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Green & Just Transition

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Acknowledgements

This course was co-created by Arup, Climate-KIC, TalTech and UNDP for the Mayors for Economic Growth (M4EG) initiative. We are grateful to the many colleagues who contributed to this publication: Nikhil Chaudhary from Climate-KIC, Sean Lockie, Pasqual Capizzi, Tim Hawley, Luke Thompson, and Max Russels from Arup, Ralf- Martin Soe and Luiza Schuch de Azambuja from TalTech, and Semira Osmanovic, Tina S. Stoum and Xinyue Zhou from UNDP.

We are also grateful to our colleagues James Vener and Luke Thompson for their review and input. This publication was produced under the joint EU and UNDP initiative M4EG, funded by the EU since 2017 to support local authorities in the Eastern Partnership.

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Cover Photo

AI generated through Midjourney, by Valentin Croitoru

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Please cite this resource as Arup, TalTech, Climate-KIC, UNDP (2024) "Green & Just Transition" Course Materials, 2024 Urban Learning Center

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Overview of course

Module 1

Climate Neutrality – Deep Dive (Part 1)

- Climate mitigation at a city-wide scale - Inspirational case-study: Climate action in Oslo, Norway
- Inspirational solutions for cities and towns

Module 2

Climate Neutrality – Deep Dive (Part 2)

- Climate adaptation and resilience at a city-wide scale - Inspirational case study: Building Resilience in the City of Warsaw

Module 3

Climate Action Planning - Deep-Dive

Module 4

Integrated Pathways for Monitoring, Evaluation & Learning (MEL)

Introduction to the Course

This course builds on the ‘Green & Just Transition’ module in the course Foundations for Future Readiness of the Urban Learning Centre. It provides a deep dive into understanding the basic concepts related to the climate emergency being faced worldwide, as well as the climate actions and solutions that cities and towns can consider addressing and integrating within their Pathways for Economic Growth (P4EG).

Through inspirational case studies, the course highlights how European cities are effectively implementing a wide range of transdisciplinary solutions to achieve their ambitious net zero and resilience goals. It also illustrates how cities are leveraging multiple EU-wide processes and planning mechanisms – such as Sustainable Energy and Climate Action Plans (SECAPs) and Climate City Contracts – as an opportunity to accelerate their local multistakeholder collaboration, rapid decarbonisation, and a wide range of co-benefits for their citizens and communities.

What is this course about?

This course introduces the key concepts, solutions and planning processes essential for a Green & Just Transition and what this means for cities or towns, in terms of their practice, planning and projects. The modules in this course connect with several P4EG steps outlined in the P4EG Course of the Urban Learning Center, namely, Local Economic Situation Assessment, Strategy making, Action planning and Monitoring, Evaluation and Learning (MEL).

The course provides a range of opportunities to learn; from bite-sized content to interactive quizzes and activities to help you to apply these new learnings to your context.

What can I expect to gain from this course?

Across a series of modules, you will gain an understanding of the basic concepts of climate action and net zero, including climate mitigation, adaptation, and resilience – and what they mean in practice and in relation to the pathways towards sustainable economic growth.

You will dive deeper into the inspirational solutions that European cities are currently testing and experimenting with to address rapid and ambitious climate mitigation, adaptation and resilience across their most critical sectors and stakeholders.

You will learn about how cities and towns could potentially align and learn from their envisioned impacts for a Green & Just Transition with their P4EG strategic objectives, action planning, and monitoring, evaluation and learning (MEL).

Learning Objectives:

- 1** Understand the urgency to adapt to climate change, recognizing the wide-reaching and severe impacts forecasted due to climate change, particularly on vulnerable and low-income communities, and grasping the necessity of shifting towards building resilient and inclusive urban systems that can withstand, recover, and adapt to climate-related hazards and stresses.
- 2** How to build capabilities and capacities to better understand and describe the short-term, medium-term, and long-term impacts and outcomes of the P4EG efforts.
- 3** Learn from real-life examples, case studies and climate actions, planning approaches that a city or town can undertake to address their net zero goals and align actions with their P4EG journey.



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Module 1

**Climate
Neutrality –
Deep Dive
(Part 1)**

Module 1

Climate Neutrality – Deep Dive (Part 1)

1 What this module will cover

Overview of the module and links with the P4EG Course

This module introduces the key concepts and solutions essential for a Green & Just Transition and what this means for cities or towns, in terms of their practice, planning process and projects. It enables municipalities to identify the main local/regional economic sectors with a competitive advantage for a city or town. The module outlines climate actions that a city or town can undertake to address their net zero goals in the transport, energy, and buildings sectors.

This module consists of:

- Climate Neutrality Deep-Dive part 1
- Climate mitigation at a city-wide scale - Inspirational case-study: Climate action in Oslo, Norway
- Inspirational solutions for cities and towns with focus on mobility and energy

It supports the P4EG modules:

- Reviewing of Global national and local context (Module 3); and
- Local Economic Situation Assessment (Module 4)

Learning Objectives

- Recap of the basic foundational understanding of what we mean by a ‘Green Transition’, ‘Just Transition’ and the EU Green Deal.
- Understand the key concepts of climate mitigation, important for a ‘Green and Just Transition’: carbon-neutrality, greenhouse gas reduction, climate neutrality, net-zero, emissions gap – what do they mean in practice for cities and towns?
- Learn about the urgency to mitigate and adapt to climate change globally based on the latest scientific assessments by the Intergovernmental Panel on Climate Change (IPCC).
- Learn from inspirational solutions that European cities are testing and experimenting with to address rapid and ambitious climate mitigation and adaptation – for the most critical and carbon-intensive sectors of transport, energy, and buildings.

1.1 Basic concepts

Recap: What is a ‘Green Transition’?

The 'green transition' refers to the ambition towards a large-scale shift that many cities, businesses, and individuals are making from traditional, fossil fuel-dependent practices to more sustainable, environmentally friendly ones. This transition is often driven by a desire to reduce greenhouse gas emissions and mitigate climate change, but it also brings many other benefits like improved air quality and potential cost savings in the long term. Another key pillar of green transition is building resilience and adaptive capacity which is addressed in more detail in module 2 of this course.

Green transition involves a series of small, incremental steps that collectively enhance sustainability, reduce environmental footprints, and improve community health and resilience. Education and awareness are crucial, with initiatives such as workshops, informational campaigns, and integrating sustainability into, for instance, school curriculums being vital for encouraging community-wide participation and behavioural change. Ensuring local buy-in through community-led projects and stakeholder engagement is essential for the success and sustainability of green transition efforts, as it fosters a sense of ownership and commitment among residents.

A ‘Green Transition’ aims to improve the prosperity, well-being and health of citizens and future generations by providing multiple benefits:

- Cleaner energy and cutting-edge technological innovation
- Competitive, resource-efficient and resilient industry
- Longer-lasting products that can be repaired, recycled and reused
- Renovated, energy-efficient buildings
- More public transport & better accessibility
- Healthy and affordable food & sustainable agricultural practices
- Improved air quality, clean water, healthy soil, and biodiversity
- Future-proof jobs and skills training for the transition

Recap: What is meant by a ‘Just Transition’?

Just Transition represents a crucial component of the broader green transition agenda, specifically focusing on ensuring fairness and equity throughout the process. Just transition acknowledges that while the shift towards sustainability is essential, it must be managed in a way that protects and benefits all members of society, particularly the most vulnerable. It involves careful planning and inclusive practices to manage the disruptions caused by systemic changes, such as e.g., providing retraining and support for workers in declining sectors. Just transition strategies also focus on preventing negative consequences like environmental degradation and income inequality, ensuring that the economic growth driven by green policies is both sustainable and equitable.

"Greening the economy in a way that is as fair and inclusive as possible to everyone concerned, creating decent work opportunities and leaving no one behind."

as defined by the International Labour Organization (ILO)

More guidance on how a Just Transition can help deliver the Paris Agreement commitments at the national level can be found in this UNDP Report:



See also this article that further elaborates what a Just Transition implies:





Along with economic growth, a Just & Green Transition should also aspire to:

- Diversify low-carbon investments across key economic sectors – to decouple growth and resource use
- Ensure greenhouse gas (GHG) emission reduction and sustainable economic growth to ensure new job creation
- Ensure new jobs are decent – with guaranteed living wages, workplace safety protections, and health benefits
- Prioritise and support regions or communities where the economy is highly fossil fuels-dependent
- Ensure economic goals are aligned with poverty eradication, social inclusion and equity i.e., no one is left behind
- Ensuring that the move towards a sustainable economy is equitable, providing widespread benefits such as improved living standards, better health, greater educational opportunities, and enhanced family time
- Help planning processes become transparent – with the active participation of a broad range of stakeholders
- Help minimise fear, opposition, and inter-community and inter-generational conflicts
- Help monitor and learn from the hard-to-measure social impacts (or co-benefits) of economic growth

What is the 'EU Green Deal' for Green & Just Transition?

The increasing global focus on climate solutions has amplified the demand for communities to have a stronger voice and greater ownership in shaping these initiatives. This call for more accountability and responsive governance is reflected in the involvement of 62 countries that directly or indirectly referenced Just Transition principles in their Nationally Determined Contributions (NDCs).

Communities now expect to actively engage in the co-creation of development solutions, as evidenced by significant events such as the first-ever Local Climate Action Summit and the second Urbanization Ministerial Dialogue at COP28. These forums highlight how the specific priorities and needs of cities and towns are demanding more central consideration in global and national climate agendas, ensuring that local perspectives are integral to developing effective and inclusive climate policies.

On EU level, launched in 2020, the European Green Deal is one of the main examples of policies that are driving the Green and Just Transition. It covers eight key policy areas:

- 1. Climate action:** Making the EU climate neutral by 2050 and reducing GHG emissions by 55% below 1990 levels by 2030
- 2. Clean Energy:** Affordable and secure energy generation with renewable sources and energy efficiency
- 3. Sustainable Industry:** Mobilising industry for a clean and circular economy and production
- 4. Building and Renovating:** A cleaner construction sector for energy- and resource-efficiency
- 5. Sustainable Mobility:** Promoting and accelerating the shift to low-carbon and smart mobility
- 6. From Farm to Fork:** Designing a fair, healthy and environmentally friendly food system
- 7. Protecting Biodiversity:** Preserving and restoring fragile ecosystems and biodiversity
- 8. Eliminating Pollution:** Measures to cut pollution rapidly and efficiently for a toxic-free environment

The EU Green Deal places a strong emphasis on putting people first. This involves a special focus on supporting regions, industries, workers, households, and consumers that will face significant challenges during this transformation. The EU stresses fairness and inclusivity as foundational principles, essential for gaining widespread and sustained public support for the green transition. This includes integrating social measures, such as the Social Climate Fund, to help mitigate the social impact on vulnerable communities.

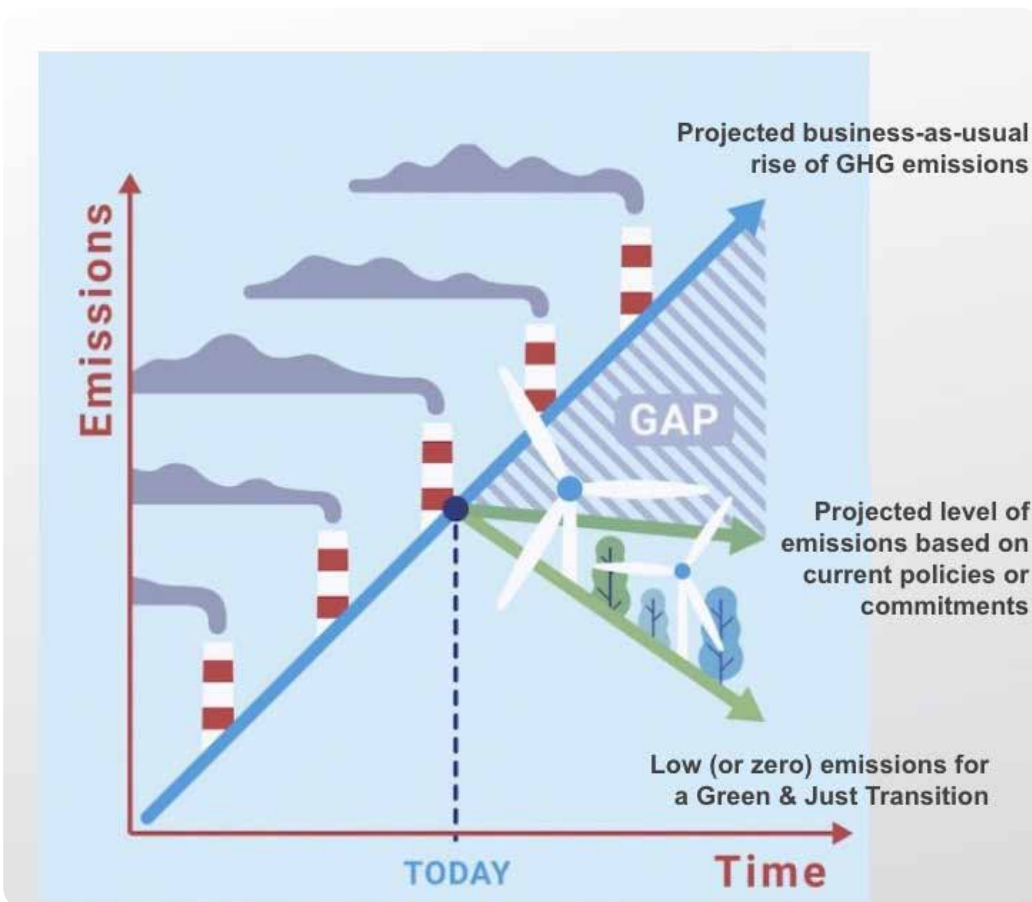
Let us now introduce the key concepts critical for a Green Transition

- Climate change / global warming:** Long-term changes in the earth's climate which are warming the atmosphere, oceans and land globally especially due to the increased use of fossil fuels (oil, petroleum, natural gas etc.). These harmfully affect the ecosystems, biodiversity and health and cause extreme or frequent natural disasters (hurricanes, floods, heat waves, and droughts), sea-level rise and coastal erosion.
- Greenhouse gases (GHG):** Naturally occurring or human-caused gases in the earth's atmosphere that trap heat radiated by the earth's surface to cause climate change. Major GHGs include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and fluorocarbons (FCs).
- Climate neutrality:** Refers to a state in which human activities result in no net effect on the climate system. Achieving such a state would require balancing human-caused emissions with removing the equivalent amount through sequestration.¹
- Net-Zero carbon emissions:** Refers to meaningfully reducing any GHG emissions released into the atmosphere from a city's or town's activities, while any remaining GHG emissions are balanced by an equivalent amount through reduction, prevention or removal- i.e., the CO₂ balance is reduced to zero and stops further concentration.
- Climate mitigation or decarbonization:** Refers to any action taken by governments, businesses, and people to reduce, capture, or prevent GHGs to avoid harmful climate change.
- Climate positive:** Means that a city or town's actions go beyond achieving net-zero GHG emissions, to create environmental benefits by removing additional CO₂ and other GHGs from the atmosphere (e.g., direct air capture of CO₂).
- Climate Resilience:** Refers to the capacity of a city, town, or community to anticipate, prepare for, respond to, and recover from significant climate-related events. It involves enhancing the ability to withstand and bounce back from incidents like extreme weather or long-term shifts in climate patterns.
- Climate Adaptation:** Involves making adjustments in ecological, social, or economic systems in response to actual or expected climatic stimuli and their effects or impacts. It aims to moderate harm or exploit beneficial opportunities arising from such climatic changes.

¹ Adapted from: Glossary — Global Warming of 1.5 °C (ipcc.ch)

What is the Emissions Gap and why is it crucial?

- The Emissions Gap measures the gap between what needs to be done and what is being done to tackle climate change. It can also be understood as the “Commitment Gap”.
- The gap is the difference between the low level of emissions that the world needs to drop to, compared with the projected level of emissions based on a country, city or town’s current commitments or policies to decarbonization (see diagram below).
- The Emissions Gap is important because, if it is not closed and the emissions reduction target is not met, countries, cities, or towns will experience increasingly severe worldwide climate impacts. For the commitments made by governments to be sufficient to bridge the gap, it is critical that decision-makers, policy-makers and citizens in a city or town understand the gap.
- Moreover, studies indicate that the costs of not closing the gap are far worse than the costs or investments associated with effective actions.
- The latest UNEP Emissions Gap assessment also states that the world is not on track to reach the Paris Agreement goals and global temperatures can reach 2.8°C by the end of the century under a business-as-usual scenario. The Emissions Gap measures the gap between what needs to be done and what is actually being done to tackle climate change. It can also be understood as the “Commitment Gap”.



