funding helps reduce risk, making it easier to bring in other investors later. For example, EU and national grants, local green banks, city bonds, municipal guarantees and revolving funds. Key EU Programmes include: Horizon Europe (Horizon Europe - Research and innovation - European Commission), LIFE Programme (LIFE - European Climate, Infrastructure and Environment Executive Agency), CEF (Connecting Europe Facility - European Climate, Infrastructure and Environment Executive Agency) and ELENA (ELENA – European Local ENergy Assistance).
  - Includes multilateral and national development banks (e.g. the European Investment Bank and KfW), regional public banks, and municipal investment agencies.
  - Their core goal is policy alignment**.** Public investors **prioritise projects that advance climate targets, social equity, and public policy goals**. They are willing to take a longer-term view and **embrace higher risk tolerance to catalyse projects** that commercial capital deems too risky.
  - Typical projects funded by public lenders are large-scale infrastructure: **transit lines, district heating networks, public building retrofits, and renewable energy portfolios**.
  - A list of funding per country is available in the guide "public sources of capital at EU, national and regional level"

- **Private Sector Investors:**
  - This group includes commercial banks, institutional investors (pension funds, insurers), and corporate investors. They seek **market-rate returns** and stable cash flows.
  - **Commercial banks** provide debt financing for proven projects with robust revenue streams and creditworthy counterparties.
  - **Institutional investors** like pension funds favour investments with **stable, long-term yields matching their risk profiles**.

- **Philanthropic & Impact Investors:**
  - This category covers **foundations and impact funds** (e.g. Rockefeller Foundation, European Climate Foundation) and other organisations that provide early-stage or risk-tolerant funding.
  - These actors deploy **patient, high-risk capital** to support innovation and transformative social or environmental outcomes. They often accept below-market returns or use grant funding. They focus on **early-stage projects/programmes**: community-led initiatives, novel business models, vulnerable population programmes, and market development pilots.

- **Blended Finance:** A financing approach that uses a mix of the three, such as concessional public or philanthropic funds to de-risk and attract private capital for city climate projects. Examples: EU Catalyst (EU–Catalyst partnership).

These differences in goals and requirements per investor type are not theoretical – they translate into practical expectations for city projects. Each type of investor evaluates projects in its own way and looks for different signals of quality, reliability, and impact. Understanding these expectations helps cities adapt their project design, governance, and financial structures to better match investor needs.

Investor expectations not only differ across investor types but also depend on the maturity of the project or underlying technology. Some investors are better suited for early, unproven ideas, while others focus on mature projects with established performance and revenue streams. Together, this means that both who the investor is and how developed the project is influence what is required to secure funding.

Matching projects to Investors over time

The type of capital available for projects is closely linked to the maturity of the underlying concept and the project itself. Not all projects follow the same development pathway: some start as early-stage innovations, while others are already mature and directly suitable for commercial financing. Investors therefore tend to focus on projects that match their mandate in terms of risk, maturity, and clarity of the business model.

Understanding this relationship helps project developers (and cities) identify which investors are most relevant to their specific project stage.

Early-Stage: Philanthropy & Seed Funding

- Initial funding for high-risk, unproven concepts. These projects often lack a clear commercial pathway but hold significant potential for impact or innovation.

Mid-Stage: Development Banks & Public Finance

- Capital to de-risk and scale pilot projects. Public sector investors help bridge the gap between innovation and commercial viability, often providing concessional terms

Late-Stage: Private Investors & Commercial Capital

- Investment for mature projects with proven models, clear revenue streams, and established market access. Private capital seeks predictable returns and scale.

As a result, investors not only differ in what stage of a project they are typically interested in, but also in how they assess whether a project or concept is suitable for investment. The next section focuses on the key lenses through which investors evaluate projects, and how these translate into concrete project requirements.

How Investor Preferences Shape Project Requirements

To assess whether a project is suitable for financing, investors typically examine it through four key lenses: returns, project readiness, risk, and impact. Together, these lenses provide a structured way to evaluate whether a project is financially viable, well-prepared, resilient to uncertainty, and aligned with broader environmental or social goals. The relative importance of each lens varies by investor type, reflecting their different priorities.

Public-sector funders often look for projects aligned with government climate targets, policy mandates, and community benefits. They prioritise greenhouse gas reductions, job creation, and contributions to national or EU climate goals. For these investors, measurable environmental and social impact is often just as important as financial viability.

Philanthropic investors have a similar focus on impact, but with a stronger emphasis on innovation and social transformation. They tend to support projects that benefit vulnerable communities, test new approaches, or deliver long-term environmental and social change, even if financial returns are limited or secondary.

Together, these four lenses - returns, project readiness, risk and impact - shape the concrete requirements that investors place on projects. The next sections explain these requirements in more detail.

Return Requirements

Investors are looking for projects that demonstrate how financial value will be generated and sustained over time, whether through revenues, cost savings or measurable performance improvements. In practice, this means that projects need to clearly demonstrate one or more of the following elements:

- **Revenue Models:** Projects need to show how revenue will be generated over time. This can include income from sales, tariffs, service fees, or subscriptions. Clear and predictable revenue streams help demonstrate that a project can remain financially viable and repay investors or funders.

- **Cost Savings Validation:** For projects focused on efficiency improvements, projected cost savings need to be clearly demonstrated. This typically includes establishing a baseline, defining how savings will be measured, and reporting the savings achieved over time.

- **Performance Metrics:** Projects also benefit from clear performance indicators that track progress and outcomes. These may include metrics such as energy generation, greenhouse gas emission reductions, or operational efficiency improvements, linked to specific targets.

Project Readiness Requirements

Before committing funding, investors assess whether a project is well-prepared, clearly structured and supported by appropriate documentation, timelines and governance arrangements. **In practice, this means that projects are expected to demonstrate readiness across several key areas:**

- **Documentation & Due Diligence:** All investor types require thorough project documentation as part of their due diligence. Cities should be prepared to provide **comprehensive legal, technical, and financial documentation** to ensure transparency and accountability. This typically includes a detailed business case or proposal, risk assessments, feasibility studies, financial models, environmental impact analyses, and frameworks for monitoring progress and results. Meeting these documentation standards is essential to gain investor trust.

- **Timeline & Repayment Expectations:** Different investors have different patience levels. **"Patient" capital** (e.g. public or mission-driven funds) may allow longer development and payback timelines, whereas **commercial investors often insist on faster implementation and strict schedules**. For example, a development bank might accept a 15-year project horizon, while a private bank might expect an investment horizon of 5-7 years. Thus, investor expectations will influence project timelines and milestones. City teams should align project schedules with the time horizon of their target funders – e.g. use longer-term funding for infrastructure that needs a long ramp-up, and reserve short-term private capital for projects that can generate revenue quickly.

- **Financial Structure & Risk Allocation:** The type of investor involved influences how a project's financing is structured. Public lenders or impact investors may offer grants or low-interest loans and are sometimes willing to take on higher risk. Private investors, by contrast, usually require commercial terms and clearer financial returns. In practice, this means deciding how different sources of capital are combined and how risks are shared between parties. For example, a project might combine a grant or low-interest public loan, which helps absorb higher risk, with commercial debt, which is used for the more stable parts of the project. Cities need to design funding plans that match each investor's required risk/return position – this can range from fully public-funded models to **mixed finance with loans, equity stakes, or other instruments**.

- **Governance & Oversight:** When external investors come on board, they often impose governance requirements. Funders may demand clear decision-making structures, project governance committees, or even board representation for major projects. They will expect robust compliance with environmental, social, and governance (ESG) standards. Regular reporting and independent audits are typically required to track performance and assure accountability. Cities should be prepared to adopt strong governance and transparency practices to meet investor confidence.

Risk Requirements

Investors also assess how potential risks are identified, managed, and mitigated throughout the project lifecycle. In practice, this means that projects are expected to include clear measures to anticipate risks and limit their financial impact. These typically include:

- **Insurance:** Comprehensive insurance policies are mandatory to protect against unforeseen events like natural disasters, construction defects, or operational failures, ensuring financial recovery.

- **Guarantees:** Guarantees from other organisations, such as performance bonds or government guarantees, are often required to cover specific risks and enhance the project's ability to attract financing and credibility.

- **Sensitivity Analyses:** A sensitivity analysis tests how well a project performs when key assumptions change. For example, if a project depends on the cost of a contractor or on reaching a certain level of demand, the analysis shows what happens if costs are higher or demand is lower than expected. This helps demonstrate how robust the project is to changes and provides insight into potential risks that may need to be managed.