Source: UNEP

1.2 The urgency to act now

The urgency for climate action & systemic change: Findings from the latest IPCC assessment

The Intergovernmental Panel on Climate Change (IPCC) is an independent body founded with the support of the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP).

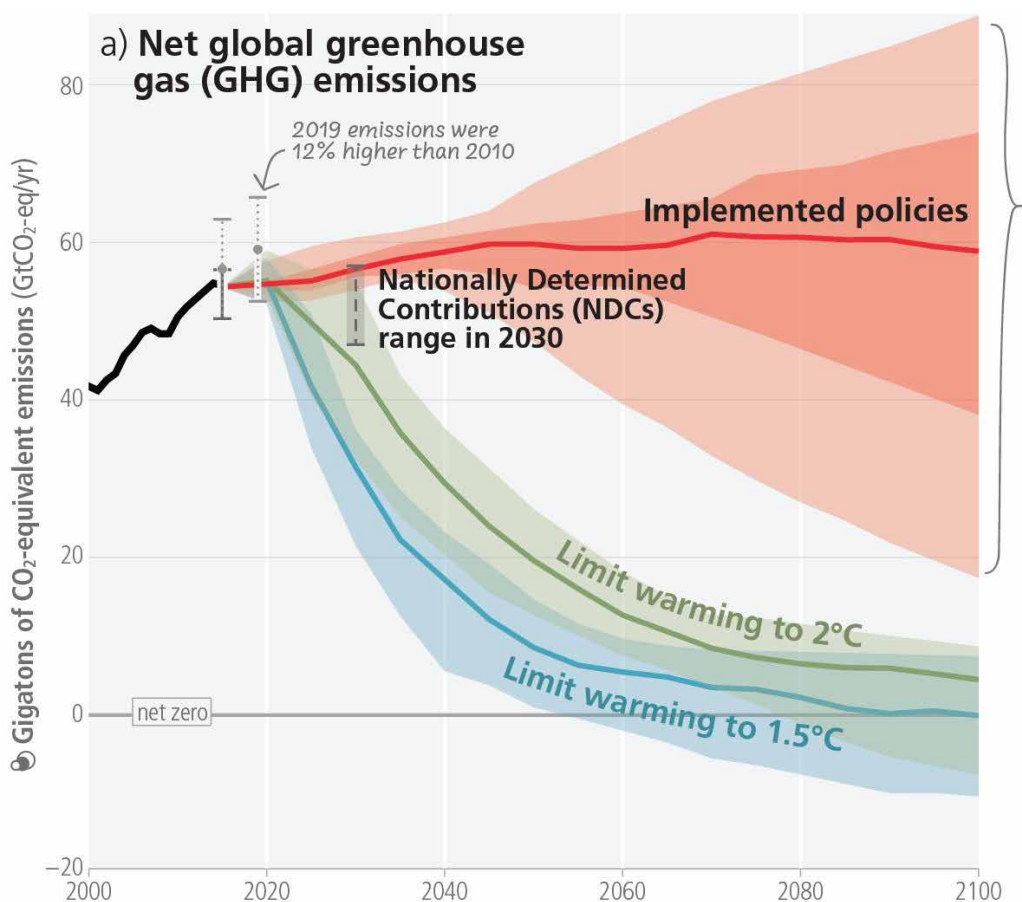
As the most credible source of climate science, the IPCC assesses the scientific literature and findings on climate change and provides vital scientific information and evidence-based recommendations to policymakers and the public.

By modelling global GHG emissions, the IPCC has estimated that the world is on track towards global warming of between 2.2 – 3.5 degrees C, if only the current business-as-usual policies are implemented (see red graph in the diagram).

To keep global warming within the safer limit of 1.5 – 2 degrees C (as agreed under the Paris Agreement), the world’s governments need to ensure that all GHG emissions peak by 2025 and reach net zero between 2050-2100.

The IPCC has recommended reducing CO₂ emissions globally by 45% before 2030 (compared to 2010 levels) and reaching net zero by mid-century.

Transitioning to net zero requires a rapid, deep and immediate transformation of our energy, transportation, and production and consumption systems. This is necessary to avoid the worst impacts of climate change (see green and blue graphs in the diagram).



Source: IPCC 6th Assessment Report

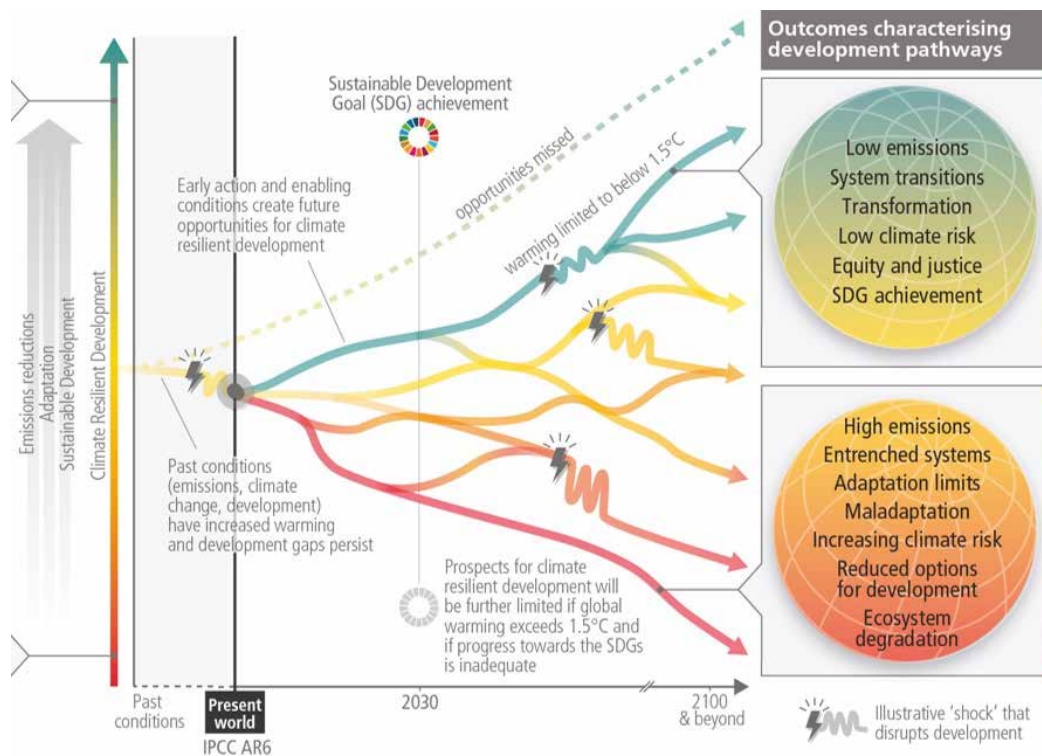
**The urgency to align climate action with SDGs:
The latest IPCC assessment on development pathways**

The IPCC also recommends that there is a narrowing window of opportunity to enable ‘climate resilient development’. These findings present two sets of choices and actions to shift development pathways towards sustainability. Climate resilient development is the process of implementing climate mitigation and adaptation measures, in order to also enable achieving the Sustainable Development Goals (SDGs).

These pathways illustrate that choices made, and actions implemented by various government, private sector and civil society actors can support achieving climate-resilient development, shift pathways towards sustainability, enable lower GHG emissions and enhance adaptation.

The following diagram illustrates two sets of outcomes – the green-yellow pathways are essential to lower climate risks, ensure equity and justice, and align SDGs achievement with climate action. The opportunity to achieve such alignment is minimised or missed completely, depending on where we are along a long-term timeline until 2100. Moreover, the disproportionate impacts of not acting in time affect the most vulnerable and lower-income people or countries – therefore, it is also necessary to consider why a just transition objective is important.

Such an urgent and systemic shift of pathways (from red to green ones) also requires creating enabling conditions for individual and collective actions. They include –behaviour change, ecosystem building, sectoral integration, long-term thinking, inclusive governance, and diverse knowledge (see also Transition Map in the Foundations module on Green & Just Transition).



Source: IPCC 6th Assessment Report

Picture explanation:

- The green-yellow pathways are essential to lower climate risks, ensure equity and justice, and align SDGs achievement with climate action.
- The opportunity is minimised or missed completely, depending on where we are along a long-term timeline until 2100.

2 Climate mitigation at a city-wide scale

Inspirational case-study: Climate action in Oslo, Norway

In the following sections, we will look at how favourable development pathways are being designed and implemented through climate action at a city-wide scale.

To contribute to the EU’s commitment to becoming a climate-neutral continent by 2050, ambitious European municipalities are addressing radical and systemic climate actions at their city scale. Several of them have made commitments to achieve rapid net zero GHG emissions by 2030.

Let’s look at a leading example of a municipality that is taking city-wide climate action.

Oslo, the capital of Norway, has successfully managed to align climate action commitments, goals and policies to contribute to the Paris Agreement’s aim of urgently limiting global warming to 1.5 to 2 degrees.

Oslo’s latest Climate Action Plan 2030 builds on the city’s past Climate and Energy and Adaptation Strategies. It is guided by an up-to-date inventory of the city’s emission source sectors to identify the largest sources of emissions (see figure).

It established five key 2030 goals for Oslo:

- A 95% reduction in GHG emissions by 2030 compared with 2009.
- Management of natural areas to sequester carbon in vegetation and soil.
- A 10% reduction in total energy consumption by 2030 compared with 2009.
- Strengthened resilience to withstand the impacts of climate change, with measures such as green roofs and water runoff space.
- Significantly lower impact on GHG emissions outside city boundaries in 2030 compared to 2020.

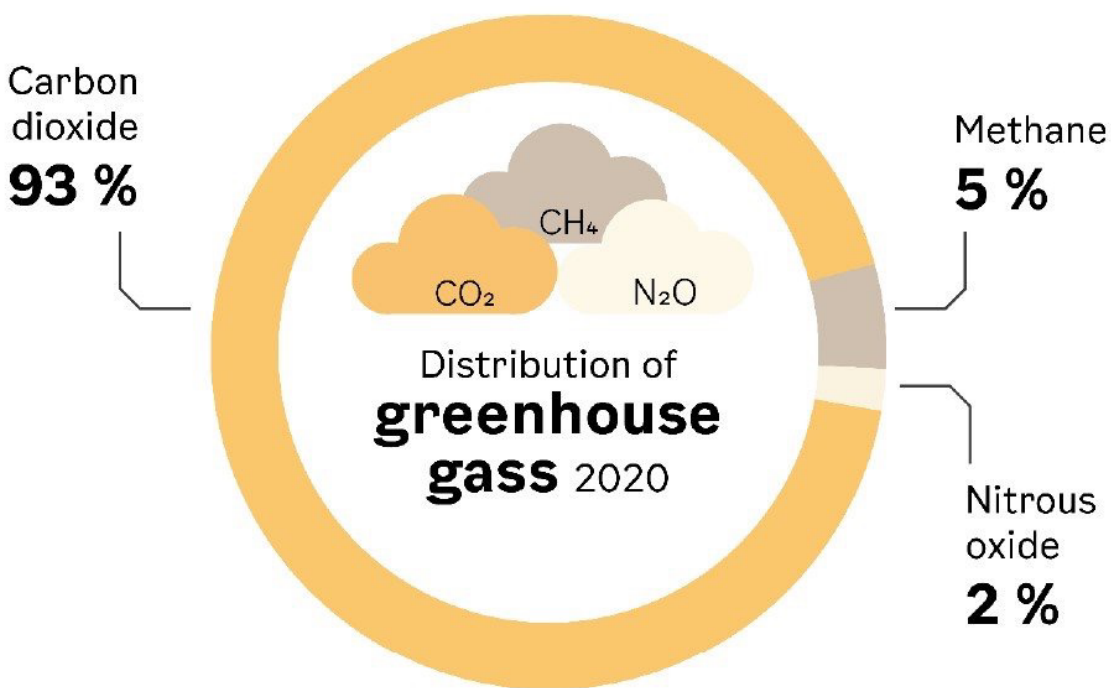


Source: Eirik Skarstein / Unsplash

2.1 Example of Oslo, Norway

GHG Emissions Inventory of a city

The City of Oslo has built a robust GHG Emissions Inventory as a database to measure the distribution of greenhouse gas emissions and to inform their climate actions and strategies with evidence.



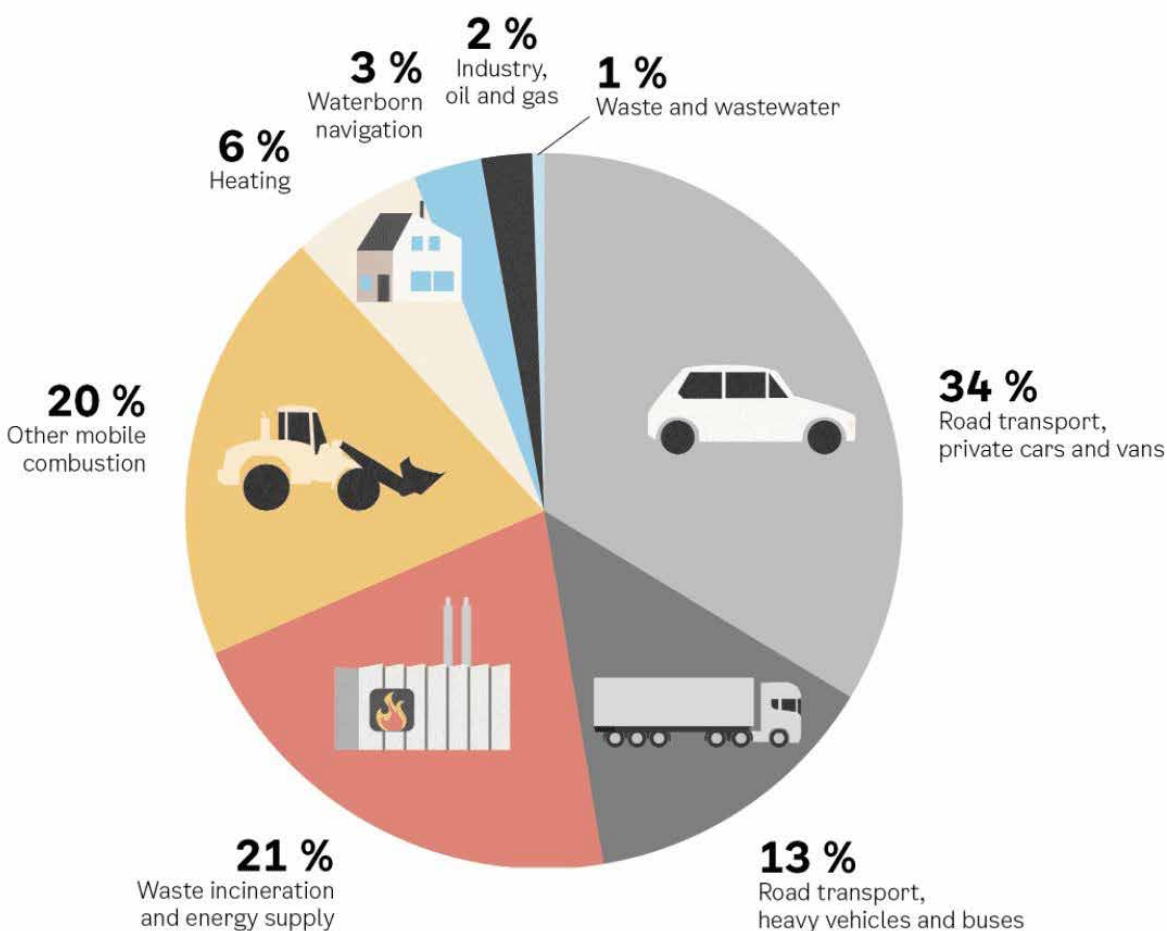
Source: Municipality of Oslo

For Oslo, 93% of the greenhouse gas emissions, measured in CO₂ equivalents, are carbon dioxide (CO₂), 2% nitrous oxide (NO₂) and 5% methane (CH₄) – see pie chart below.

A carbon dioxide equivalent or CO₂ equivalent, abbreviated as CO₂-eq is a measure used to compare the emissions from various greenhouse gases based on their global-warming potential. CO₂ is calculated by converting amounts of other gases to the equivalent amount of carbon dioxide with the same global warming potential.

Oslo’s emission reduction targets focus on direct emissions, i.e., those emissions which occur within the city’s boundaries. One-fourth of direct emissions are generated by private vehicles and close to one-fourth by vans, lorries and buses.

The remaining share is mainly from building and construction and waste incineration at the city’s two incineration plants. All these GHG emissions must be eliminated for Oslo to achieve its target of a 95% cut in emissions (see pie chart below).



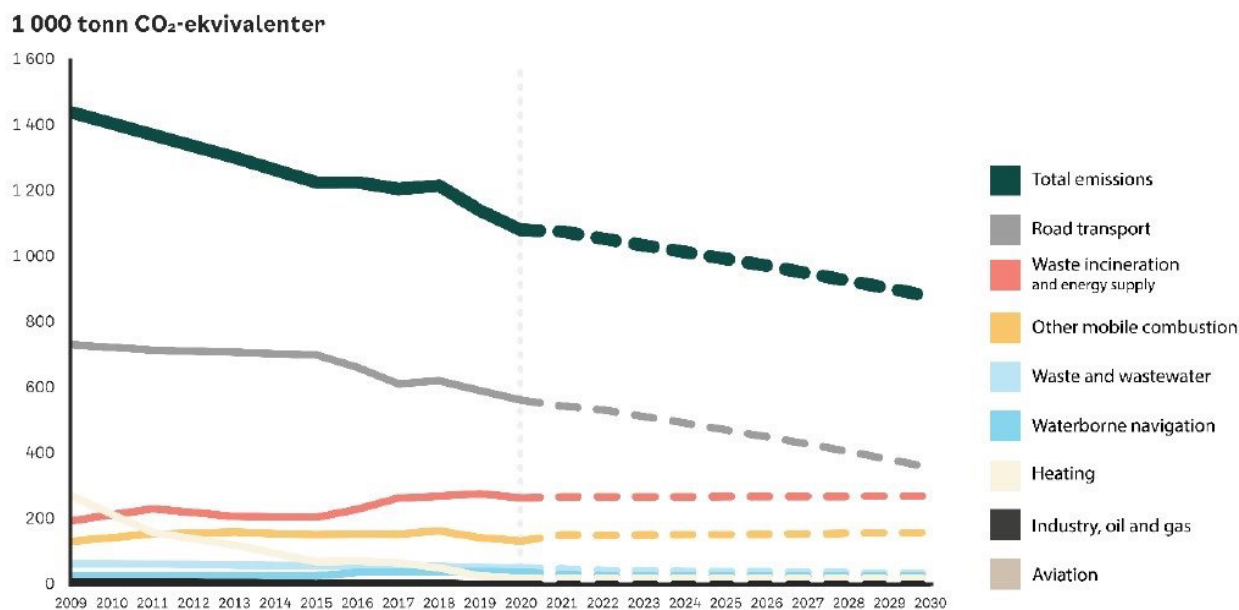
Source: Municipality of Oslo

Sector-wise roadmaps for GHG reduction

Based on the GHG emissions profile, the City of Oslo has selected 16 areas of priority to make it easier for citizens, communities and businesses to make climate-friendly choices every day. The priority areas reflect strategic and long-term decisions.

A 'Baseline Trajectory' is based on the best available knowledge about the historical emissions of a city, and based on assumptions about trends, such as population growth, economic development, technological innovation etc.

This trajectory for Oslo indicates emission reductions in multiple sectors until 2030 (see dotted lines in the diagram below), with the assumption that no new measures will be implemented after the baseline year of 2020.



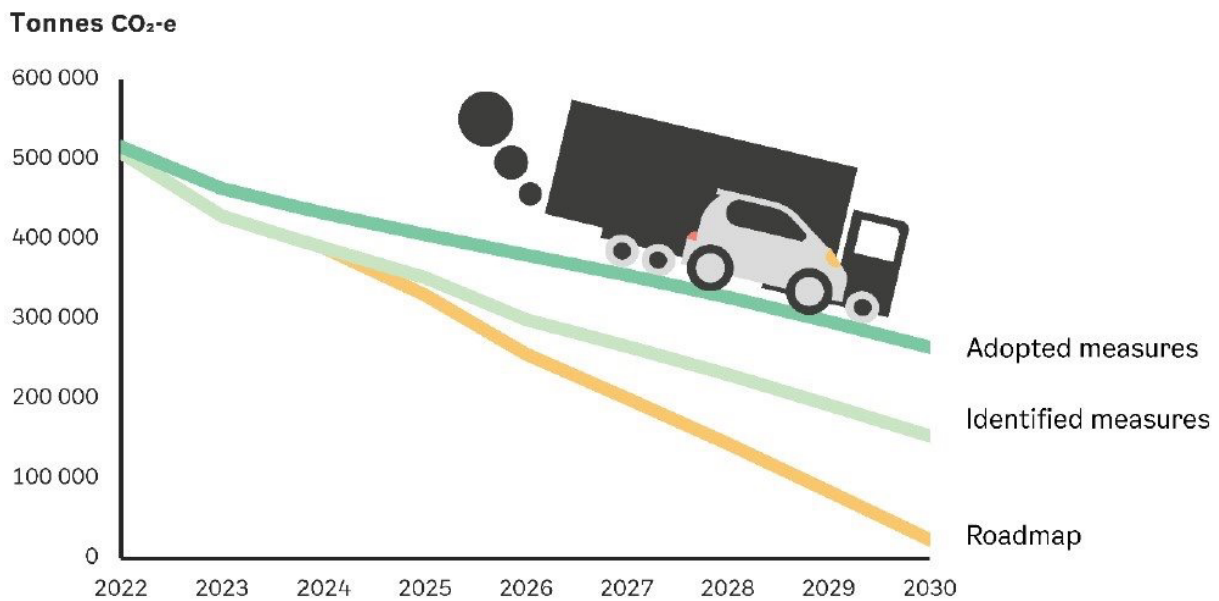
Source: Municipality of Oslo

Sector-wise strategies for GHG reduction

As a sector-wise example, transport accounts for around half of Oslo's direct GHG emissions. Most of Oslo's emission reduction until 2020 came from road transport measures (such as a large modal share of Electric Vehicles), along with contributions from enhanced waste management, and electrification of some shipping services.

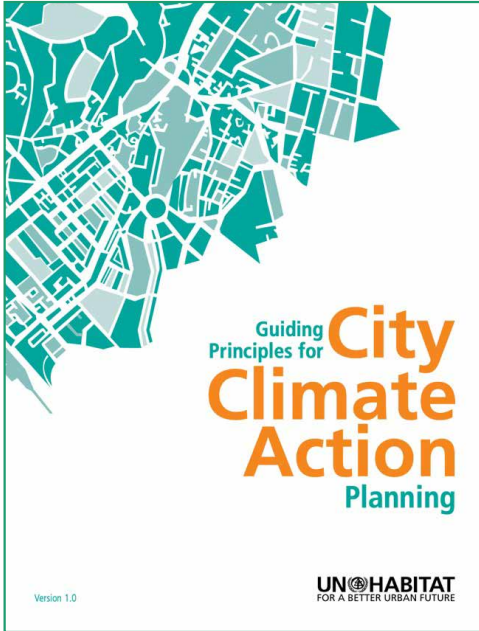
The City of Oslo has also adopted a range of climate mitigation measures based on their sectoral roadmaps under the Climate Strategy 2030. For the transport sector, measures such as bicycle pathways, switch to biofuels, parking reduction, priority to walking, cycling and public transport have already been adopted.

Moreover, identified measures like a carbon tax, zero-emission zones, and a switch to hydrogen fuels will further cut GHG emissions in favour of the 95% GHG reduction targets (see diagram below).



Source: Municipality of Oslo

2.2 Summary of key actions in critical sectors: Which sectors can cities or towns focus on to reduce GHG emissions?



As we have seen from the case of Oslo, municipalities need to take climate action across a range of critical and city-wide sectors.

This can include, but is importantly not limited to the following, which has been adapted from UN-Habitat. Read more in the report here:



Sustainable mobility and transport (reduce motorised traffic, shift to walking and biking, electrifying public transport, logistics, etc.)

- **Building and energy** (energy efficient renovation, LED street lighting, energy audits, heat pumps, district heating/cooling, etc.)

- **Renewable energy** (solar, wind, hydro-power installation, biomass, grid system flexibility, installing smart grids, micro-grids, etc.)

- **Land-use and forestry** (nature-based solutions: green walls, green roofs, tree planting, increasing green open spaces, etc.)

- **Material extraction and production** (Circular Economy) (industrial processes, sustainable value chains, recycling, reuse of secondary raw materials, etc.)

- **Waste and waste-water management** (reducing plastic use, composting, anaerobic digestion, waste-to-energy conversion, etc.)

- **Food systems** (urban agriculture, organic waste collection, reducing food waste, surplus food donations, etc.)

- **Digital and data solutions to monitor GHG emissions** (sensors, Internet of Things, GPS, Digital Twins, etc.)

3 Inspirational solutions for cities and towns

In this section we are drawing attention to several successful and innovative initiatives on addressing mobility and energy, these are:

- **Mobility and Transport –
Super-blocks in Barcelona, Spain**

- **Mobility and Transport –
Low Emission Zones (LEZ) in Berlin, Germany**

- **Mobility and Transport –
15-Minute City Concept in Paris, France**

- **Buildings & Energy –
One-Stop-Shop for building renovation**

- **Buildings & Energy –
Positive Energy Districts (PEDs)**

- **Circular Economy –
Reusing construction waste
and building materials in Austria**

- **Citizen participation –
Energy communities initiative
in Ghent, Belgium**

- **Citizen participation –
Citizens’ Climate Assemblies in Camden
Borough, London**

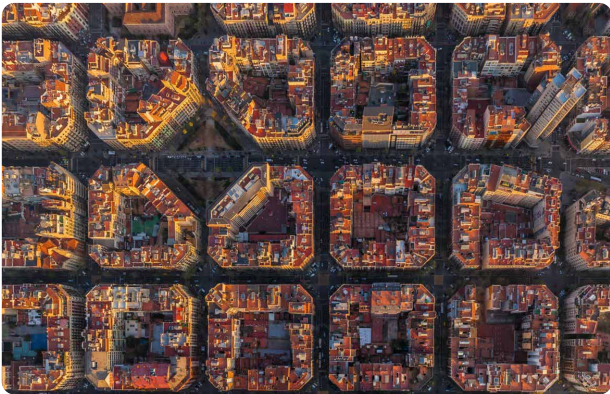
- **Climate budgeting –
Embedding cross-departmental responsibility
towards climate actions in Oslo, Norway**

3.1 Mobility and Transport – Super-blocks in Barcelona, Spain

The concept of “Superblocks” is an urban innovation that aims at low-carbon mobility following a participatory approach at the city and neighbourhood level. This solution has been successfully implemented in the Spanish city of Barcelona since 2017.

The idea is that the city, at the neighbourhood level, is reorganised into compact car-free areas that maximise public space for new social and ecological uses and keep road traffic outside the neighbourhoods.

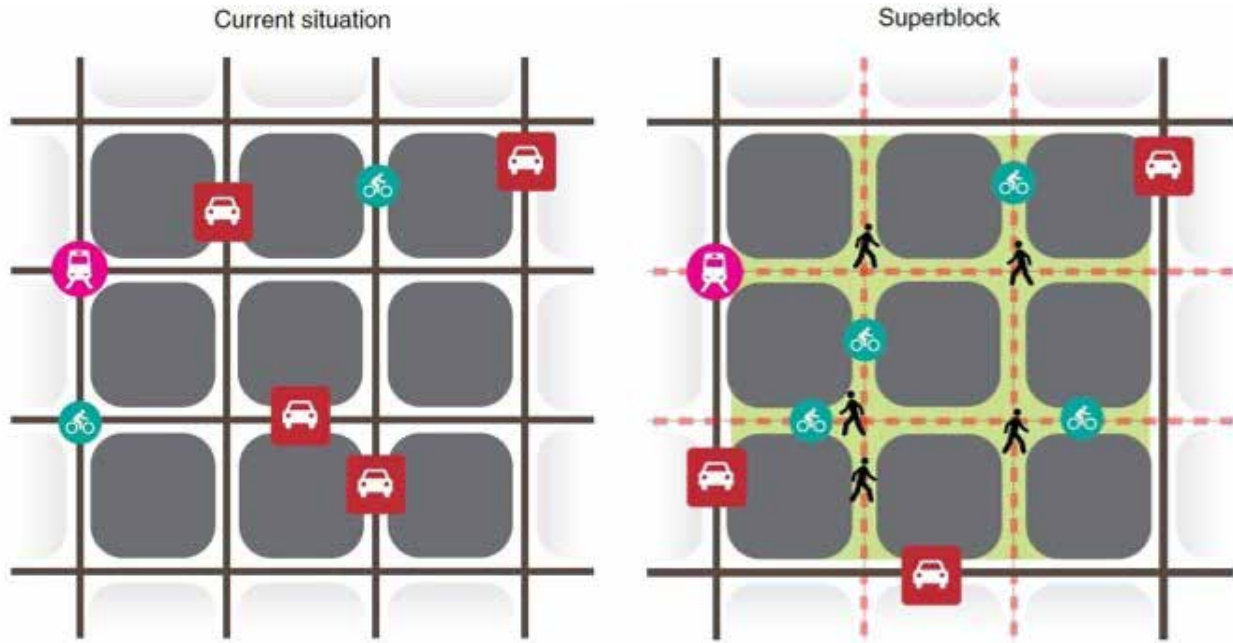
Inner streets within the blocks are redesigned primarily used by pedestrians. The planning process and mobility behaviour change after implementing the infrastructure changes are also supported by strong public communication and community engagement measures. This helps create credibility for the initiative, enabling the city to overcome conflicts of interest and adjust its mobility plans to the needs of the public.



Source: CitiesForum: Aerial view above of Barcelona superblocks, Spain. Image Copyright: Westend61 / Amazing Aerial



Source: CitiesForum: Public space in a Superblock. Photo by: Anna Beltri



Source: Sven Eggimann

Along with the reduction in CO2 emissions from transport, one of Barcelona's several Superblocks (Sant Antoni neighbourhood) also resulted in co-benefits such as –

- Air quality improvement (NO2 reduced by 33% in a year),
- Reduced noise pollution by 4db in a year,
- Traffic reduction of 92% in neighbourhood streets,
- Increased surface area and road safety for pedestrians.

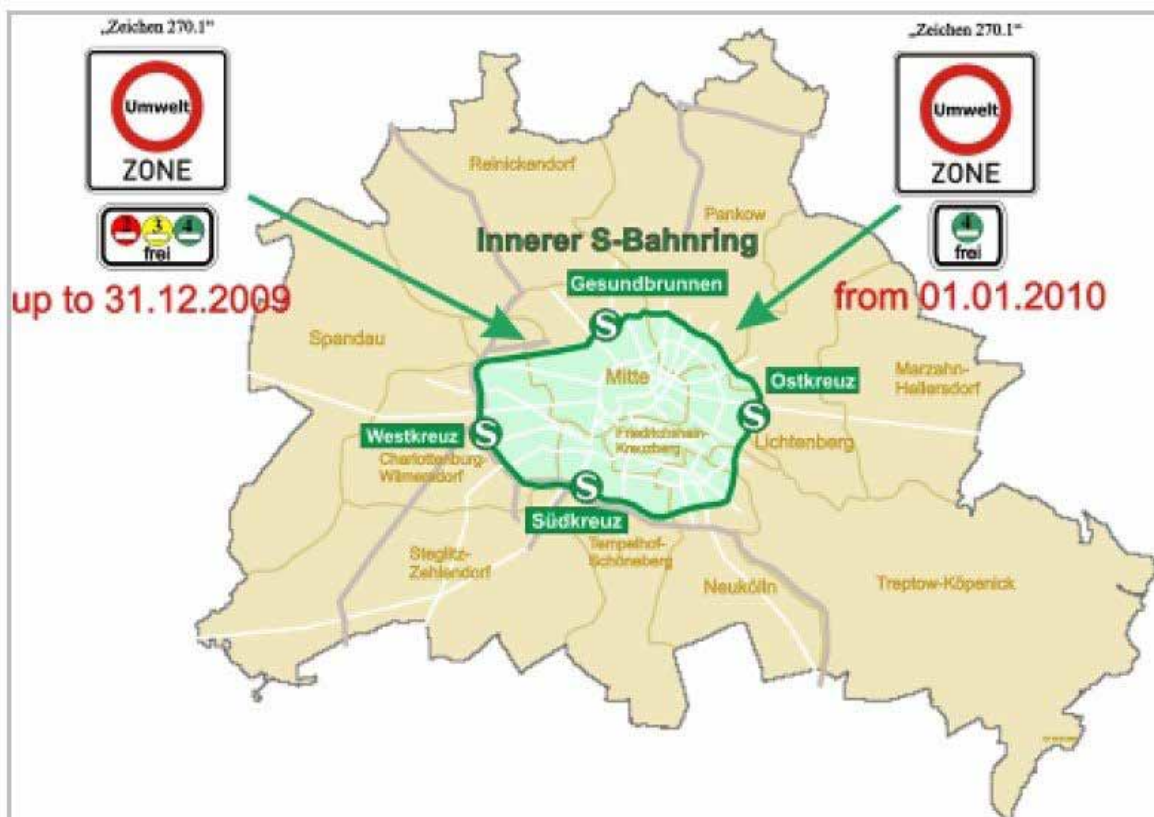
3.2 Mobility and Transport – Low Emission Zones (LEZ) in Berlin, Germany

A LEZ is a geographically defined area in a city where traffic access is limited to vehicles that meet certain emissions standards, aimed at reducing the level of transport emissions. Stricter versions of a LEZ can include Ultra-Low-Emission Zones (U-LEZ) or Zero-Emission Zones.