- **Financial reserves (contingencies):** Dedicated financial reserves are set aside to cover unexpected costs, delays, or changes to the project. This provides a buffer if unforeseen issues arise during project implementation.

Impact Requirements

For climate-related investments, investors increasingly expect projects to demonstrate measurable environmental and social outcomes, alongside financial performance. This means that projects must clearly define how their impact will be measured, reported, and demonstrated in practice. Impact requirements are particularly important for public-sector and philanthropic investors, where environmental and social outcomes are core objectives. Private investors are also increasingly considering impact, although financial performance typically remains their primary focus. Key elements typically include:

- **Climate KPIs**: Projects must define and track key performance indicators that measure climate impact, such as greenhouse gas emission reductions, renewable energy generation capacity, or improvements in energy efficiency. These indicators provide clear evidence of the project's environmental impact.

- **Standardised Reporting**: Adherence to recognised reporting frameworks like the European Union Taxonomy for Sustainable Activities or United Nations Sustainable Development Goals (SDGs)[2], or other national/international standards is often required to ensure transparency, comparability, and credible impact claims.

- **Social Co-benefits**: Investors increasingly look for projects that provide wider benefits to society, such as job creation, local community engagement, improved public health, or increasing energy access for vulnerable groups.

Key lessons for cities

These are three key lessons for cities when considering external financing in projects:

- **Align Early:** Start discussions with different types of investors early in the project. This helps to understand their requirements and risk tolerance and to take these into account during project development. Aligning expectations from the beginning helps avoid costly changes later.

- **Provide Clear Data:** Investors need transparent and reliable information on all aspects of the project, including financial forecasts, risk assessment, and expected environmental or social impacts. Strong, evidence-based information builds confidence and supports better decision-making.

- **Adjust the Narrative:** Successfully securing investment often means presenting the project in a way that matches each investor's priorities. For example, highlight public benefits for public investors, financial returns for private investors, or environmental impacts for foundations.

City case

Turku: Financing a Tramway Project in Finland

A practical example is a Finnish city's effort to finance a new **tramway system**. The city (Turku, Finland) worked with the **Climate City Capital Hub** to develop a financial structure for the tram project. The approach included studying how similar large infrastructure projects have been funded in the past and mapping potential funding sources.

Key findings: The analysis showed that building the tram line would **drive urban growth** – improved transit access increases land values and attracts development. In turn, the city can capture value by selling land or through land-use agreement fees. The **increased revenue from land plot sales and developer fees would positively impact the municipal economy** and could help finance the tramway. This value-capture mechanism strengthens the project's business case.

Funding strategy: The project team delivered a comprehensive assessment of financial resources for the tramway. They identified how a mix of funding could be assembled, including local sources (like the land value revenues), national or EU grants, loans, and private investment. By presenting a clear financial structure, informed by past infrastructure funding models, the city demonstrated to investors and government stakeholders that the tram project was economically viable. The **goal was to enable sustainable growth** with the modern tram system, and aligning the project's financing plan with that growth story was critical. This case underlines how cities can **combine technical analysis and innovative financing (e.g. land value capture).**

Useful Resources

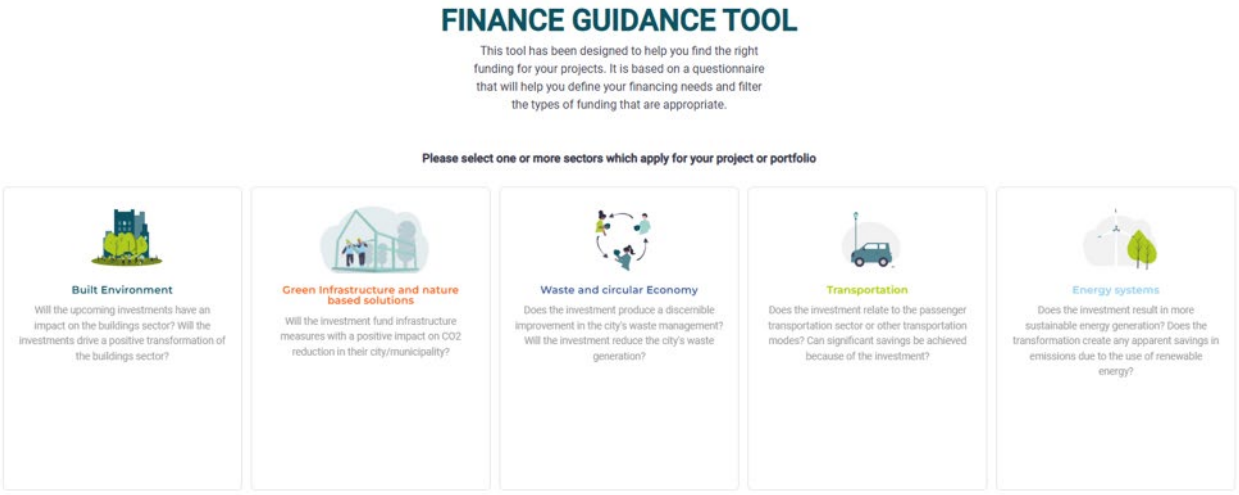
1. Portal Page: NetZeroCities - Financing the ambition of NetZeroCities
2. Presentation: Online Planning Lab Module 6 - Investor Groups Slides
3. Video:
    a. NetZeroCities - NetZeroCities Capability Building Module Investment Plan | Part A
    b. NetZeroCities - NetZeroCities Capability Building Module Investment Plan | Part B
    c. NetZeroCities - NetZeroCities Capability Building Module Investment Plan | Part C
    d. NetZeroCities - Climate Transition Map Series | NZC Co-create a Portfolio Webinar | 4 October 2022
4. Tool: NetZeroCities - The NZC Finance Glossary
5. Further Read: Capital Hub: Financing Europe's Climate Neutral Future
6. Further Read: Capital idea: How the Climate City Capital Hub aims to make the difference for cities' climate neutrality goals - NetZeroCities

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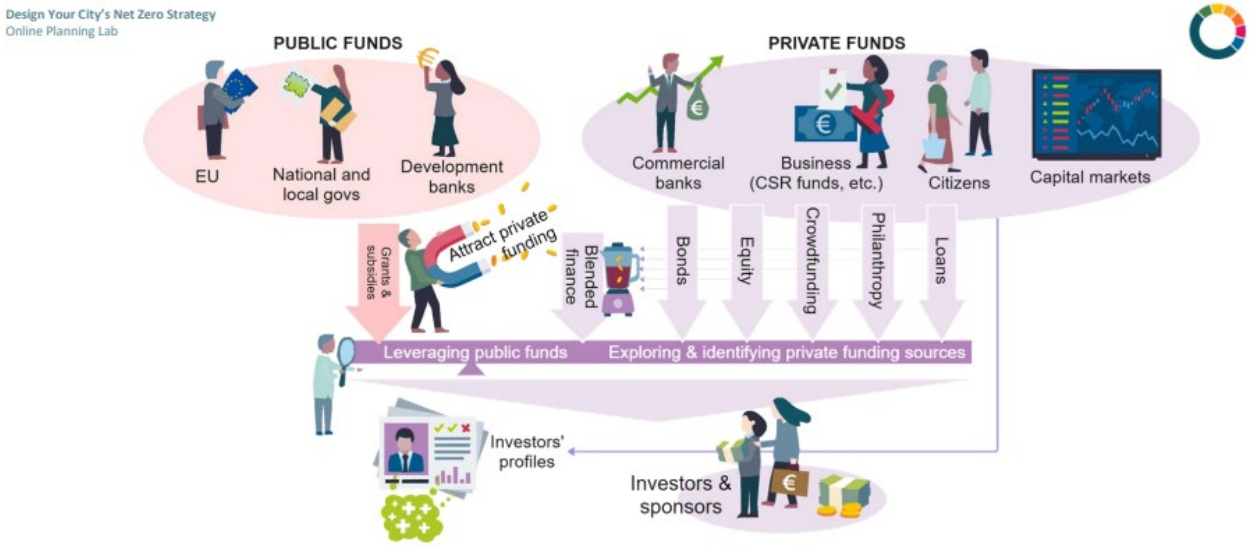
Topic 6.3 WHO Finances Projects: Key Financing Instruments

Municipalities can leverage several financing instruments to bring their climate project to implementation. The finance guidance tool is an interactive instrument freely available on the portal that supports cities in having an overview of the financing instruments available and understanding which instruments can be most suitable for each project.