Enforcement must be carefully considered so that only vehicles meeting the current standards are able to access the zone. It should be noted, that LEZs only act on emission standards, independent of the number of kilometres driven, i.e., they do not help to reduce the total number of vehicles in an area.

Low-emission zones are generally introduced in stages, meaning they become increasingly strict over the course of several years. This allows citizens and businesses time to adapt to the changes by purchasing lower-emitting vehicles, retrofitting existing vehicles where possible or finding other modes of transport within the LEZ area (e.g., walking, cycling, public transport, e-scooters). Early and regular communication also allows citizens to adapt their behaviour to the new situation.

Co-benefits of LEZs comprise: reduction of GHG emissions, reduction of energy needs, improved land use management, improved air quality, and reduction of urban heat islands.



Source: Senate Department for Urban Development and the Environment Berlin. The map shows environmental zones indicating the start of the environmental zone, where certain restrictions on vehicle emissions are in place.

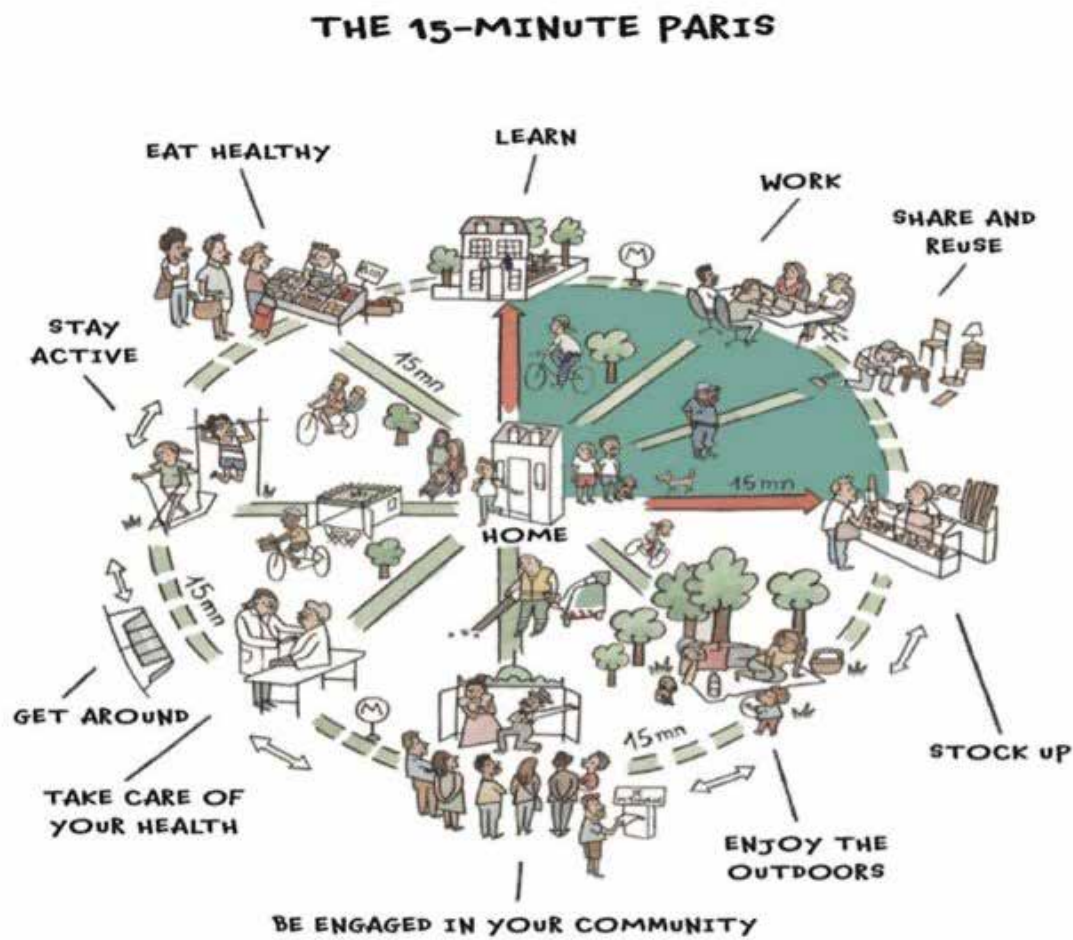
3.3 Mobility and Transport – 15-Minute City Concept in Paris, France

The concept of the 15-minute city is one of the most prominent attempts to avoid or shorten trips in people's everyday lives. This can be achieved if essential services (e.g., shops, pharmacies, schools, workplaces, hospitals, leisure destinations etc.) are physically close to people's residences. The 15-minute city concept is therefore tightly linked to city-wide spatial planning strategies and emphasises neighbourhood-based planning.

This concept was successfully adopted by Paris to inform their mobility and urban planning strategies, as well as address their net-zero goals and post-pandemic economic recovery.

The 15-minute city can be a major contributor to GHG reduction strategies because fewer and/or shorter trips mean fewer emissions, but also because shorter trips are easier to cover on bike or by walking.

A 15-minute city is also beneficial in terms of convenience, accessibility, safety and public health. Shorter trips also improve social equity because people who do not want to or are not able to own and/or drive a car can still reach their destinations.



Source: Municipality of Paris

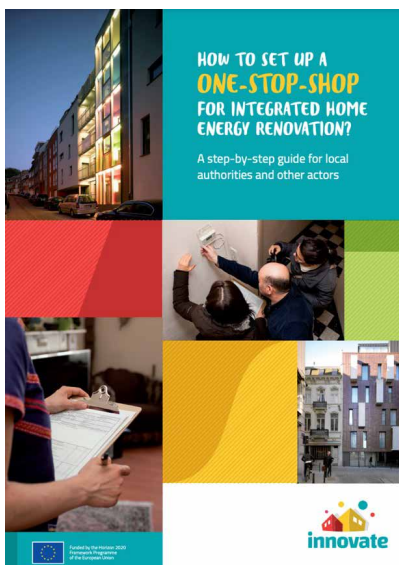
3.4 Buildings & Energy – One-Stop-Shop for building renovation

A one-stop shop is a collective term for services offering integrated renovation solutions with the main intention of simplifying the renovation process for homeowners. A one-stop-shop is a virtual and/or physical place where homeowners can find all information and services, they need to implement an ambitious global energy renovation project.

One-stop shops can play a key role in addressing a town or city’s GHG reduction goal, by interconnecting funding opportunities, incorporating solutions to new regulatory requirements, organising training and apprenticeship programmes and supporting various awareness-raising activities. Their co-benefits include – reduced energy needs, improved access to information, and raising awareness/behavioural change.

In order to increase the renovation rate in one defined area, the one-stop-shop needs to cover the following services and propose them, ideally, ‘under one roof’:

- Proactive engagement of homeowners with targeted communication and marketing to connect with the right groups at the right moment (e.g., young families, elderly people, low-income households, etc.).
- Tailormade energy renovation and financial plans for achieving deep renovation, depending on the financial means of each homeowner.
- Coordination of the renovation process on behalf of the homeowner.
- Long-term and affordable financing: especially for low- and medium-income families, elderly people and other vulnerable groups who cannot access other financing means although the value of their energy savings is large enough to pay off.
- Guaranteed results and post-work monitoring including the quality of work and, ideally, energy savings.



Read more in this Energy Cities guide on “How to set up a one-stop shop for integrated home energy renovation?”



3.5 Buildings & Energy – Positive Energy Districts (PEDs)

Positive Energy Districts (PEDs) are neighbourhoods with annual net zero energy import and net zero CO2 emissions, generating more renewable energy than they consume yearly. PEDs are characterized by:

- Net-positive renewable energy production on a yearly basis (i.e., generation is more than annual consumption),
- High energy efficiency,
- Use of flexible and diversified renewable energy technologies,
- Focus on providing inclusive, affordable, and sustainable lifestyles, along with economic advantages for residents.

PEDs usually also include renewable energy generation (like solar panels), energy storage batteries and electric vehicle (EV) charging solutions. They also require integration of different systems and infrastructures and interaction between buildings, the users and the regional or local energy networks, mobility and info-communication technology (ICT) systems.

PEDs bring various social benefits such as a comfortable living space, modern services for citizens, recreational areas, job creation, and opportunities for citizens and other local stakeholders to participate in community governance. PEDs also contribute to the decentralisation of the energy generation system and foster energy democracy.

The use of energy conservation and renewable energies in PEDs also decreases the costs of heating or cooling, and reduces the production of electricity, resulting in less GHG emissions and pollution and a decreased ecological footprint of cities and towns.



Source: Andrew Glaser / Wikimedia Commons

3.6 Circular Economy – Reusing construction waste and building materials in Austria

Since 2016, Austria has implemented progressive regulations to encourage the recycling of building and demolition waste. Six local organisations formed the ‘BauKarussell’ collaboration (translated as Construction Carousel) to help Austria adopt green building practices rapidly to comply with present and future building regulations.

To optimise their deconstruction initiatives, builders and project developers can use operational services from BauKarussell. Reusable and recyclable components are taken during the pre-demolition deconstruction phase and stored for future sale. Reusable building parts are promoted in an online catalogue and sold to consumers and businesses, resulting in circular patterns of material consumption. The operational deconstruction work is then funded by the proceeds from recycling high-value materials and reuse, which is undertaken by neighbourhood social entrepreneurs.

The deconstruction activities employ, train, and qualify individuals with labour market disadvantages, thereby facilitating regional employment options for these individuals.

These solutions potentially also reduce GHG emissions, boost local business, contribute to raising awareness/behavioural change, increase skill development and better waste management. It could also promote the materials cycle and reduce ecological footprint.



Source: Harald A. Jahn / BauKarussell

3.7 Citizen participation – Energy communities initiative in Ghent, Belgium

Energy communities are communal and citizen-driven energy initiatives that advance the transition to clean and resilient energy systems while empowering citizens. They help to broaden public support for renewable energy uptake and make it easier to attract private capital for the transition. By improving energy efficiency, reducing consumers' electricity costs, and generating local jobs, they also have the potential to directly benefit citizens.

Energy communities can contribute to the flexibility of the electricity system by encouraging public participation in demand response and storage. By harnessing energy and enabling residents to actively participate in the energy transition, these initiatives provide a way to restructure our energy systems and unlock several co-benefits.

Energy communities may be organised as any type of legal structure, such as an association, a cooperative, a partnership, a non-profit, or a small-to medium-sized business. It makes it simpler for its residents to work together with other stakeholders in the market and participate in shared energy assets.

As a result, the energy communities can function as one entity and access all suitable energy markets, on a level playing field with other market participants. This helps to contribute to a more decarbonized, resilient, and flexible energy system. In the suburb of Sint Amandsberg-Dampoort, the city of Ghent successfully tested an energy community project between 2018-2020. With the installation of solar panels, the pilot aimed to improve local renewable energy generation and spread out the costs and profits equally within the community. The project offered a chance to investigate the policy framework and business models for producing local energy at a reasonable cost from renewable sources.



Source: Buurzame Stroom / Neighbourly Power

3.8 Citizen Participation – Citizens’ Climate Assemblies in Camden Borough, London

A citizens’ assembly is a participatory process where a randomly selected group of citizens learn about and deliberate upon a specific issue or policy, and collectively produce recommendations for decision-makers.

A citizens’ assembly aims to bring together a group of everyday people who broadly reflect the wider community, to deliberate on an important public issue and based on extensive learning and deliberation, provide recommendations. Recommendations can be on a specific policy, or more broadly on an issue. The assembly’s recommendations should inform policy and decision-makers and there should be sufficient budget and planning in place so that organisers and authorities can stay in touch with the assembly participants and support them in their own communities.

Engagement for citizens’ assemblies can happen through public surveys/ submissions, online platform discussions, outreach and community engagement activities and media outreach. Industry, science and technology, and academia may perform different functions including joining the advisory group, providing expert evidence to the assembly, and observing and evaluating the process.

In the Camden borough of London, over 50 randomly selected residents came together in July 2019 for the ‘Camden Citizens’ Assembly on the Climate Crisis’ to co-create a strategy for how Camden can best address the climate emergency.

The citizens’ assembly held three sessions, during which it heard evidence from a variety of sources outlining the facts related to the ecological and climate crisis and possible solutions. It then developed and adopted 17 actions that Camden residents, community organisations, businesses, and the council should implement.



Source: Camden Citizens’ Assembly / The Involve Foundation

3.9 Climate budgeting – Embedding cross-departmental responsibility towards climate actions in Oslo, Norway

For effective implementation, a city’s climate action must be included in all departments and agencies' daily operations, duties, responsibilities, and working methods, as well as in interdepartmental cooperation. This should be a continuous process that enables annual adjustments that are well-informed. This can be done by using the city's standard financial budget and governance with a governance approach called ‘climate budgeting’.

Under a climate budget (ideally also aligned with a climate action plan), climate mitigation and adaptation strategies are recommended, put into action, tracked, and reported as part of the city’s financial planning process.

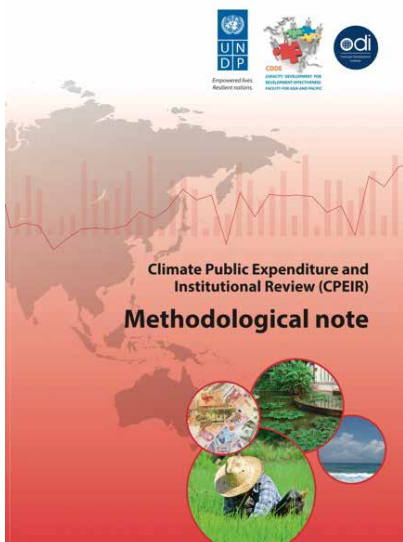
By establishing cross-departmental clarity of vision, allocating responsibilities within the municipal government, and ensuring that departmental resources are targeted to achieving climate goals, it facilitates horizontal coordination and internal collaboration.

Climate budgeting modifies the city's governance structure as well as essential documents and procedures towards a city’s climate action commitments. The municipality's financial budget processes, including guidelines, templates, and other associated materials, are also integrated within the climate budget. For this process to be effective, it also requires commitment at the political, mayoral and executive levels.

In Oslo, the city's climate budget is under the control of the Deputy Mayor of Finance. The Climate Agency was founded to coordinate the city's efforts to achieve its climate goals and advance cross-sectoral projects. It drafts the climate budget document, estimates emission reductions from climate actions, and provides technical support and guidance to all stakeholders. The agency also publishes budget instructions with guidelines and templates to assist departments in creating and submitting proposed measures.



Source: Oslo City and Fjord. Marian Rotea / Unsplash



You can learn more about the methodology on Climate Public Expenditure and Institutional Review (CPEIR) in this publication by UNDP and Overseas Development Institute (ODI).



4 Test your learning & reflect on the lessons learned

4.1 Quiz

Q1 - Which of the following is a greenhouse gas causing global climate change? (Click on all the correct options.)

- A) Carbon dioxide (CO₂)
- B) Methane (CH₄)
- C) Nitrous oxide (N₂O)
- D) Helium (He)
- E) Fluorocarbons (FCs)

Q2 – Which of the following actions can help a city or town’s climate mitigation? (Click on all the correct options.)

- A) Increased public transport use.
- B) Reduced fossil fuel consumption.
- C) Increased organic waste treatment.
- D) Increased renewable energy generation.
- E) Increased installation of district heating.
- F) All the above.

Q3 – Which of the following is not a characteristic of Positive Energy Districts?

- A) Use of diverse renewable energy technologies.
- B) Increased costs for heating and cooling.
- C) Increased energy efficiency.
- D) Sustainable lifestyles of residents.
- E) Net-positive renewable energy generation.

4.2 Reflection Questions

Based on the topics covered in this module, please reflect and discuss the following questions:

Q1. Think of the case of the City of Oslo presented in this module. Does your city or town have greenhouse gas (GHG) inventory in place?

Q2. Does your city or town have a clear idea of which sectors are the sources of the most emissions and need to be tackled urgently through climate mitigation measures?

Q3. Think of the list of critical sectors to address for effective climate mitigation. Which are the most relevant for your city or town and why?

Q4. Of all the inspirational cases above, which one would you like to introduce in your city or town?



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Module 2

**Climate
Neutrality –
Deep Dive
(Part 2)**

Module 2

Climate Neutrality – Deep Dive (Part 2)

1 What this module will cover

Module overview and links with the P4EG course

As pointed out in the previous module, climate neutrality means living in a way that produces no net greenhouse gas (GHG) emissions. Municipalities alongside local actors have a key role to play in supporting and orchestrating such a transition.

This module illustrates the adverse impacts, risks and shocks related to global warming for cities, towns, and regions. The module also outlines the climate actions that a city or town can undertake to address crosscutting areas to bridge the divide between technological, governance or sectoral siloes.

This module consists of:

- Climate Neutrality Deep-Dive part 2
- Climate adaptation and resilience at a city-wide scale - Inspirational case study: Building Resilience in the City of Warsaw
- Inspirational solutions for cities and towns with focus on climate resilience

The module connects with two of the P4EG steps outlined in the P4EG Course Modules:

- Reviewing of Global national and local context (Module 3); and
- Local Economic Situation Assessment (Module 4)

Learning Objectives

- Understand the basic concepts of climate adaptation and resilience, important for a Green & Transition: climate adaptation, climate resilience, climate justice, co-benefits – what do they mean in practice for cities and towns?
- Learn about the urgency to adapt to climate change in Europe, based on scientific assessments of adverse impacts and risks of global warming that cities or towns will potentially face.
- Learn from inspirational solutions and examples of how European cities are addressing climate adaptation and resilience through actions in cross-cutting areas, such as citizen participation, municipal finance, master planning, and circular economy.

1.1 Basic concepts

The first step to learning about climate adaptation and resilience is to understand what cities need to adapt and be resilient to.

The effects of climate change can be classified into two main unintended consequences that require cities to adapt to:

A) Transformational: Long-term yet discrete effects on natural processes on which cities rely to function. For example, effect on regional agriculture which will impact on supply chains that feed the city – which might drive changes in food behaviours and food growing methods.

B) Hazard profile change: Climate change will alter the hazard profiles, exacerbating destructive forces associated with natural phenomena like floods, heatwaves, cyclones, etc. This will mean cities need to take actions to reduce the risk impact of these intense hazards like improving drainage capacities through nature-based solutions, etc.

Even though both consequences require urgent adaptation to social, economic and technical processes in cities, in this module, we primarily focus on the hazard profile change and the adaptation required to reduce increased physical risks related to climate change.

Climate change is increasing the probability, severity, and frequency of climate-related hazards, hence also increasing the risk of damaging cities, their populations and livelihoods. It is key then to understand what the components of climate-related risks are, so cities can assess, plan, and implement actions to increase their climate resilience. Climate risk results from the interaction of a hazard; the exposure; and the vulnerability of the location where the hazard is taking place.



Definition of key components of climate adaptation and resilience:

Climate change adaptation: A city's actions that help reduce exposure and/or vulnerability to the impacts of climate change hazards – such as rising temperatures, biodiversity loss, natural disasters (hurricanes, floods, heat waves, droughts, etc.), sea-level rise and coastal erosion.

Climate resilience: The capacity of a city, town or community to anticipate and manage dangerous climatic events and recover and transform after the resulting shocks, with minimal damage to societal well-being, economic activity, and the environment.

Climate risk: The potential for adverse consequences of a climate-related hazard on lives, livelihoods, ecosystems and species, physical and cultural assets, and infrastructure. Risk is commonly understood as the results from the interaction of vulnerability (of the affected system), its exposure over time (to the hazard), as well as the (climate-related) hazard and the likelihood of its occurrence.²

Climate Hazards: The potential occurrence of a climate-related physical event or trend that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources.³ The impact (risk) of climate hazards in cities will vary depending on its location, intensity, frequency, and probability, and on the vulnerability and exposure of the physical and social assets. Examples of climate hazards include coastal flooding, cold and heat waves, drought, landslides, heavy rains, wildfire, strong wind, etc.⁴

Vulnerability: This is the propensity or predisposition of the city, or parts of it, and its inhabitants to be adversely affected by a hazard. Vulnerability encompasses a variety of concepts and elements including physical, socio-economic and cultural aspects.

Exposure: The presence of people; livelihoods; environmental services and resources; infrastructure; or economic, social, or cultural assets in places that could be adversely affected.

² Adapted from: Glossary — Global Warming of 1.5 °C (ipcc.ch)

³ Adapted from: Glossary — Global Warming of 1.5 °C (ipcc.ch)

⁴ Adapted from: <https://toolkit.climate.gov/steps-to-resilience/understand-exposure>

Other relevant concepts related to climate adaptation and resilience: There are several other concepts that are often referred to across climate adaptation and resilience, including:

Climate justice: Means putting equity and human rights at the core of decision-making and actions on climate change. It especially focuses on economically weaker or marginalised communities, historically left out of the decision-making process and benefits.

Nature-based solutions: They support climate change adaptation and mitigation by using natural systems and processes to restore ecosystems, conserve biodiversity, and enable sustainable livelihoods. They are designed and implemented with the engagement and consent of local communities and citizens.

Co-benefits: These are the positive side-effects (i.e., social, environmental or economic benefits) as a result of a city's climate mitigation activities. For e.g., better air quality, better health or well-being, improved public transport, reduced noise pollution etc.

Carbon sinks or sequestration: The process of absorbing, removing, and storing GHG from the atmosphere – through actions such as planting trees or capturing carbon from biofuels and bioenergy plants. It completes cutting GHG emissions to slow climate change.

Adaptation pathways: A series of adaptation choices involving trade-offs between short-term and long-term goals and values. These are processes of deliberation to identify solutions that are meaningful to people in the context of their daily lives and to avoid potential maladaptation.⁵

1.2 The urgency to adapt to climate change: Findings from the latest IPCC assessment

Between the years 2000 and 2019, 7,348 major disasters affected 4.2 billion people globally and caused economic losses of approximately USD\$3 trillion.⁶ This is estimated to be almost double the number of disasters and economic losses from the previous two decades⁷ and will likely continue to increase, with an estimation of 560 disasters per year by 2030.⁸

While cities offer economic opportunities and protection to many, the high concentration of economic and infrastructural assets and people make it very exposed to the potential impacts of climate change.

In this IPCC diagram, three representative generations (born in 1950, 1980, and 2020) are used to show how the climate has already changed and will change over the course of the next century based on observed (1900–2020) and projected (2021–2100) changes in global surface temperature (as compared to 1850–1900).

Global surface temperature increases are projected for the years 2021–2100 for various GHG emission levels, from very low to very high ranges. Annual global surface temperature changes are shown as "climate stripes," with forecasts for the future showing how the most recent generations will face the most severe global warming effects until 2100 and beyond.

⁵ Glossary — Global Warming of 1.5 °C (ipcc.ch)

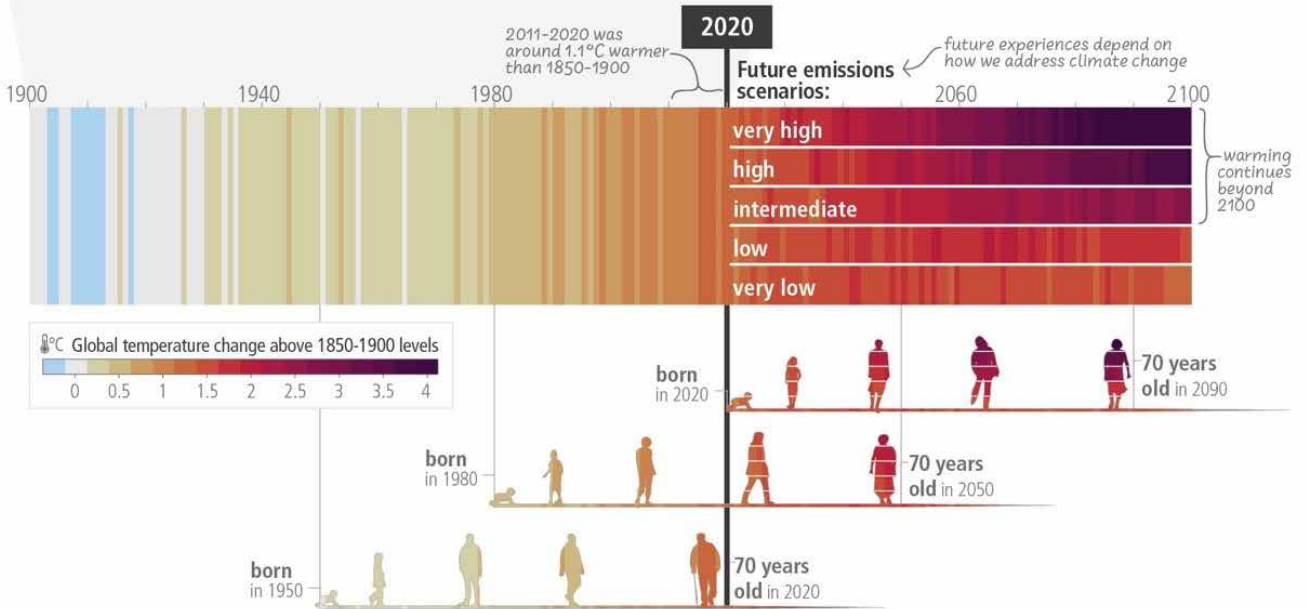
⁶ <https://www.undrr.org/publication/human-cost-disasters-overview-last-20-years-2000-2019>

⁷ <https://www.undrr.org/publication/human-cost-disasters-overview-last-20-years-2000-2019>

⁸ <https://www.undrr.org/gar/gar2022-our-world-risk-gar#:~:text=If%20current%20trends%20continue%2C%20the,lifetime%20of%20the%20Sendai%20Framework>

These findings indicate the urgent need to both reduce GHG emissions to prevent the worst climate impacts, as well as strengthen efforts towards climate adaptation and resilience.

c) The extent to which current and future generations will experience a hotter and different world depends on choices now and in the near-term



Source: IPCC 6th Assessment Report

Far-reaching and adverse impacts of human-caused climate change

The IPCC predicts the following widespread impacts and related loss and damage, as a result of climate change. It is worth noting again that these impacts disproportionately affect the vulnerable or low-income communities in a city or town and countries.

- Increase in agricultural and ecological droughts,
- Increase in weather-related fire incidents, like wildfires,
- Increase in heavy precipitation; Inland flooding and associated damages,
- Increase in flood or storm-induced damages in coastal areas;
- Sea-level rise,
- Damages to infrastructure (roads, electricity grid, water supply, sewage etc.),
- Increase in hot temperature extremes and heat island effects,
- Decreased water availability, water quality and groundwater depletion,
- Decreased crop, livestock, or fisheries production; Vector-borne diseases.

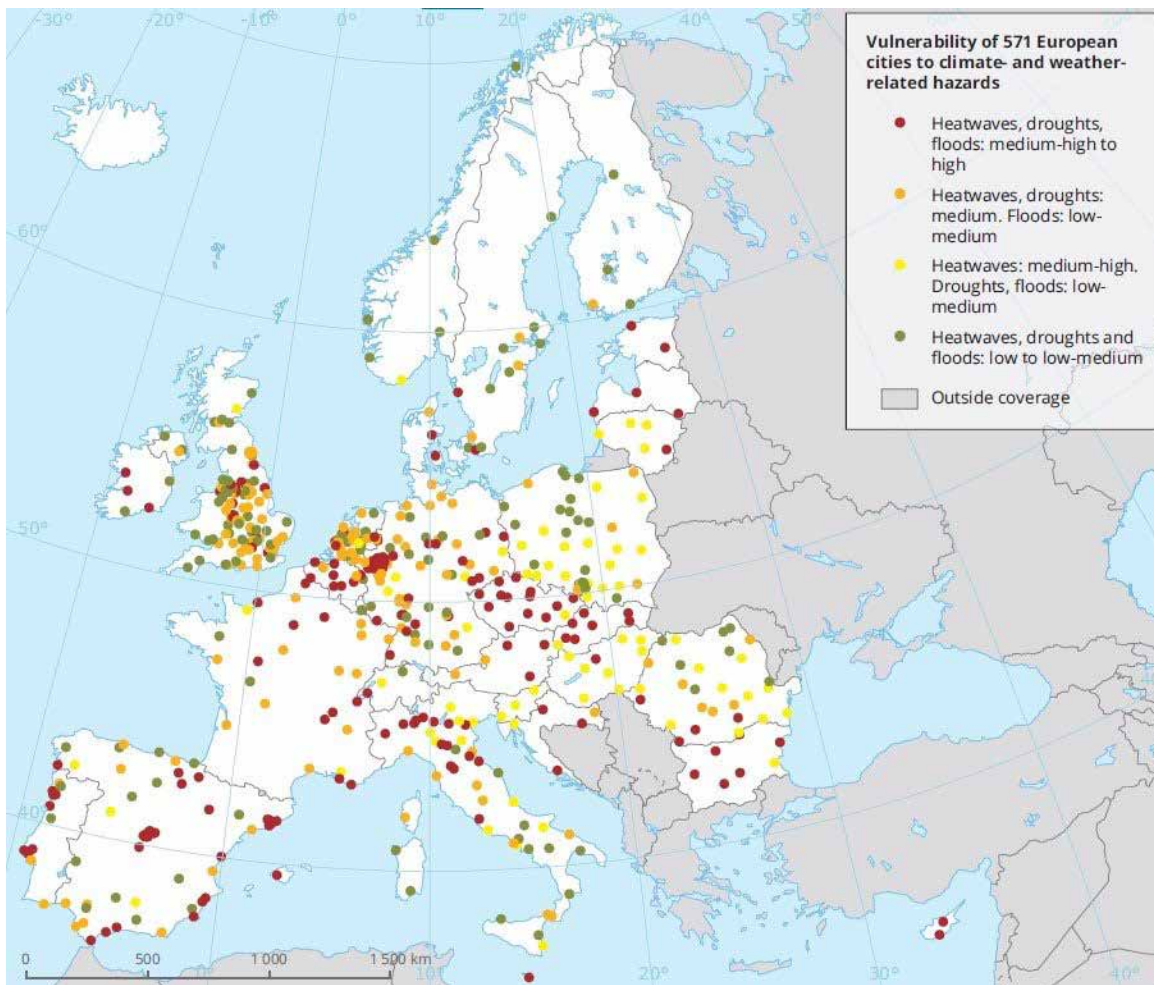
1.3 The urgency to adapt to climate change: Adverse impacts and risks in Europe

In the coming years the frequency and magnitude of heatwaves, heavy precipitation, flooding, and droughts as the most harmful current climate and weather-related hazards is expected to increase. These hazards will primarily affect the natural environment, water management, buildings, and transportation.

Even if temperatures are projected to rise throughout Europe, cities in south-eastern Europe are expected to see the highest increase in the frequency of heat waves, the lowest amount of green space, and the strongest urban heat island (UHI) effect.

Most of Europe is expected to experience an increase in the frequency of heavy precipitation events. Increased surface sealing in cities and frequently inadequate sewer infrastructure worsen their effects. Due to their location in river or coastal floodplains, a sizable amount of residential, commercial, and other important types of land in European cities may be at risk of flooding.