Financing mechanisms describe the **way in which a project is funded**. In other words, they refer to the specific financial instruments or structures used to raise capital, such as loans, bonds, or blended finance. Each mechanism determines who provides the funding, under what conditions, and how the money is repaid or returned.

In this topic, the key financing instruments utilised by municipalities are presented. The following section provides an overview. The subsequent sections expand the explanation on four selected instruments.



The following table provides a granular overview of financing instruments for municipalities classified in terms of aim (1. Raise capital, 2. Generate revenues, 3. Risk reduction, 4. Deliver & operate projects) and type of investor (public, private or blended). The dedicated portal page provides a detailed explanation of each of the 72 financial instruments. More extended guidance is provided in the "Financial instruments for

mitigation, adaptation and energy poverty actions - Covenant of Mayors Guidebook Complementary document 5" (Joint Research Centre, European Commission)

Raise Capital

How can I finance my project? Use these instruments when you need funding to start, expand, or refinance a climate project. They help cities access capital from governments, financial institutions, investors, or a combination of these sources.

Raising capital focuses on securing the financial resources needed to develop and implement climate and sustainability projects. Cities can access capital through public funding, private investment, capital markets, or blended financing approaches, depending on the project's characteristics and financing needs.

Public Funding

Public capital helps cities fund projects that deliver public benefits but may not attract enough private investment on their own. These instruments are often supported by governments or public financial institutions and can reduce the cost of financing.

- Concessional Loans
- Dedicated Credit Lines
- Green Investment Funds
- Regional Development Funds
- City Climate Funds
- Revolving Funds
- Technical Assistance Grants

Blended Finance

Blended finance combines public and private capital. Public resources are used strategically to improve project viability and attract additional private financing.

- Blended finance vehicles
- Pooled finance
- Aggregation platforms
- Green Investment Funds
- Regional Development Funds
- City Climate Funds
- Revolving Funds

Capital Markets

Capital market finance enables cities and project developers to raise funds directly from investors by issuing debt securities. These instruments can mobilise large amounts of capital for infrastructure and climate investments while diversifying funding sources.

- Green Bond
- Climate Bond
- Sustainability Bond
- Project Bond
- General Obligation Bonds
- Climate Adaptation Notes
- Catastrophe bond

Private Finance

Private capital instruments are ways to attract funding from commercial banks, investors, and private organisations. These instruments are most suitable for projects with a clear business case or reliable revenue stream.

Debt

- Commercial Loans
- Syndicated Loans
- Term Loans
- Infrastructure Debt Funds
- Project-level Market Rate Debt
- Dedicated Credit Line

Alternative Capital

- Crowdfunding
- Community Funds
- Philanthropic Organisations

Equity

- Private Equity
- Project-level Equity
- YieldCos
- Equity Futures

Asset Finance

- Operating Lease Finance
- Asset-backed Securities
- Hybrid purchase-lease
- Green Sukuk

Generate Revenue

How can I create or increase revenues to support investments? Use these instruments when you want to create or increase revenue to finance climate investments or repay project costs. They help cities strengthen their financial capacity over the long term

Revenue generation instruments help to create or increase income streams that can finance climate investments or repay financing.

Public Instruments

- PropertyTax
- Charges/Pricing
- Development Charges
- Tax abatements
- Tax/rebates on negative aspects
- Land Sales/Auctions
- Land Leasing
- City ETS
- Tax/Fee-based LVC
- Carbon Credits
- Land banking/readjustment

Blended Instruments

- Development-based LVC
- National PES
- Public-Private PES
- Voluntary PES

Private Instruments

- Carbon Credits

Risk Reduction

How can I de-risk my project to align with investor expectations? Use these instruments when your project struggles to attract financing because the risks are too high. They help improve attracting financing by reducing financial, technical, or market risks for investors and lenders.

Risk reduction instruments improve the bankability of projects by reducing financial, technical, or market uncertainties. They help attract investment by increasing confidence among lenders and investors

Public Instruments	Blended Instruments	Private Instruments
Viability Gap Funding		Risk Insurance
Revenue Support		Currency Exchange Funds
Ecological Fiscal Transfers		Pay-as-you-save
Intergovernmental Transfers		On-bill Repayment
Risk Guarantees		Energy Upgrade Financing
Contracts for Difference		
Loan Loss Reserve		
Risk Insurance		

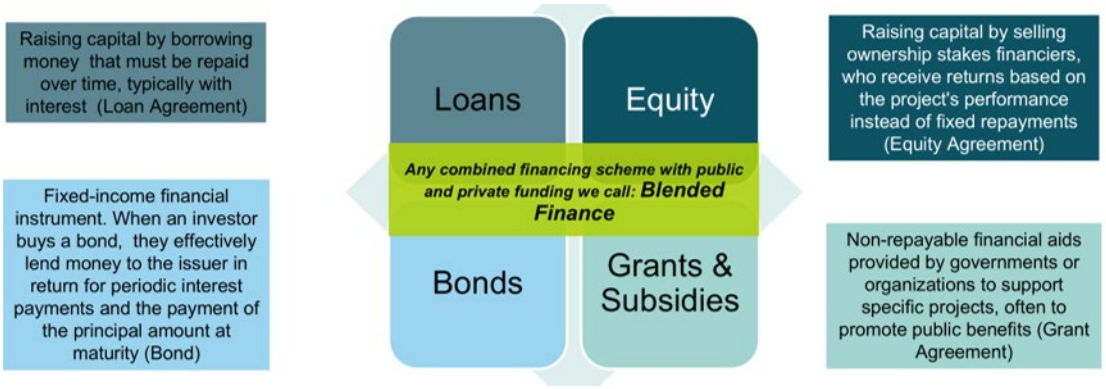
Instruments to Deliver & Operate Projects

How can I work with the private sector? Use these instruments when you want to work with private partners to design, build, finance, operate, or maintain infrastructure. They define how responsibilities, risks, and revenues are shared throughout the project lifecycle.

Project delivery instruments define how infrastructure projects are procured, delivered, financed, and operated. They enable collaboration with private partners to share responsibilities, expertise, and long-term project management.

Public Instruments	Blended Instruments	Private Instruments
ESCOs	PPPs	ESCOs
	O&M Contracts	EPCs
	Leases/affermage	
	Concessions	
	BOT	
	PPAs	
	Energy Perfomance Contracts	
	Hybrid Purchase-Lease	

Next, a description of very common funding, financing and risk-sharing mechanisms available to municipalities and municipal climate projects is provided.



1. **Loans:** Commercial loans: Where permitted under national and regional legislation, municipalities may borrow from banks or other financial institutions, usually to finance capital investment. Borrowing powers, eligible uses, debt limits, approval requirements and permissible security arrangements vary substantially among EU Member States and may also differ between categories of local authority.

Syndicated loans: Loans provided to one borrower by a group of lenders, usually coordinated by one or more arranging banks. Syndication allows lenders to share risk and enables the borrower to raise a larger amount than might be available from a single institution.

Revolving Loans **and On-Bill Financing:** As a strategy, cities can set up revolving loan funds where savings or revenues from one project (e.g. energy savings from retrofits) are reinvested into the next project. This creates a continuous pool of capital for continuous climate action. On-bill repayment or similar "pay-as-you-save" models help building owners repay the cost of improvements through their regular utility bills or taxes, making participation easier. These mechanisms make it easier for private building owners to participate in city-led retrofit programmes by offering upfront financing paid back over time through cost savings.

2. **Equity:** You raise capital by selling a percentage of ownership in a project. The equity investor earns a return (dividends, retained earnings, distributions or an eventual sale of the investment), based on the performance of the project. If the project fails, the equity investors lose their money, so they are incentivised to ensure that the project is successful.
   Investors generally demand a higher expected return, impose stricter conditions or assign a lower valuation to riskier projects. Examples: equity in a district-heating company, renewable-energy project company, municipal utility, energy community or city climate fund.

3. **Bonds**, including Municipal Bonds (Green Bonds)**:** Cities can borrow money directly from investors by issuing bonds. Green bonds are used only for climate-related projects and require transparent reporting. They allow cities to raise large amounts upfront for projects like energy efficiency, clean transport, or flood protection.
   Examples: Gothenburg - Pioneering sustainable transport infrastructure, Milan - Financing energy efficiency retrofits, Paris - Supporting renewable energy transition.

4. Grants **and subsidies,** Guarantees**, and** Technical Assistance**:** Grants can cover early project development or pilots. Guarantees help reduce risk for investors. Technical assistance (for example through NetZeroCities) helps cities design strong, investment-ready projects.