Due to the overuse of water resources and an increase in the frequency and severity of droughts, water scarcity is also becoming a reality in cities in other European regions. The level of damage brought on by coastal flooding and coastal erosion is anticipated to increase with the projected sea level rise.

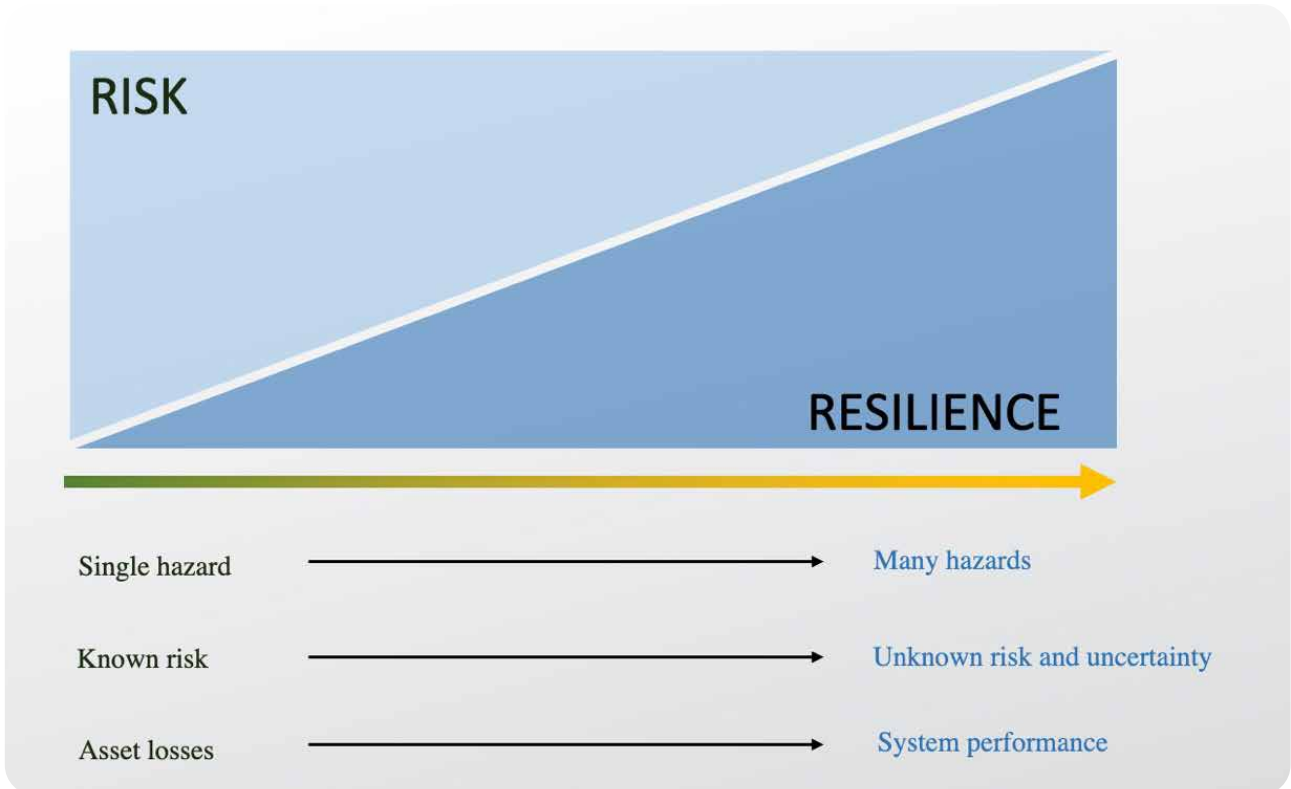


Source: European Environmental Agency (EEA)

1.4 Climate risk and resilience

Faced with the growing likelihood and severity of hazards as a result of climate change, it is important to shift our perspective from risk to resilience.

This means moving from an attitude of mitigating individual risks to building responsive processes and organizational structures that can withstand and recover from acute shocks and adapt in the face of ongoing stress, ensuring continued optimal system-wide performance.



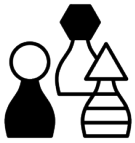
Relationship between climate risk and resilience. The illustration reflects a spectrum of risks that can be faced due to climate change, from specific, known issues to more complex and uncertain ones that can impact the entire system's performance.

Source: Arup

Understanding and acting towards climate resilience

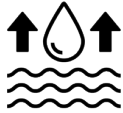
Developing more resilient urban systems is a process and not an immediate action.

This prospect can be daunting to start. However, some key questions can help to gain a greater understanding of how to build resilience in your urban context.



Resilience of what?

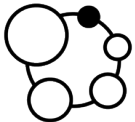
- What are the characteristics of urban systems in your town or city? Who are the people that live in the urban area? Consider the environmental, infrastructural, socio-economic and governance contexts.



Resilience to what?

- What are the key shocks and stressors that may and be plausibly experienced by urban systems in your town or city, and may adversely influence their ability to perform to the current or desired levels?

• In this course, we are focusing on resilience and adaptation to climate change, however, there are a broader set of stresses and shocks that are important to consider – such as conflict, health crises like pandemics, and others.



What resilience levels currently exist?

- How resilient are the urban systems of your town or city – and the urban dwellers, especially the most vulnerable – today and plausibly in the future considering the likely impact of climate change?



How to build urban resilience?

- What are the key areas of intervention and strategies needed to build the resilience of people and urban systems in your town or city?

2 Climate adaptation and resilience at a city-wide scale

Inspirational case study: Building Resilience in the City of Warsaw

We are already beginning to see the impacts of climate change on our towns and cities through more extreme weather events. As we have seen in the previous section, it is important for cities to shift towards a mindset of resilience, and to adapt to the coming impacts of change.

However, with cities being interconnected systems of systems, it is important for adaptation and resilience to take a holistic and integrated perspective across the whole of the city.

Let’s take a look at an example of a city that has taken a city-wide approach to climate change adaptation and resilience. The Polish capital of Warsaw, home to approximately two million people, has taken a city-wide approach to address climate change and achieve the city’s green vision:

“...to improve the quality of life of our citizens, achieve carbon neutrality by 2050 and enable us transition to a resilient, biodiverse and sustainable city.”

Through the Green Cities framework from the EBRD, Warsaw developed a Green City Action Plan (GCAP) to support Warsaw to develop a green vision of the future of the city. Importantly, the process supported the prioritisation of climate actions across both climate mitigation and adaptation.



Source: Warsaw City. Unsplash

2.1 Understanding current conditions

Warsaw established a city-wide understanding of the current state of the city with respect to key environmental and socio-economic elements.

A current state assessment of the city identified that a high proportion of Warsaw's infrastructure and households can be considered to be at risk of the hazards of climate change like heatwaves and flooding.

From a climate resilience perspective, this includes:

- 60% of residential buildings are considered to be at high risk to hazards from climate change.
- 84% of the area of public infrastructure, in relation to the total area of roads and buildings in the city is considered to be exposed to high risk.
- 19% of residents are exposed to increased risk from flooding across the city.



Source: Warsaw City. Unsplash

2.2 Planning and prioritising climate action

To help bring the plan to life, 27 specific actions were identified for Warsaw. Actions were developed across the key urban themes of: Buildings, Transport, Energy infrastructure, Planning and Blue-Green Infrastructure, and Waste management

- Removing impermeable surfaces through implementing blue-green infrastructure such as rain gardens, green roofs and facades. As well as preserving and restoring green spaces including greenways and routes throughout the city. This increase in permeable green spaces can help to provide a cooling effect across the city and sustainably manage heavy rainfall.
- Improving the energy efficiency and heat sources of buildings across the city to reduce the dependency on fossil fuel energy and price volatility. This can help to support reductions in energy poverty and the vulnerability of residents to the impacts of our changing climate, such as in cold- or heatwaves.



Warsaw's existing and planned nature corridors.

Source: Environmental Protection Program for the Capital City of Warsaw for the years 2021-2024; The Board of Greenery of the capital City of Warsaw

2.3 A focus on implementation and monitoring

Alongside each of the actions, relevant funding opportunities were also identified to support implementation; from municipal budgets, as well as other external sources such as National funds, International Financial Institutions, EU Grants, and public-private partnerships. To help guide and monitor Warsaw's journey towards climate resilience and adaptation, a set of indicators has also been developed. The indicators cover environmental quality, natural resource availability, climate change risks, energy efficiency as well as urban transportation, buildings, electricity, heat consumption, and water and waste infrastructure.

You can find more information here:
The Green Vision of Warsaw - 20.04.2023 »
EBRD Green Cities



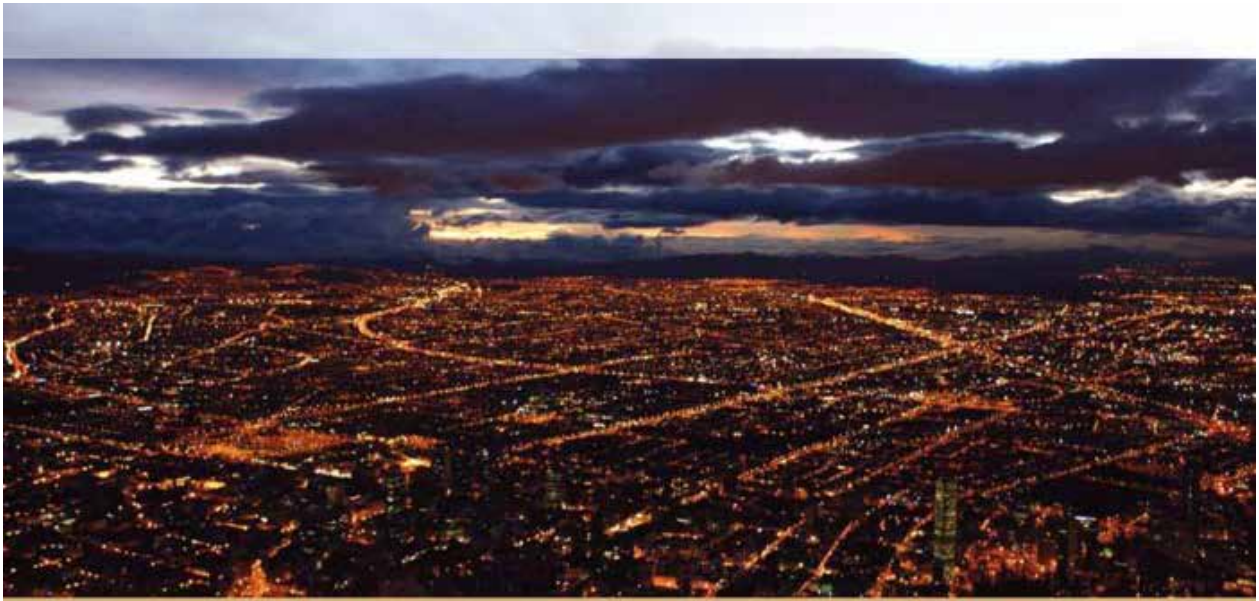
2.4 What might climate adaptation and resilience look like in practice?

In a similar way to the first module, there are a range of actions in critical sectors to support climate adaptation:

Which sectors can cities or towns focus on to build resilience?⁹

- **Sustainable mobility and transport** (grey-to-green infrastructure, greening roads and increasing permeable surfaces, considered placement and design of transport infrastructure)
- **Building and energy** (climate adaptive design like insulation and ventilation, location of structures in lower hazard areas, nature-based solutions, passive cooling and heating).
- **Renewable energy** (resilience of renewable energy (grid) in extreme conditions, high-temperature design, decentralised renewable energy systems)
- **Land-use and forestry** (nature-based solutions: green walls, green roofs, tree planting, increasing green open spaces, sustainable draining solutions (SuDS) etc.)
- **Material extraction and production** (sustainable management of local material extraction, e.g. forestry and mangrove.)
- **Waste and waste-water management** (water security and wastewater management, water contamination targets, urban green area to reduce water flow, protect and restore natural environments).
- **Food systems** (Nature-based solutions, urban agriculture, sustainable management of local natural resources, surplus food donations to those in need)
- **Digital and data solutions** (Monitoring of climatic risk, urban heat island, flood mapping and monitoring, water-ground-air quality monitoring).

⁹ UN-Habitat (2020) Enhancing Nationally Determined Contributions through Urban Climate Action. Available online: <https://unhabitat.org/enhancing-nationally-determined-contributions-ndcs-through-urban-climate-action>



Guide to Climate Change Adaptation in Cities



You can read more about the range of actions in the following resource produced for the Climate-Adapt programme: Guide to Climate Change Adaptation in Cities from the World Bank



In the next sub-sections, we will learn about some of the cross-cutting or transversal actions or solutions that connect several traditional sectors for effective implementation and greater climate mitigation and resilience.

3 Inspirational solutions for cities and towns to address climate resilience

Inspirational solutions: Resilience planning – City Resilience Index, Global

The City Resilience Index (CRI), developed by Arup and The Rockefeller Foundation, is a tool that helps cities understand and measure their capacity to survive, adapt and thrive no matter what kinds of chronic stresses or acute shocks they experience.

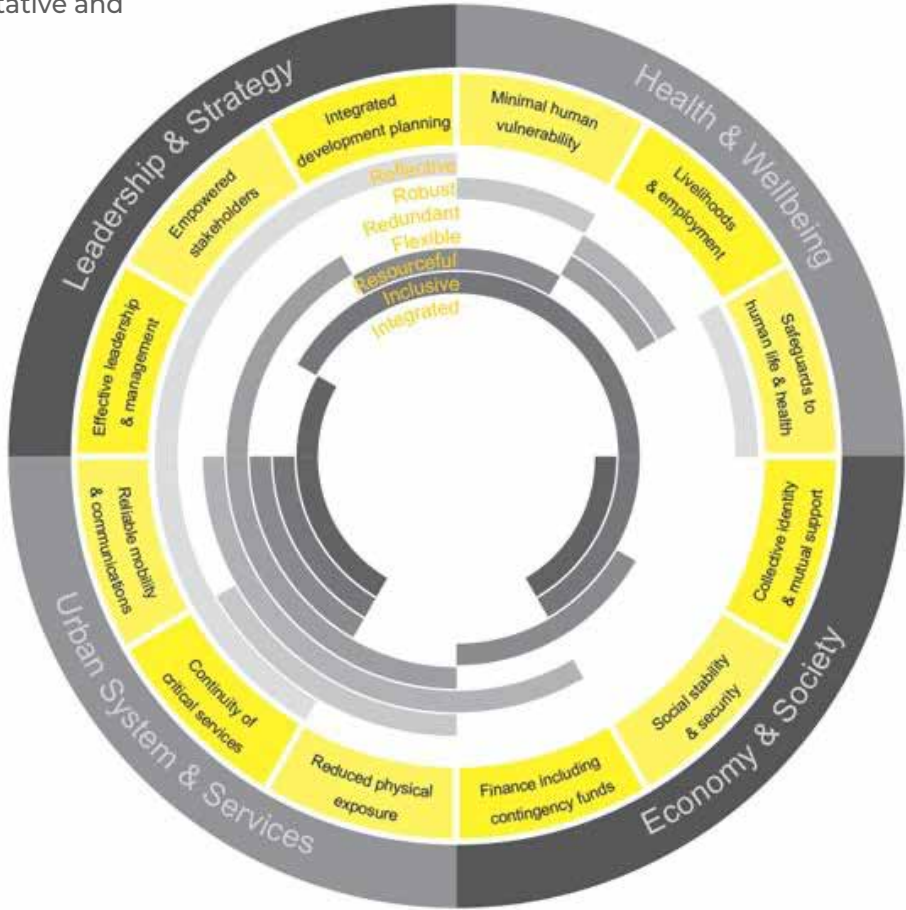
The CRI is based on the City Resilience Framework (CRF), which provides a holistic, practical and evidence-based definition of urban resilience. The CRF identifies 12 goals or outcomes that contribute to the city’s ‘immune system’, across four critical dimensions of city resilience: People, Organisation, Place and Knowledge. The CRI comprises 52 resilience indicators, which are assessed through 156 questions, drawing upon both qualitative and quantitative data.

CITIES

QUALITATIVE RESILIENCE PROFILE



You can explore how the cities performed at City Resilience Index.

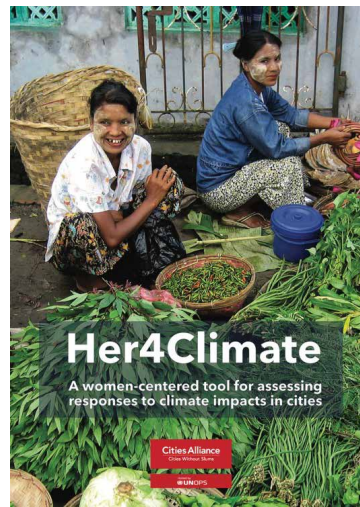


Source: Arup – City Resilience Index

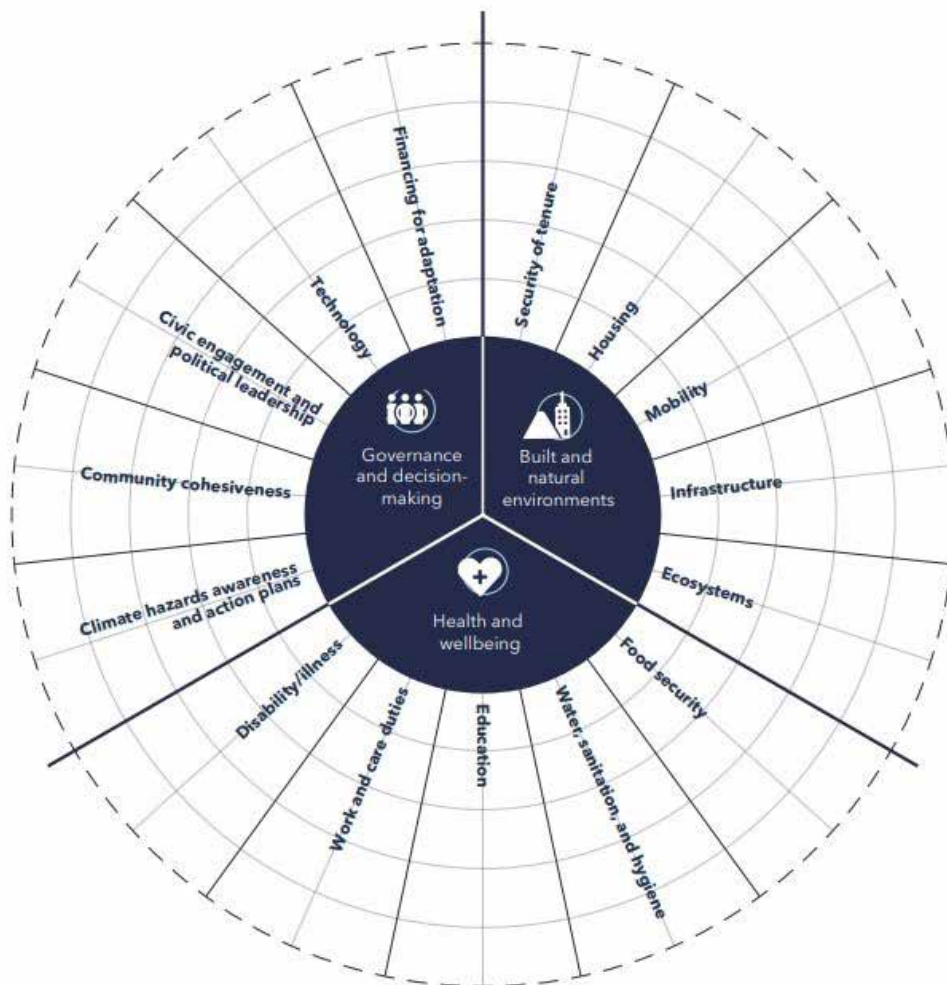
3.1 Women-centred planning – Gender-sensitive responses for climate resilience, Global

Her4Climate is a participatory assessment tool developed by Cities Alliance in collaboration with Arup to mainstream gender considerations in climate adaptation.

This tool is centred on the knowledge and capacities of women in urban areas, providing a framework for understanding women's exposure and their capacity to respond to climate change in urban areas, including the identification of key climate impacts that require action, and the level of climate adaptability in the future. You can find more information here.



You can find more information here.



Source:

Arup, Cities Alliance, UNOPS.
Her for climate: a women-centered tool for assessing responses to climate impacts in cities - Arup.

3.2 Green City Action Plans, European Cities

As part of its Green Cities programme, the European Bank for Reconstruction and Development (EBRD) has established Green City Action Plans (GCAP), designed to identify and shape investable projects, programmes, and policy actions tailored to address the most significant environmental issues facing European cities.

The process has developed a diversity of actions and policies including wastewater treatment, brownfield land regeneration, green infrastructure, energy efficiency programmes and retrofitting buildings to enable cities to enhance their climate resilience.

- 88 projects carried out across.
- More than 50 cities.
- 30 GCAPs adapted by City Councils.
- Over 4,500 ktonnes co2e/year reduced each year.
- €5 billion funding mobilised.



**EBRD
GREEN CITIES**

The EBRD region is home to vibrant and diverse cities that span across Central and Eastern Europe, Central Asia, North Africa and the Middle East



You can learn more about the Green Cities programme here

3.3 Tirana Orbital Forest

As a follow-on investment from Tirana’s Green City Action Plan (GCAP), part of the EBRD Green Cities programme, the city of Tirana has pursued the development of green infrastructure to support the city’s climate adaptation ambitions.

The Orbital Forest - a proposed ring around the urban perimeter of the city with a mix of forests, shrubland, agricultural land and recreational areas – is a nature-based solution that is intended to put a brake on urban sprawl, reconnect the citizens with nature, clean the air, address urban heat effects and is just one part of a wider plan for the city’s future.

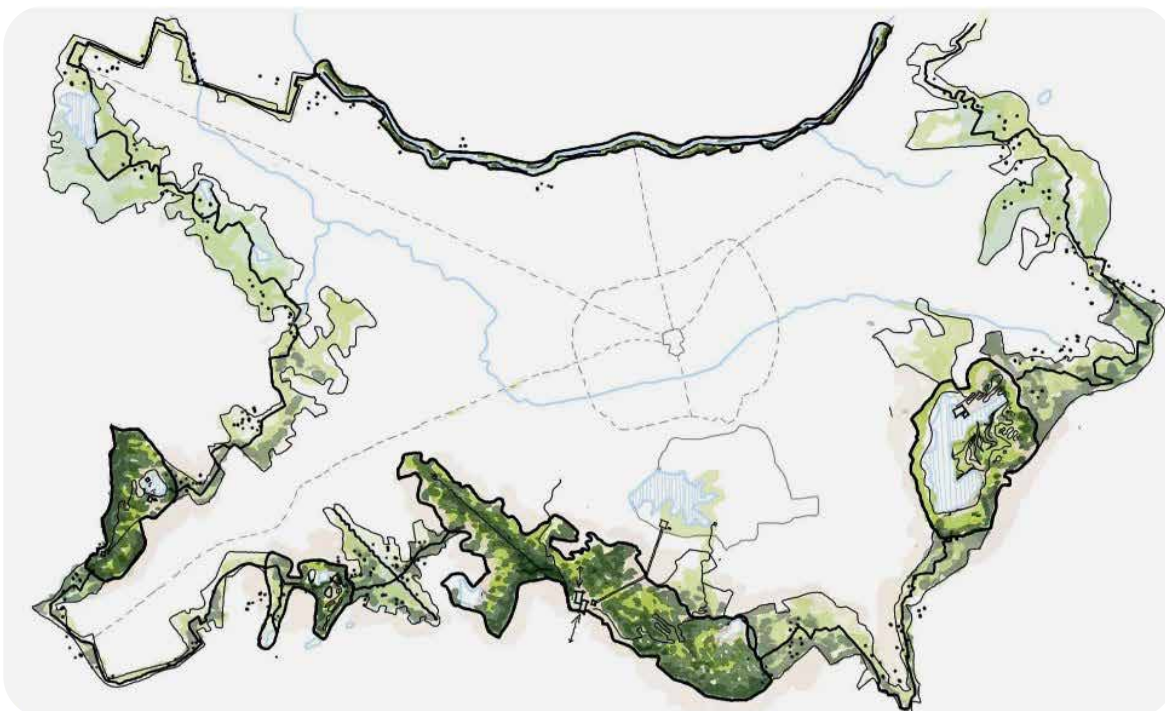
Tirana Orbital Forest is an important milestone in the EBRD’s mission to support investments in nature-based solutions. The Bank recognises the economic benefits green infrastructure can have in comparison to traditional, grey interventions. As a part of EBRD Green Cities, and as an acknowledgement of these benefits, the project will receive support from the Green Climate Fund’s concessional resources made available to Green Cities like Tirana.

"Greening our city is a clear priority: As recently as five years ago, Tirana had zero playgrounds. We examined unused spaces across the city, listening to parents, children, teachers, to understand what was needed and where. Today, we have 70 playgrounds."

Annuela Ristani
Deputy Mayor, City of Tirana



You can read more about the project here



Source: Arup, Planting an idea Tiranas radical orbital vision.

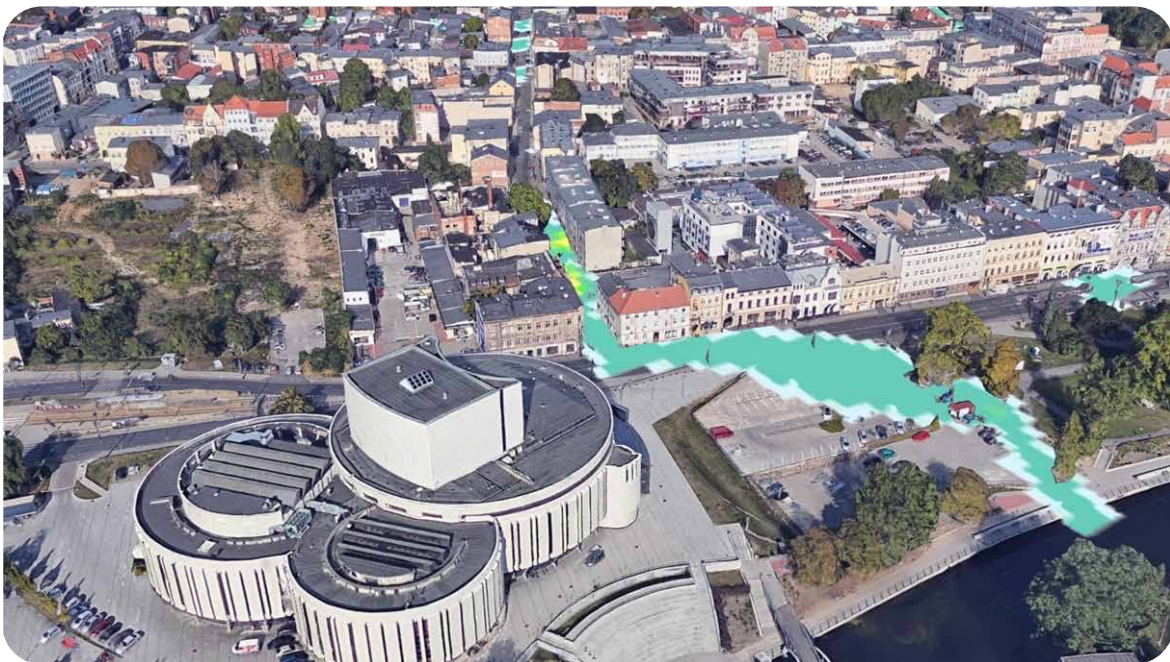
3.4 Enhancing city of Bydgoszcz's, Poland rain drainage system

The city of Bydgoszcz is located on the confluence of the Brda and Vistula rivers, and as such recent rapid development has placed its aging drainage infrastructure under stress and increased the risk of flooding. To enhance the city's flood resilience, the city collaborated on a project to develop a detailed catchment model to understand the nature and characteristics of the drainage system, and likely consequences of climate change.



You can read more about the project here

The resulting model helped identify and optimise a wide range of climate adaptation solutions ranging from detention and infiltration tanks to increased stormwater drainage solutions, pumping stations and application of flow regulators among others. Under this approach, the resilient city is designed to act like a 'sponge', harvesting and storing rainwater to be used during the dry weather seasons.



Source: Arup: Integrated catchment modelling and city flood analysis for city of Bydgoszcz - Arup

3.5 SuDS - Greener Grangetown, Cardiff, Wales

Greener Grangetown is a sustainable drainage system (SuDS) project that has also been designed to transform the quality of the public realm and improve cycling and pedestrian infrastructure across a city centre neighbourhood. The result is a more resilient urban sewer network and a street environment that is more attractive - and more useful - for residents and commuters.

Rain gardens deliver visual amenity improvements and a more sustainable approach to rainwater treatment. In a natural environment, most rainwater gradually soaks into the ground, but in urban environments, impermeable surfaces push rainwater run-off into storm drains where it enters the sewer system, mixes with wastewater from residences, and is routed for costly sewerage treatment.

The project removes 40,000m³ of rainwater each year from entering the sewer network, created 108 rain gardens and planted 130 trees.

Read more here:



Source: Arup.

3.6 Urban Greening – Trees Master-planning in Barcelona, Spain

Currently, 35% of Barcelona's territory is covered by the city's green infrastructure, which includes both public and private green spaces as well as trees. One of the main policies to address climate change effects like flooding and heatwaves and to improve Barcelona's liveability has been increasing green space in the city.

The "Trees for Living - Barcelona Tree Master Plan 2017-37" has resulted in an increase in this green cover during the previous few years. The strategy is in line with the objectives of the Barcelona Nature Plan 2030 and the Barcelona Green Infrastructure and Biodiversity Plan 2020. Local flooding is prevented, and temperature conditions are stabilised by enhanced tree coverage and enhanced biodiversity. The municipal administration's goal is to improve the physical and spatial connection between isolated green spaces (like urban forests, parks, etc.) and between urbanised areas and green open spaces. This also increases the overall amount of greenery in the city's densest and least green places.

These enhancements, which make residential areas more desirable, can quickly lead to a rise in housing costs and rent, driving out economically weaker residents. In order to green Barcelona in a socially just manner, the municipality is also taking steps to keep housing costs low and avoid such impacts of green gentrification.



Source: Ricardo Orlando / Unsplash

3.7 Madrid + Natural, developing green urban infrastructure

Madrid + Natural addresses the most common issues 21st century cities are facing to develop a series of decarbonisation strategies. The approach developed solutions that aim to help Madrid combat climate change hazards like heat island effects, floods, droughts, loss of biodiversity and air quality issues that heavily affect the city’s ecosystems.

Through this process, the city developed a framework of nature-based solutions. The framework allowed a clear mapping of solutions that could be adapted to the real needs of cities, to increase resilience and improve liveability for residents.

The range of initiatives included making existing infrastructure greener – from transport hubs and empty spaces to obsolete infrastructure – to identifying opportunities for new green spaces. This has the potential to reduce cities’ carbon footprint, creating more natural habitats for wildlife and more recreational spaces for residents.

You can learn more about the process and solutions here:



Source: Arup – Madrid.

4 Test your learning and reflect on the lessons learned

4.1 Quiz

Q1 - Which of the following is a co-benefit of climate action? (Select all the correct options.)

- A) Improved air quality
- B) Better access to public transport
- C) Increased beef consumption
- D) Reduced traffic accidents
- E) Increased walking and biking
- F) Better public health and wellbeing

Q2 - Which of the following is not an impact of climate change?

- A) Increased drought
- B) Higher probability of severe flooding
- C) Lower global average temperatures
- D) Increased chances of forest fires
- E) Lower groundwater availability
- F) Decreased crops and fish production

4.2 Reflection Questions

Based on the topics covered in this module, please reflect, and discuss the following questions:

Q1. Which climate-induced disasters or risks apply the most to your city, town, or region? Have you personally experienced any such events recently?

Q2. Based on the principles and measures presented in this module to enhance resilience and climate adaptation, which are the most suited to your context and why?

Q3. From the list of co-benefits presented in this module, which are the most relevant for your city's or town's citizens and communities?



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Module 2

**Climate
Action
Planning
Deep Dive**

Module 3

Climate Action Planning Deep-Dive

1 What this module will cover

Module overview and links with the P4EG course

This module outlines the climate action planning processes that cities could potentially undertake alongside their P4EG approach. Cities or towns commonly use these climate action planning approaches to methodically assess their local situation as well as outline their time-bound and measurable actions, commitments, monitoring indicators, baseline and projected GHG data – to address their net-zero targets and climate adaptation goals.