5. **Combination scheme of public and private funding:**
   This includes:
   - Public-Private Partnerships (PPPs)**:** In PPPs, cities work with private companies to deliver infrastructure or services. Cities provide the regulatory framework and oversight, while private partners bring financing, expertise, and efficiency. Cities sometimes also bring finance and expertise in a PPP, as cities can have equity ownership in a PPP vehicle. Risks and responsibilities are shared. PPPs can support projects such as heat networks, renewable energy, or public transport. In a PPP:
      - **Public Sector**: Provides regulatory framework, land access, and policy certainty. Might also deliver capital.
      - **Private Partner**: Delivers capital, technical expertise, and operational efficiency.
      - **Shared Outcomes**: Joint delivery of transport networks, energy systems, and climate infrastructure.

   - City Climate Funds **and** Blended Finance Facilities**:** Some cities create funds to finance a group of climate projects. These funds may mix public, private, and philanthropic capital. Public money reduces risk, which helps attract private investment. This approach is useful when a city wants to finance many smaller projects together, such as building retrofits or local energy improvements. Facilities combine grants, loans, and equity to de-risk projects and attract private capital at scale. For instance, Bristol (with regional partners) launched a Green Growth Investment Fund aimed at raising £100 million for projects ranging from renewables to building retrofits. Such funds often use a blended finance approach: they might combine public contributions (or philanthropic "first-loss" capital) with private investors' money to create a larger pool of funding.

   - Innovative Finance Mechanisms - ***Community Crowdfunding*****:** Platforms enabling residents to invest directly in local renewable energy projects, fostering ownership and engagement.

The following section focuses on four common and specific financing instruments, explained in detail with examples of city cases.

Focus on: Green and Sustainability Bonds

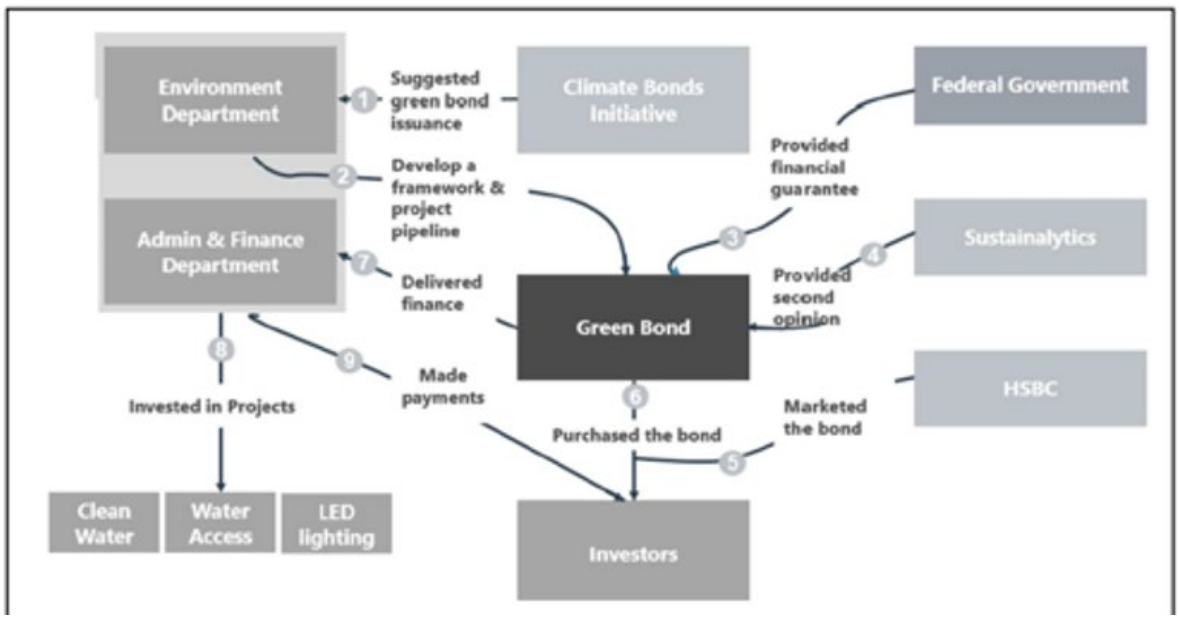
Bonds are a way for governments or large organisations to borrow capital from investors. Investors provide capital upfront and receive regular interest payments, and the original capital is repaid after a fixed period.

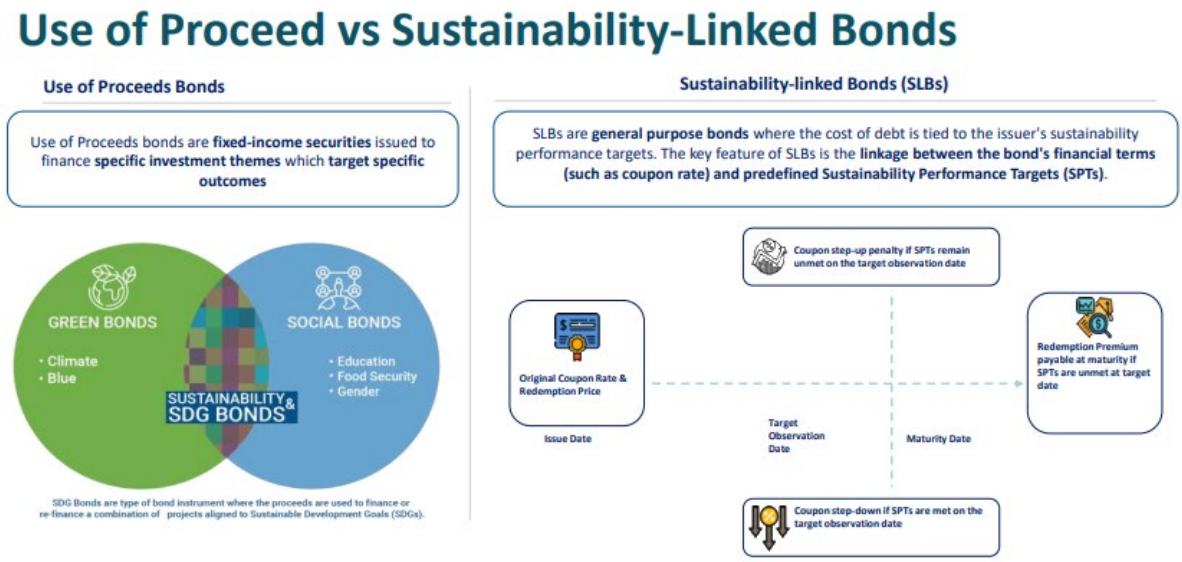
- **Investors**: Institutional Investors include pension funds, insurance companies, sovereign wealth funds, and asset managers seeking predictable income streams and diversification opportunities.
- **Scale Requirements:** Bond issuances typically require minimum sizes (often £100–500 million) to ensure liquidity and justify underwriting costs.
- **Transparency Standards:** Comprehensive disclosure requirements including audited financials, legal opinions, and ongoing reporting obligations to maintain investor confidence.
- **Credit Ratings:** Independent assessments from recognised agencies (S&P, Moody's, Fitch) are typically essential for institutional investor participation.
- **Green bonds** enable cities to raise debt capital specifically earmarked for climate and environmental projects. These instruments require rigorous project eligibility criteria and transparent reporting on environmental outcomes.

Key characteristics:

- Dedicated use of proceeds for verified green projects
- Third-party certification and impact reporting
- Access to sustainability-focused investor market

Steps of a Sustainability Bond Issuance:





City cases

Climate City Fund in Leuven, Belgium

Project characteristics

City role: early pipeline builder and strategist (with extensive CH input)
Financing: City fund combining public capital, private capital, and guarantees
Total investment size: ~€50 million first close – target up to €1 billion
Financing structure & key instruments: Rolling closed-ended fund and guarantees

Key takeaways for Cities

- A city-led project pipeline (86 breakthrough projects) can be used as the basis for a dedicated investment fund.
- External fund management and guarantees are considered to attract private capital and manage investments.
- Public lenders (e.g. EIB) are expected to play a role in de-risking and crowding in private investors

Green Growth West Impact Fund in Bristol, England

Project characteristics

City role: strong ideation and design role; convener of stakeholders

Financing: Impact fund combining regional public capital, private capital, and debt

Total investment size: ~€ 100-120 million

Financing structure & key instruments: More typical infrastructure/impact fund using primarily debt

Key takeaways for Cities

- Early pipeline design by BBRC aligns projects with the fund manager's typology, creating a clear path for pipeline building.
- Council and National Wealth Fund de-risk to attract private capital.
- Innovative blended impact/green fund fully leveraging fund manager method.

Focus on: Public–Private Partnerships (PPPs)

A PPP is an agreement where the public sector provides the policy framework and policy certainty, land access and oversight, while the private sector brings in capital, technical and operational know-how. By sharing risk and reward, the two sides reinforce each other. Success depends on robust contracts that allocate risks fairly and clearly, set clear performance targets and define governance.



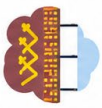
PPP models vary:

- Public-led: The city retains more control and funding responsibility.
- Co-led: Both city and private partner share control and financing.
- Private-led: The private partner funds and operates the project while the city provides policy and regulatory support.

These PPPs demonstrate that different models can match different project types and risk profiles. The common thread is well-structured contracts and clear public–private roles.

While PPPs are typically structured around individual projects, cities can also raise capital at a broader portfolio level through capital market instruments such as bonds.

Risk and control sharing in climate projects engaging public and private actors and capital: 3 examples





	Public-Led Model: Ljubljana Energy Retrofitting via EPC	**Co-Led Public-Private Model:** Prato Circular Textile Valley	**Private-Led Model:** Milano BikeMi Bicycle Sharing
Innovation	Bundling of 48+ public buildings into one Energy Performance Contracting tender with performance guarantees.	District-wide textile circularity model linking industrial symbiosis, water reuse, and governance forums. Clear local strategy crowds private capital in.	Early European bike-share with e-bikes, digitally integrated into Milan's public transport ecosystem.
Financing	ESCOs and EU funds provide capital; city repays from guaranteed energy savings. De-risking by ELENA/ Cohesion Fund helps mobilizing private investments.	Investments made by SMEs and consortia. EU, regional, and city resources go to coordination, infrastructure, and small pilots.	Concession model. Operators finance bikes and docks with revenue from users and ads. City provides subsidies or funds expansion when needed.
City role	Off taker and building owner.	Municipality coordinates and convenes stakeholders; leads pilots but is not the borrower.	Providing space. Integration into the existing transport system.

City case

Public Private Partnership

BikeMi Bike Sharing in Milan, Italy



Project characteristics

City role: City sponsors and integrator of BikeMi into ATM's transport system; private concessionaires operate the service

Financing: Operators finance bikes and docks; city provides subsidies or funds expansion when needed.

Total investment size: ~€10-15 million

Financing structure & key instruments: concession model: operator funds, earns ads & user revenues, city provides space

Key takeaways for Cities

- Revenue-generating services can attract fully private financing.
- Concessions allow cities to expand services without upfront capital expenditure.
- Integration into public systems (e.g. transport networks) increases project bankability.

Focus on: City Climate Funds – Portfolio Approach:

Another emerging approach is the use of dedicated city funds, which pool different sources of capital and invest across a portfolio of climate projects.

Bringing in Capital at Scale through a Portfolio: Cities can fundraise for specific pools or portfolios with different levels of structuring complexity and different mixes of city vs investor involvement.

Funds can deploy a whole suite of instruments (including guarantees) and utilise capital allocation strategies to blend public and private funds and capabilities more deeply at both project and portfolio level, hence the interest in this type of structure.

City Fund

A mechanism for collecting private capital at scale by combining a portfolio with an adapted fund model of investment and governance.

1. Funds crowd-in institutional investors: Around two-thirds of private investment into infrastructure as an asset class flows through fund (LP-GP) structures
2. Systematic investment through a fund manager: Cities can adapt this structure, with the city feeding an early portfolio to a fund manager while retaining key governance powers
3. Reinvestment Cycle: Returns can fund new climate initiatives, creating perpetual impact

Focus on: Blended Finance

Blended finance is a sub-category of mixed funding sources. It is a financing approach that uses concessional public or philanthropic funds to reduce risk and attract private investment. For city projects, this often means grants covering project preparation or first-loss guarantees lowering perceived risk. The EU's InvestEU and ELENA facilities are key examples where blending helps cities access private financing for climate-neutral infrastructure.

Blended Finance Instruments

First-Loss Capital: A form of subordinated financing that agrees to absorb the initial losses if the project underperforms. This **"first-loss" layer protects senior (commercial) investors** by insulating them from early risk, thereby **improving the overall credit profile** of the project. Cities can seek first-loss grants or junior loans from philanthropic or public sources to make projects safer for banks.

- **Guarantees & Insurance:** These are risk-sharing tools provided typically by public agencies or multilateral banks. **Guarantees or insurance policies can cover specific risks**, such as political risk, currency fluctuation, or technology performance shortfalls, which in turn **enhances the project's bankability for private lenders**. By backstopping certain risks, guarantees give investors greater confidence that they will be repaid.

- **Technical Assistance (Project Preparation Grants):** Many development and climate funds offer grant-based support to get projects ready for investment. Such **technical assistance funds** finance early activities like feasibility studies, business case development, stakeholder engagement, or capacity building within the city team. This preparatory work helps projects become ready to secure funding by improving design and addressing gaps before major capital is brought in. Technical assistance ensures that promising ideas become robust, well-structured proposals that meet investor requirements.

By leveraging blended finance structures and tools, city governments can **reduce the risk for private partners and align multiple investors** around a project.

Choosing the right mechanism

Different financing instruments appeal to different types of investors, depending on their risk tolerance, regulatory constraints, and investment objectives. Not all investors are willing or able to fund the same type of project or level of risk.

Understanding these differences is essential when structuring a financing strategy, because the choice of mechanism determines:

- which investors can participate;
- what conditions they will require;
- how attractive the project is in the market.

In practice, financing mechanisms influence three key aspects:

- **Investor Targeting:** Different instruments naturally attract specific financier types based on risk-return profiles and regulatory frameworks.
- **Terms & conditions:** Each mechanism comes with distinct structural requirements, covenant packages, and documentation standards.
- **Market Access:** The right instrument opens doors to deeper capital pools and more favourable pricing dynamics.

Selecting the most suitable financing mechanism is not a one-size-fits-all decision. It depends on the characteristics of the project, the expectations of investors, and broader market conditions. To structure this decision, three main aspects are typically considered:

1. **Project Maturity**
   - Match the length of time of the funding to project cash flow generation
   - Consider refinancing windows and exit strategies
   - Align repayment with asset lifecycle and revenue curves

2. **Project Scale**

Project scale refers to the **overall size of the investment and whether it is large or small in financial terms**. This matters because different financing mechanisms are designed for different deal sizes.

- Some financing options are only suitable for large projects above certain minimum sizes
- Transaction costs relative to funding amount
- Investor appetite and available market depth vary depending on project size

3. **Risk Profile**

The risk profile describes how risky the project is perceived to be and what could go wrong during its lifetime. This includes both financial and non-financial risks.

- Assess overall financial strength and credit quality of the project or borrower
- Identify key risks such as construction delays, changes in regulation or policy, or underperformance in operations
- Determine what type of projections investors will require, such as guarantees, collateral or contractual safeguards

Useful Resources

1. Portal Page: NetZeroCities - Financing the ambition of NetZeroCities
2. Presentation: Online Planning Lab Module 6 - Learning from Mission Cities Slides
3. Tool: Finance guidance tool

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Topic 6.4 WHAT investors look for

What do investors look for in a project?



- *Risk Assessment - Is the project stable and creditworthy?*

  Investors look at political stability, clear regulations, strong technical design, and the city's credit rating. They want to know if the project has capable leadership and clear accountability.

- *Return Expectations - What financial or social returns will be generated?*

  Depending on the investor, this may include financial returns (such as savings or revenues), social returns, or strategic benefits.

- *Climate Impact + Social Benefits - Can environmental outcomes be measured and verified? Quantifiable emissions reductions*

  Investors want to see how much emissions will be reduced, how the project supports resilience, and how progress will be tracked. Transparent reporting is important.

  Understanding these criteria helps city teams anticipate investor questions early, reducing delays later in procurement and financing processes.

Identifying Projects Attractive to External Financiers

External financiers, including private investors, look for specific characteristics and assurances in climate projects such as:

- Clear Alignment with Climate Goals: Investors are increasingly aware of climate change risks and opportunities. Projects that clearly demonstrate their contribution to climate objectives, such as emissions reduction, are more appealing.

- Regulatory Alignment & Credibility: Projects that demonstrate clear regulatory alignment, such as with the EU Taxonomy for environmental sustainability and broader EU strategic initiatives (e.g., European Green Deal, InvestEU), signal strong credibility to potential investors.

- Financial Viability and Returns: Projects must demonstrate a clear path to financial reward with a competitive risk-return profile, proving their financial soundness and viability through thorough assessment of cash flows, revenue generation potential, and overall financial sustainability.

- Revenue Generation Potential: Projects that can generate their own revenue streams are inherently more attractive, as this directly contributes to self-financing capacity and investor returns.

- Project Scale and Bundling: Individual small projects may not meet the minimum investment thresholds of larger institutional investors due to high per-project transaction costs. Cities can overcome this by aggregating smaller, similar projects into a larger portfolio to reach the necessary scale.

In addition, when evaluating public sector projects, investors also look for:

- **Creditworthiness of the city:** For loans and bonds, a city's creditworthiness is often a critical factor. A higher credit rating can lead to more available finance at lower interest rates. One solution is incorporating project financing, where instead of relying on the balance sheet of the city, the project financier looks to the project itself to be financially viable and produce secure cash flows to repay debt and equity. Selecting the right business model with the right mix of revenue is key to a project's viability.

- **Internal Capacity and Expertise:** The city administration's internal capacity to prepare, execute and manage the project is a significant consideration for financiers. Having skilled technical expertise can be a key advantage. The NetZeroCities consortium provides technical assistance and financing expertise to support cities from project preparation to financing.

- **Strategic Planning and Policy Signals:** Long-term targets and policies that signal a clear direction for climate action to provide confidence to lenders and investors for long-term urban infrastructure investments. The NetZeroCities consortium assisted Mission Cities to develop such plans and policies, including Climate City Contracts and Climate City Action Plan, earning them Mission City Labels.

Checklist

Project investment Criteria:

✓ *Clear Alignment with Climate Goals?*	*Does it seek to reduce Emissions?*
✓ *Regulatory Alignment & Credibility?*	*Is there political, regulatory support?*
✓ *Financial Viability and Returns?*	*Does it make economic and financial sense? Is it revenue-generating or savings-based?*
✓ *Revenue Generation Potential?*	
✓ *Project Scale and Bundling size?*	*Can it be bundled to achieve an attractive investment*
✓ *Proven Technology/Concept?*	*Is the technology/ concept known to be successful?*

What Makes a Project "Investment-Ready"?

An investment-ready project (often referred to as a "bankable" project or "transaction-ready") for a city is a project that meets the risk, return, and governance requirements of financiers and investors. For cities, investment readiness involves having a clear revenue model (e.g., tariffs, leases, savings), a robust feasibility study, secure permits, and credible implementation arrangements. Investment readiness does not necessarily imply commercial profitability. It means that the project's financial and non-financial risks are well understood, mitigated, and transparently allocated.

The majority of the work undertaken and risks faced occur in the project development phases. The investor wants to see clearly, through their due diligence process, that the project is technically (as well as financially) feasible. An investor typically wants a data room set up that includes all relevant technical documentation (e.g. feasibility studies, an EIA if needed, a techno-economic model, etc.) that they need to evaluate the investment.

Elements that make a project investment-ready:

- **Clear Problem-Solution Logic:** The project should target a well-defined climate or sustainability challenge. Investors need to understand the issue the project addresses (for example, high energy costs or high emissions) and how the project provides a clear, measurable solution.

- **Financial Viability:** The project needs to show how it will save money or generate income over time. This does not mean the project must make a profit, but it must show how repayment will work. For example, building retrofits can repay loans through energy savings.

- **Appropriate Risk Allocation:** Risks (such as construction, operational, or demand risk) should be distributed to the parties best able to manage them. This might mean involving experienced private partners or insurers for certain risks. Investors want to see that these risks are identified and shared fairly between the city, private partners, and others involved. Each risk should be handled by the party best able to manage it.

- **Strong Governance and Capacity:** Investors want confidence that the project will be well managed. This includes organised city teams, clear roles and responsibilities, and solid monitoring systems. Good governance shows that the city can deliver what it promises. This includes coordination across city departments, reliable data and monitoring systems, and transparent accountability for results. If a city can demonstrate it has the expertise (or has partnered with experts) to implement and oversee the project, it builds investor trust.

- **Political Support and Co-Funding:** Strong local commitment is crucial. Projects that have backing from city leadership —including **policy support, co-funding in the city budget, or guarantees— signal stability**. Investors look for signals that the city is committed. This can include budget contributions, supportive policies, or long-term political backing. When the city invests some of its own money, it signals confidence and stability.

Barriers to Financing and How to Overcome Them

City teams often face common **barriers to accessing external finance** for climate projects. Key barriers and potential pathways to overcome them include:

- **Limited Technical and Financial Capacity:** Lack of in-house expertise in both non-financial capacity related to project preparation, governance, and execution and in financial capacity such as complex financial structuring, project finance, and investor engagement. **Solution:** Leverage external technical assistance programmes and build knowledge networks. Cities can partner with organisations (like the Climate City Capital Hub or development bank advisory services). Regional collaboration between cities can also help share expertise. Peer learning is valuable: many pioneering cities have found creative solutions to these challenges.

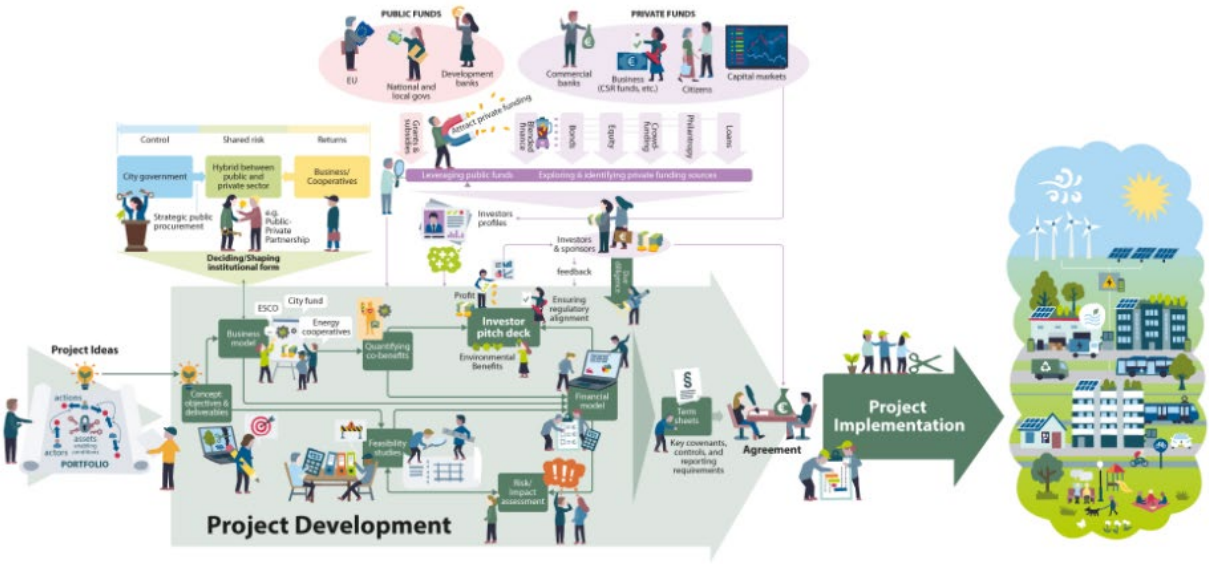
- **Meeting Investor Expectations:** Some projects struggle to **quantify financial returns or social impact** in the terms investors expect, which makes investors hesitant to provide funding. **Solution:** Develop robust impact measurement and business cases. This means using standardised frameworks to calculate and communicate expected returns (financial **and** social) and possibly securing third-party validations. Benchmarking against similar successful projects can provide credibility.

- **Small Project Scale:** Some climate actions are relatively small in investment size. Individually, they may not attract big investors due to high transaction costs and lower profit margins. **Solution: Aggregate and bundle projects** to achieve scale. By combining multiple similar projects into a single programme, cities can reach investment thresholds that interest institutional investors.

- **Fiscal and Regulatory Constraints:** Cities can face strict **municipal debt ceilings or lengthy budget approval processes**, which limit their ability to borrow or invest quickly. Additionally, regulatory hurdles can slow down public-private deals (e.g. procurement rules) or make innovative financing legally complex. **Solution:** Work within and around these constraints by innovating in governance. This could involve setting up independent project delivery vehicles or "climate investment units" that operate with more flexibility and off-balance-sheet financing. Streamlining internal procedures and engaging legal/financial experts early can reduce delays.

Topic 6.5 HOW to get a project investment-ready

Securing external financing is crucial for accelerating urban climate action. This section outlines how to identify projects that appeal to external financiers and the essential project preparation steps **to achieve a financeable, transaction-ready project.**



The Importance of Project Preparation

Thorough project preparation is paramount to ensure projects can attract external financing. This involves defining the project, assessing its viability, and presenting it professionally.

Developing an Investment Plan: Cities should develop a long-term financial strategy, often part of a broader Climate City Contract, to achieve climate neutrality. This plan mobilises public resources and outlines how to attract private capital.

Defining Financing Needs: Utilise tools like the Finance Guidance Tool to clarify your city's specific financing needs and identify appropriate funding options. This tool uses a questionnaire to match project types with suitable funding mechanisms (e.g., grants, commercial loans, private equity, public-private partnerships).

Designing a Project Concept: This initial step of project preparation involves developing the project concept and articulating it in a Concept Note. It's crucial to understand potential revenue streams from the outset, as this forms the core of the business case and signals financial viability to external private financiers. The NetZeroCities Climate City Capital Hub can provide a sense check and support Cities in drafting sound Concept Notes and Business Models.

Feasibility Studies and Financial Modelling: Establishing the financial and technical feasibility of projects is essential. Financial modelling helps assess the economic viability and potential impact of climate projects, providing insights into their financial implications. Resources like the NetZeroCities Climate City Capital Hub provide technical assistance in preparing investment projects including financial modelling, and the scoping and reviewing feasibility studies.

Refining Proposals and Documentation: Project proposals need to be well-structured and comprehensive. Key documents and data should be prepared in advance to showcase the project's readiness and potential. The NetZeroCities Climate City Capital Hub can assist cities in refining their proposals and preparing key documents/data for funding.

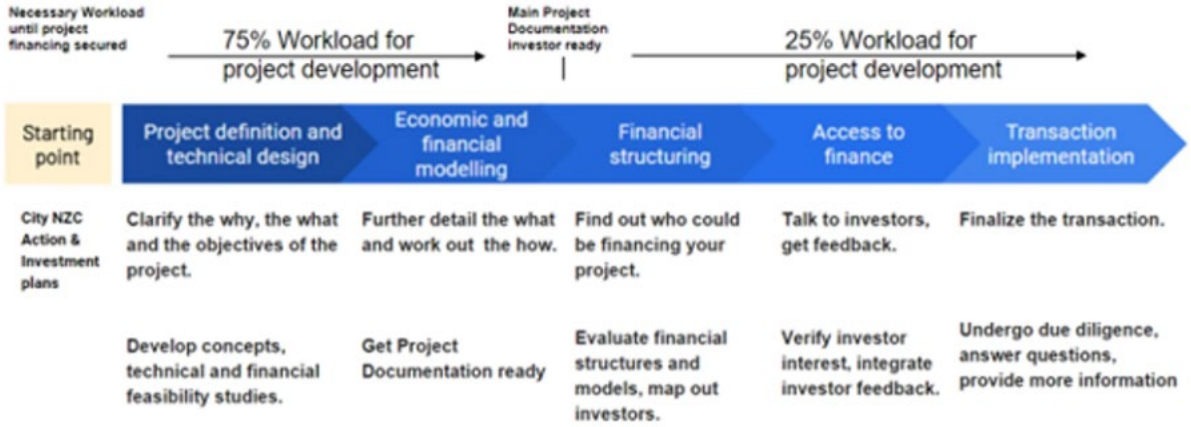
"Investment-Ready" Projects: The goal of project preparation is to make projects "investment-ready." This includes understanding the project's financial structure, addressing potential risks, and clearly articulating its benefits and alignment with investor criteria. The NetZeroCities Climate City Capital Hub has the technical and financing expertise to support the project preparation.

Project Aggregation: For smaller projects, bundling them together can create a larger, more attractive investment opportunity that meets the minimum thresholds of institutional investors and helps overcome high transaction costs. EU Mission label cities are also looking to bundle projects.

When is a project investment-ready:

✓ *Comprehensive Documentation?*	Are the key documents/data available? (Concept Note, Feasibility Studies, Risk/Impact Assessment, Business Model, Revenue Model, & Financial Model, Investor Pitch Deck, Term Sheets)
✓ *Alignment with stakeholders?*	Are stakeholders aligned? Can it align with existing plans?
✓ *Clear governance and legal structures?*	Are you clear about what roles the external parties could play?
✓ *Defined financing strategy?*	Have you clarified how it could be financed?
✓ *Risk mitigation plans?*	Have key risks been identified with plan to mitigate?

How to Prepare a Project to be investment-ready:



- **Project Definition and Technical Design**: Clarify the why, the what and the objectives of the project.
  - **Concept Development:** Define the climate challenge the project addresses and the solution being proposed. Include input from relevant stakeholders.
  - **Feasibility Assessment:** Check whether the project is technically, financially, and legally feasible. This step provides confidence that the project can be implemented.

- **Economic and Financial Modelling:** Further detail the what and work out the how. Get Project Documentation ready.

- **Financial Structuring:** Design how the project will be paid for, who will invest, how revenue or savings will flow, and how risks will be shared. Evaluate financial structures and models, map out investors.

- **Investor Engagement & Access to finance:** Present a clear and simple case to investors, including expected outcomes, responsibilities, and key performance indicators. Verify investor interest, integrate investor feedback.

- **Transaction implementation:** Finalise the transaction. Undergo due diligence, answer questions, provide more information.

The first stages up until financial structuring are the riskiest and where the most time and resources will need to be spent (~ 75% of the workload for the project development stages).

An investment-ready project tells a credible story of outcomes, returns, and accountability. It demonstrates clear financial viability whilst delivering measurable climate impact. It requires the following key elements:

- Robust Governance Structure
- Verified Technical Feasibility
- Transparent Financial Projections
- Risk Mitigation Strategies
- Measurable Climate Outcomes

Detailed Guidance

CLIMATE CITY CAPITAL HUB
European Investment Bank

Project Development Stage	
Project definition & technical design review.	**Information:** Project objectives & outcome expectations; - Informed evaluation of technical solutions and business model(s) for project; - Policy and regulatory aspects evaluated; - Realistic assessment of project scope; - High-level project costing (Budget compiled); - High-level organisational project structure; **Main Documents:** High level concept note/planning document of project; - Pre-feasibility study; - Feasibility study; - Indicative budget;
Economic and Financial Modelling	**Information:** Organisational Project structure defined; Technical solution(s) finalised; Business model(s) defined; Implementation plan made; Detailed budget; Risks and mitigation measures evaluated; Impact measurement framework and reporting plan developed; Project stakeholders onboarded; **Main Documents:** Detailed Project plan: - Detailed Financial Model incl. summary for investors; - Risk (incl. ESG) mapping, framework incl. mitigation measures defined; - Impact measurement framework and reporting plan; - Necessary permits and licences; - In case of PPP, tender documents for private project partner.
Financial structuring	**Information:** Potential investors for project identified; Potential subsidies, national funding schemes etc. Identified for implementation of projects with objective to explore leveraging of private capital only; Overview of investment criteria, conditions, and preferences of investors; Potential capital combinations for project financing evaluated; Derisking solutions evaluated e.g. guarantees, insurances, phased project implementation etc.; **Main Documents:** Investor pitch deck; - Detailed Financial model (reflecting targeted capital combination, assessed investment conditions (e.g. interest, grace period, payback) of targeted investors);
Access to Finance	**Information:** Investor interest verified; - Project specific information for investment conditions received; **Main Documents:** If required, investor specific documents additional to project documents already developed; - Rfp/grant applications prepared; - Indications of interest from investors received;
Transaction implementation (Due Diligence)	**Information:** Due Diligence requirements from investor received; Investor Conditionalities communicated; **Main Documents:** Term sheets and Commitment letters; Legal and contractual documents; Tender documents for project procurement; NB: The Capital Hub support for the transaction implementation stage will be limited due to capacity restraints, especially for legal support the Capital Hub will direct Cities and Investors to external legal support.

More information is available in the guide "Training Material for cities to attract private capital"

Useful Links

1. Portal Page: Climate City Contracts - Mission Portal
2. Presentation: Online Planning Lab Module 6 - Pipeline of Projects Slides
3. Tools:
    a. Finance Guidance Tool - NetZeroCities.app
    b. Climate City Capital Hub - NetZeroCities
4. Further Read:
    a. Climate-neutral City Contract Concept - NetZeroCities
    b. Capital idea: How the Climate City Capital Hub aims to make the difference for cities' climate neutrality goals - NetZeroCities

Glossary Module 6: Financing Solutions

A comprehensive finance glossary is available on the Mission portal

Blended Finance: A financing approach that uses concessional public or philanthropic funds to de-risk and attract private capital for city climate projects.

Budget: An annual or multi-year financial plan detailing a city's expected revenues and expenditures. For net-zero projects, integrating capital investment into the capital budget and ensuring recurring costs, such as maintenance and OPEX, fit within the operating budget is essential. Budget credibility and transparency are fundamental to improving city creditworthiness.

Capacity Building: The process of developing and strengthening the skills, abilities, and resources of individuals, organisations, or institutions.

Cash Flows: The movement of money into and out of a project or business over a specific period. Positive cash flow indicates that cash inflows exceed outflows, which is crucial for covering obligations and enabling further investment. Investors assess a project's cash flow to evaluate its financial health and capacity to repay debt or generate returns.

Concept Note: A brief outline of a proposed project, summarising its objectives, scope, methodology, expected outcomes, and preliminary budget. A concept note serves as an initial articulation of a project idea used to gauge interest and alignment from other parties.

Creditworthiness: An assessment of a borrower's ability and willingness to meet its financial obligations.

De-risking: The process of reducing or mitigating the perceived risks associated with an investment or project, often to make it more attractive to private investors.

Due Diligence: A rigorous evaluation process through which financiers assess project risks, governance, technical soundness, and financial structure.

Economic Viability: The assessment of whether a project generates benefits that outweigh its costs from a societal or macroeconomic perspective, often considering wider externalities, such as environmental benefits and job creation, beyond direct financial returns.

EIB European Investment Bank: The European Union's long-term lending institution, financing projects that support EU policy objectives, including climate action, infrastructure, innovation, and regional development.

Feasibility Studies: Analyses conducted to determine whether a proposed project is practical and viable. They involve a comprehensive assessment of a project's technical, economic, environmental, social, and financial aspects to determine its probability of success and suitability for financing.

Financial Grants: Non-repayable funds provided by an entity, often a public body or foundation, to support specific projects or activities that align with its objectives.

Financial / Investor Returns: The monetary benefits or gains an investor expects to receive from an investment, typically expressed as a percentage of the initial investment over a defined period.

Financial Modelling: The process of creating a mathematical representation of a project's financial performance. It includes projections of costs, revenue streams, funding requirements, and financial metrics, such as Internal Rate of Return and Net Present Value, to assess a project's financial viability, sustainability, and capacity to repay debt or generate returns for investors.

Financial Structure: The composition of a project's or company's financing, detailing the mix of debt, such as loans and bonds; equity, such as shares or owner's capital; and other funding sources.

Financial Structuring: The process of arranging different sources and types of finance, such as debt, equity, grants, and guarantees, to fund a project or entity. For the EIB, this involves designing an optimal financial package that balances risk and return for all parties, often blending the EIB's own financing with that of other public and private co-financiers to make projects bankable.

Green Bonds: Debt instruments issued to finance environmentally sustainable projects. Cities can issue green municipal bonds or join pooled structures, provided that proceeds are tracked and reported according to recognised standards, such as the ICMA Green Bond Principles or the EU Green Bond Standard.

Guarantee: A financial instrument that assures investors or lenders against specific risks, such as default or policy change. Guarantees can lower borrowing costs for cities and help make blended finance possible.

Institutional Investor: A large entity, such as a pension fund or insurance company, that manages long-term capital. To attract institutional investors, city projects generally need to be aggregated and investment-grade, with clear environmental, social, and governance performance.

Investment-ready Project ("Bankable Project" or "Transaction-ready Project"): A project that meets the risk, return, and governance requirements of financiers and investors. For cities, bankability involves having a clear revenue model, such as tariffs, leases, or savings; a robust feasibility study; secure permits; and credible implementation arrangements. Bankability does not necessarily imply commercial profitability. It means that the project's financial and non-financial risks are well understood, mitigated, and transparently allocated.

OPEX (Operational Expenditure): The ongoing costs of operating infrastructure, including energy, staff, and maintenance. Sustainable project design ensures that OPEX can be covered by revenues or savings rather than relying solely on capital grants.

Portfolio: The collection of climate or infrastructure projects managed by a city. Portfolio approaches enable aggregation, risk diversification, and the strategic alignment of investment with mission goals.

PPP (Public–Private Partnership): A contractual arrangement between the public and private sectors for delivering infrastructure or services. Successful PPPs balance value for money, risk allocation, and transparency. Common city-level PPPs include street lighting, district energy, and waste-treatment projects.

Private Capital: Investment from non-public sources, including private funds and investors, that can be mobilised for city climate and infrastructure projects.

Private Equity: A type of private capital investment in companies that are not publicly traded on a stock exchange.

Project Aggregation: The process of combining multiple smaller, often similar, projects into a larger investment package or programme.

Project Preparation: The comprehensive set of activities undertaken to develop a project from its initial concept into a fully structured, finance-ready, and ready-to-implement project.

Technical Assistance (TA): Non-financial support provided to improve project preparation, governance, financial modelling, and execution, including support provided through NetZeroCities or external facilities.

Transaction Costs: Costs incurred in carrying out an economic exchange or financial transaction, beyond the price of the good or service itself. In large-scale project finance, these may include legal fees, due diligence costs, and administrative expenses.

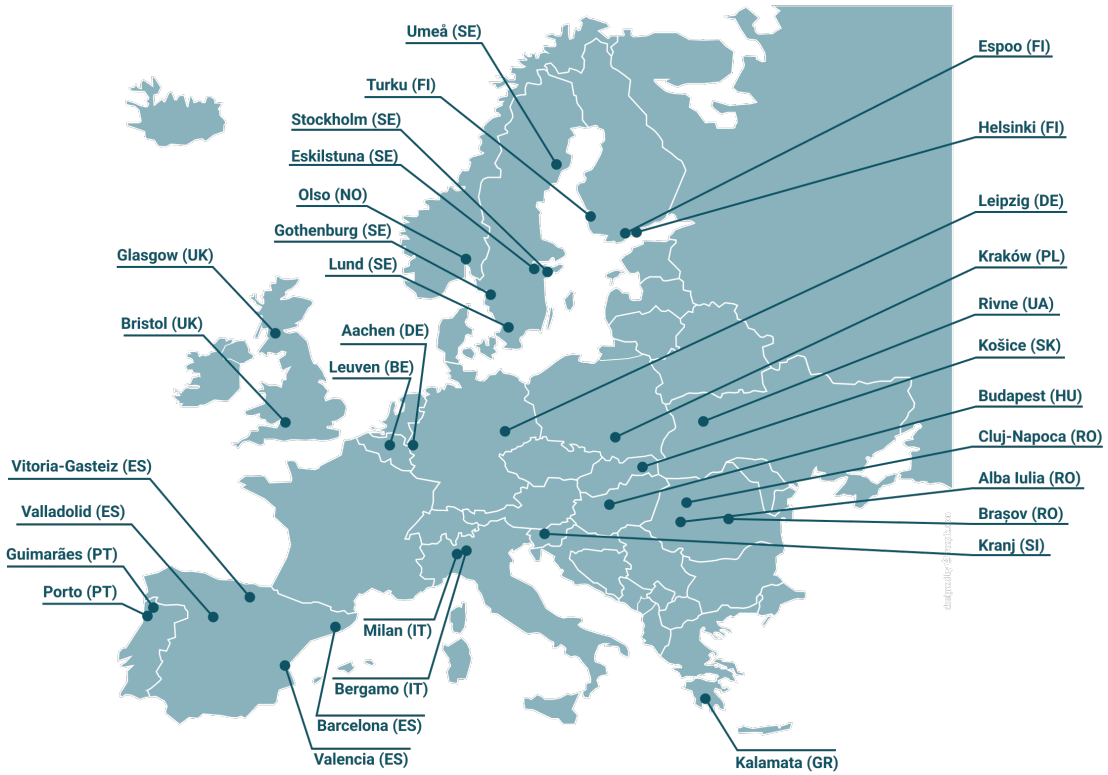
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Cities featured



NetZeroCities contacts for cities:
NetZeroCities support for all cities
Helpdesk: 1:1 booking meeting link

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Useful resources:
Online planning lab online page
NetZeroCities Learning Hub: learning opportunities for all cities

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