Municipalities can orient their Pathways for sustainable economic growth towards supporting the achievement towards net zero and green and just transition by understanding the various planning measures outlined in this module.

This module connects with the:

- ‘Action Planning and Selection’ P4EG steps are detailed in the P4EG Course (Module 6).

Learning Objectives

- Understand the basic principles of climate action planning processes that cities or towns can undertake to advance their climate action goals.
- Learn the basic components of the climate action planning mechanisms adopted by cities, such as the Sustainable Energy and Climate Action Plans (SECAPs), Climate City Contracts (CCCs), Investment Plans, and Sustainable Urban Mobility Plans (SUMP).
- Understand the key steps involved in developing the various types of plans that address the planning and implementation of climate actions in a city or town.

1.1 Basics principles of integrated climate action planning

The climate action planning process for a city or town should be:

- **Ambitious:** Setting long-term goals and implementing actions that evolve iteratively towards an ambitious vision and a timeline to reach net zero carbon.
- **Inclusive:** Involving multiple govt departments, stakeholders and wider communities in all phases.
- **Fair:** Seeking solutions that equitably address the climate risks and share the costs and benefits of actions across all actors.
- **Integrated** Undertaking adaptation and mitigation actions across multiple sectors and scales; Link city actions with regional or national policies.
- **Relevant:** Delivering climate benefits and supporting local economic development priorities and needs.
- **Actionable:** Proposing cost-effective actions, that can be realistically implemented, given local mandates, finances, and capacities.
- **Evidence-based:** Reflecting scientific knowledge and local understanding; Using GHG emissions and vulnerability assessments to inform decision-making.
- **Transparent:** Setting goals that can be measured, reported, verified, and evaluated; Following an open decision-making process.

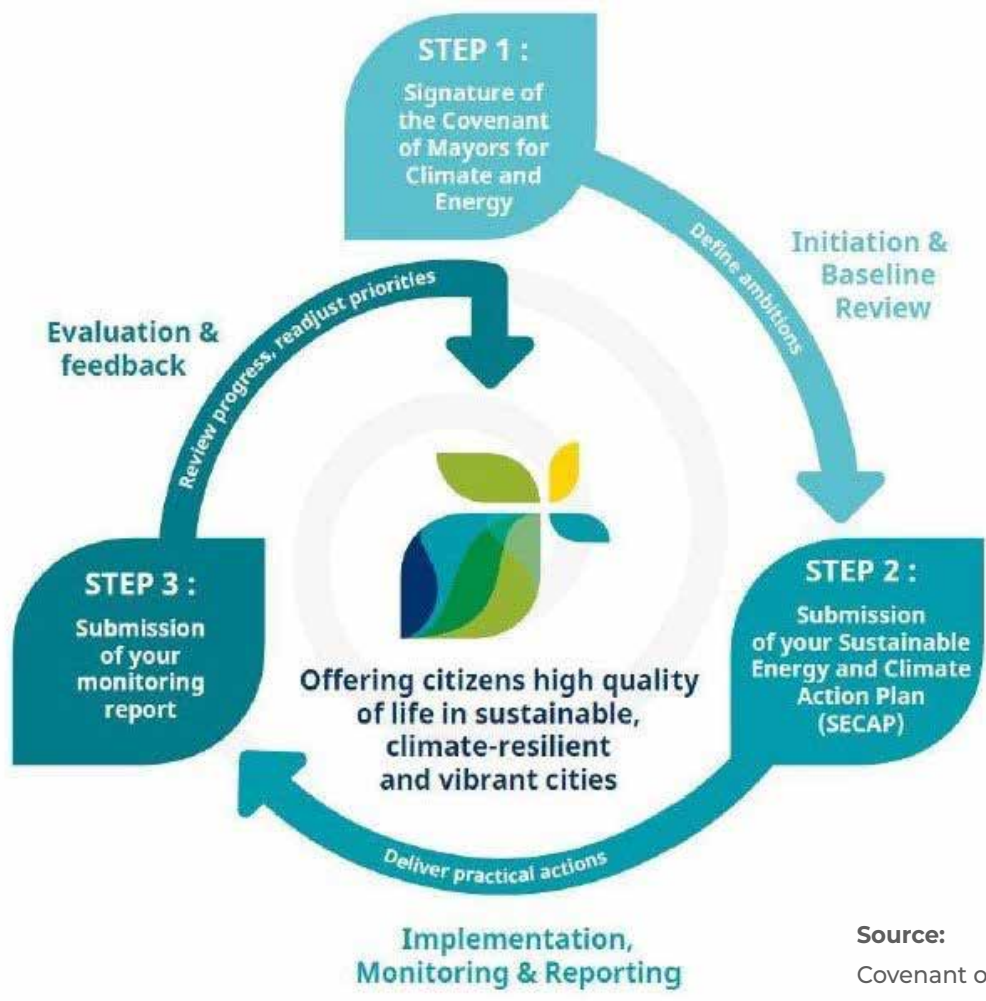
In the next subsections, we will elaborate on the key planning mechanisms or instruments used by local authorities to formulate, implement, and learn from their climate action planning processes for cities and towns.

1.2 Planning instrument: Integrated climate plans – Sustainable Energy and Climate Action Plans (SECAPs)

Integrated climate plans are the result of a well-coordinated strategic local process that generates a binding document, together with the local community. They show the path towards a meaningful and effective implementation of climate action in the city within a certain period of time.

In this sense, an integrated climate plan must be one of the first steps a city needs to take towards a carbon neutrality goal, structuring and aligning potential initiatives, resources, and decisions through a strategic document, reaching the widest local consensus possible.

The Covenant of Mayors for Energy & Climate (CoM) is the initiative that gathers more members interested in advancing towards net zero carbon. With 10,898 signatories from 54 different countries and 6,221 submitted Action Plans, the CoM has become the main-stream initiative for cities' climate change mitigation and adaptation. Since 2015, both mitigation and adaptation dimensions in European cities have been addressed by an integrated framework under the format of Sustainable Energy and Climate Action Plans (SECAPs). SECAPs connect cities' emission reduction commitments with the measures the city plans to implement, and the progress is regularly monitored using a common reporting method.



Source: Covenant of Mayors Europe

Ten key elements that a SECAP must include:

1. Formal adoption by the municipal council (or equivalent decision-making body)

Strong political support is essential to ensure the success of the process, from SECAP design to implementation and monitoring, where formalised approvals are beneficial.

2. Assessment of the local situation

Based on the Baseline Emission Inventory (BEI) and a Climate Change Risk and Vulnerability Assessment (CRVA) outputs – in terms of energy and GHG emissions, as well as climate hazards, vulnerabilities and impacted policy sectors.

3. Strategies and actions until 2030

A clear outline of the strategic actions that the local authority intends to take in order to reach its commitments by 2030 in areas like land-use planning, transport and mobility, public procurement, standards for new/renovated buildings, etc.

4. Definition of clear mitigation and adaptation targets/goals

Commitments must translate into concrete actions along with the CO₂ reduction estimates in tons/year by 2030. For a longer-term target (like 2050) an intermediate 2030 target (minimum of 40%) should be set up for the reasons of comparability.

5. Comprehensive measures addressing the key sectors of activity

As identified in the Baseline Emission Inventory and a Climate Change Risk and Vulnerability Assessment, and covering buildings sector, residential and tertiary sectors, public and private transport, and adaption measures to reduce the probability of high losses and damages for vulnerable hotspots.

6. Mobilisation of all municipal departments

SECAP process can be conceived by the different departments of the local authority administration not as an external issue, but integrated into everyday processes, such as human resources and horizontal cooperation.

7. Engagement of citizens and stakeholders

Multiple stakeholder engagement should be carried out from the very first steps of the planning process until the end of it, in order to successfully develop mitigation and adaptation actions.

8. Monitoring and reporting

Regular monitoring using relevant indicators followed by adequate revisions of the SECAP allows us to evaluate whether the local authority is achieving its targets, and to adopt corrective measures if necessary.

9. Financing

A SECAP cannot be implemented without adequate financial resources. The plan should identify the key financing resources that will be used to finance the actions.

10. SECAP submission and filled template

Covenant members submit the SECAP template. This allows them to summarise the key results of their Baseline Emission Inventory and a Climate Change Risk and Vulnerability Assessment as well as the key actions of their SECAP. The sufficiently detailed template should reflect the content of the SECAP, which is a politically approved document.

2 Additional planning instruments to address climate action

2.1 Nationally Determined Contributions (NDCs)

Nationally Determined Contributions (NDCs) are created at the national level and outline each country's overall emission reduction efforts, as well as the actions to adapt to the negative impacts of climate change.

NDCs often provide an overarching framework for policy, funding and financing for climate action across a country context. Therefore, ensuring alignment to NDCs at the city scale provides an important opportunity to access enabling mechanisms for climate action. Based on UN-Habitat, UNDP and the University of Southern Denmark's report "Urban content of the NDCs 2023 - Local climate action explored through in-depth country analyses" 91 out of 194 countries' NDCs focus on both urban adaptation and mitigation measures together. This urban content includes cities-focused climate monitoring or indicators; urban sectors, actions or solutions critical for achieving net zero.

This gap presents a significant opportunity to align subnational plans and strategies (at the regional, local, state, and municipal levels) with NDCs that might have relevant targets for emission reductions and building resilience.

How can cities align with NDCs?

It is important for an integrated approach across each (vertical) level of government – from municipal, regional and national tiers. An integrated approach across multiple levels can support mobilising resources and political buy-in. These efforts also help national governments realise the potential for local innovation and experimentation.¹¹ These can be:

- **Awareness and Alignment** – Local governments should be familiar with and aware of the NDCs at the national level. Local strategy setting and decision-making -such as investment decisions and actions- should be aligned with these shared and overarching goals.
- **Engagement and dialogue** - Local government should actively engage with national governmental ministries on the updating of NDCs. The sharing of deep local knowledge and capacities can support the alignment of NDCs to local priorities and opportunities to enable greater ambition in local climate action.
- **Experimentation** - Cities and towns can provide necessary test beds for piloting, replicating and scaling low-carbon technologies promoted by the NDCs, as well as cross-sectoral solutions (such as citizen participation, business models, capacity development, policies, governance etc.).

¹¹ UN-Habitat (2020) Enhancing Nationally Determined Contributions through Urban Climate Action. Available at: Enhancing Nationally Determined Contributions (NDCs) through urban climate action | UN-Habitat (unhabitat.org)

2.1 Climate City Contracts – A comprehensive process to rapidly achieve climate neutrality by 2030

The Cities Mission Climate City Contract (CCC) is a governance innovation tool to help cities collaboratively address their barriers to reaching climate neutrality by 2030. This process has been currently adopted by 112 cities as part of the EU's Climate-neutral and Smart Cities Mission and with an ambition of reaching their net-zero targets by 2030.

The CCC is the documented result of an iterative co-creation process. Systemic in nature, this process will be led by cities and involve multiple stakeholders at various governance levels, as well as the wider ecosystem of private and civic stakeholders. Together, they will identify all the key actions to achieve 2030 climate neutrality, and the ways and means to implement them.

The CCC is one process and document with three interlinked components: Commitments, Actions, and Investments:

- The Commitments component captures the outcomes of a co-creation process with local, regional, and national stakeholders to establish new ways of working together to achieve climate neutrality faster. It includes a shared 2030 ambition and a strategy to achieve it, as well as the specific commitment(s) to action from stakeholders in the contract.
- The 2030 Action Plan identifies the strengths and gaps of existing strategies, policies, and plans, and uses all levers of change to create a coordinated portfolio of interventions or actions to achieve the 2030 ambition. The Action Plan builds on existing plans of each city (like SECAP).
- The 2030 Investments Plan strategically mobilises and organises public resources and addresses how to attract private capital for funding and financing cities' pathways to climate neutrality.



Cities Mission Climate City Contract



Source:
NetZeroCities

The Climate City Contract is a digital living document and should be revised periodically to add new stakeholders, concrete commitments, actions and/or investments, and to reflect on what is working and not working.

The Climate City Contract can be submitted (by municipalities which are members of the EU's 100 Smart & Climate-Neutral Cities Mission) for validation by the European Commission to receive the "Mission Label".

Upon successful submission of the CCC, the Mission Label is a quality assurance certification that is envisioned to unlock synergies with other EU funding programmes and other funding and financing resources.

2.3 Investment Plans – Bridging the finance gap for 2030 net zero ambitions

What is an Investment Plan?

An Investment Plan guides cities with the capital and investment planning necessary for implementing ambitious Missions like achieving net zero carbon by 2030. As one of the core elements of the Climate City Contracts (see previous section), an investment plan serves to articulate how a city or town can seek to strategically mobilise and organise public resources and attract private capital for funding and financing their pathways to net zero.

An Investment Plan has the following characteristics:

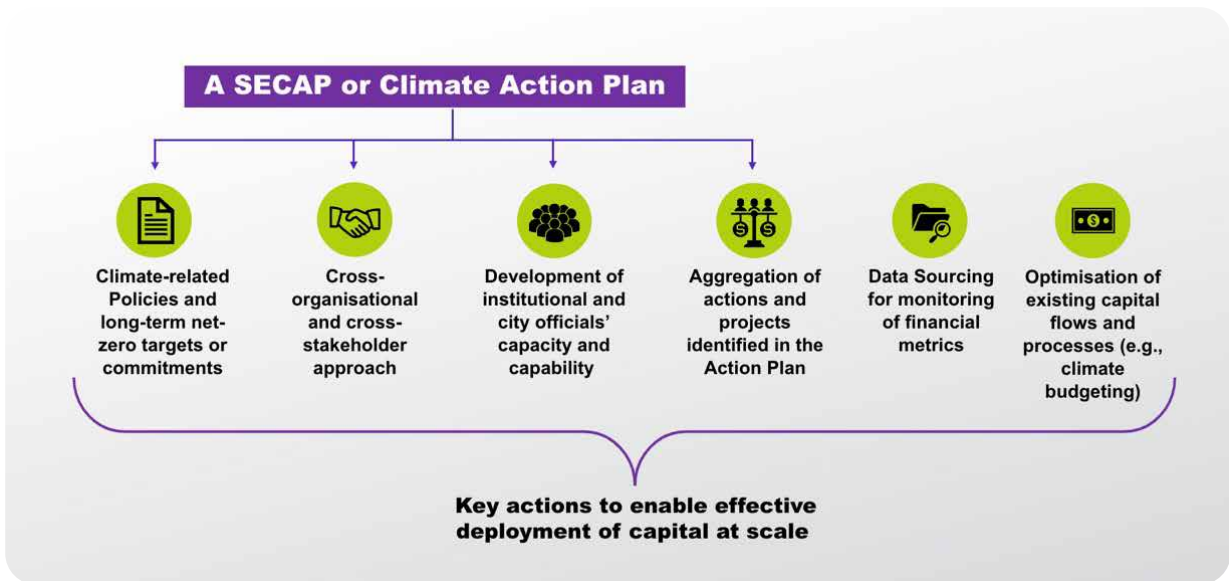
- 1. Aligned with the Action Plan:** The Investment Plan should not be mistaken for the Climate Action Plan but aligned with it, since the two affect each other both strategically and operationally.
- 2. Focus is on Financial Planning:** This is achieved through providing a city or town with cost, impact, and capital allocation guidance.
- 3. Thinking for the Long Term:** The Investment Plan is a long-term planning exercise and not short-term operational budgetary planning.
- 4. A City-Wide Approach:** This integrated approach can subsequently be complemented with a bottom-up (portfolio) project approach. The Investment Plan captures both the public and private sectors.
- 5. Involves Multistakeholder Participation:** This involves contributions from the city administration, as well as outside stakeholders – including private actors.
- 6. Acting as a Catalyst:** The Investment Plan will act as a catalyst to optimise capital and help cities seek more funding and financing.
- 7. An Iterative Process:** The Plan will be an iterative process, grounded against a set of indicators and reviewed periodically.



An effective Investment Planning process also requires the following supportive conditions in a city or town:

- Climate-related policies by the local or national authorities and long-term net-zero targets or commitments
- Cross-organisational and cross-stakeholder approach
- Development of institutional and city officials’ capacity and capability
- Aggregation of actions and projects identified in the Action Plan
- Data Sourcing for monitoring of financial metrics
- Optimisation of existing capital flows and processes (e.g., climate budgeting)

These enabling conditions help build synergies with a SECAP or climate action plan and ensure key actions enable the effective deployment of capital at scale.



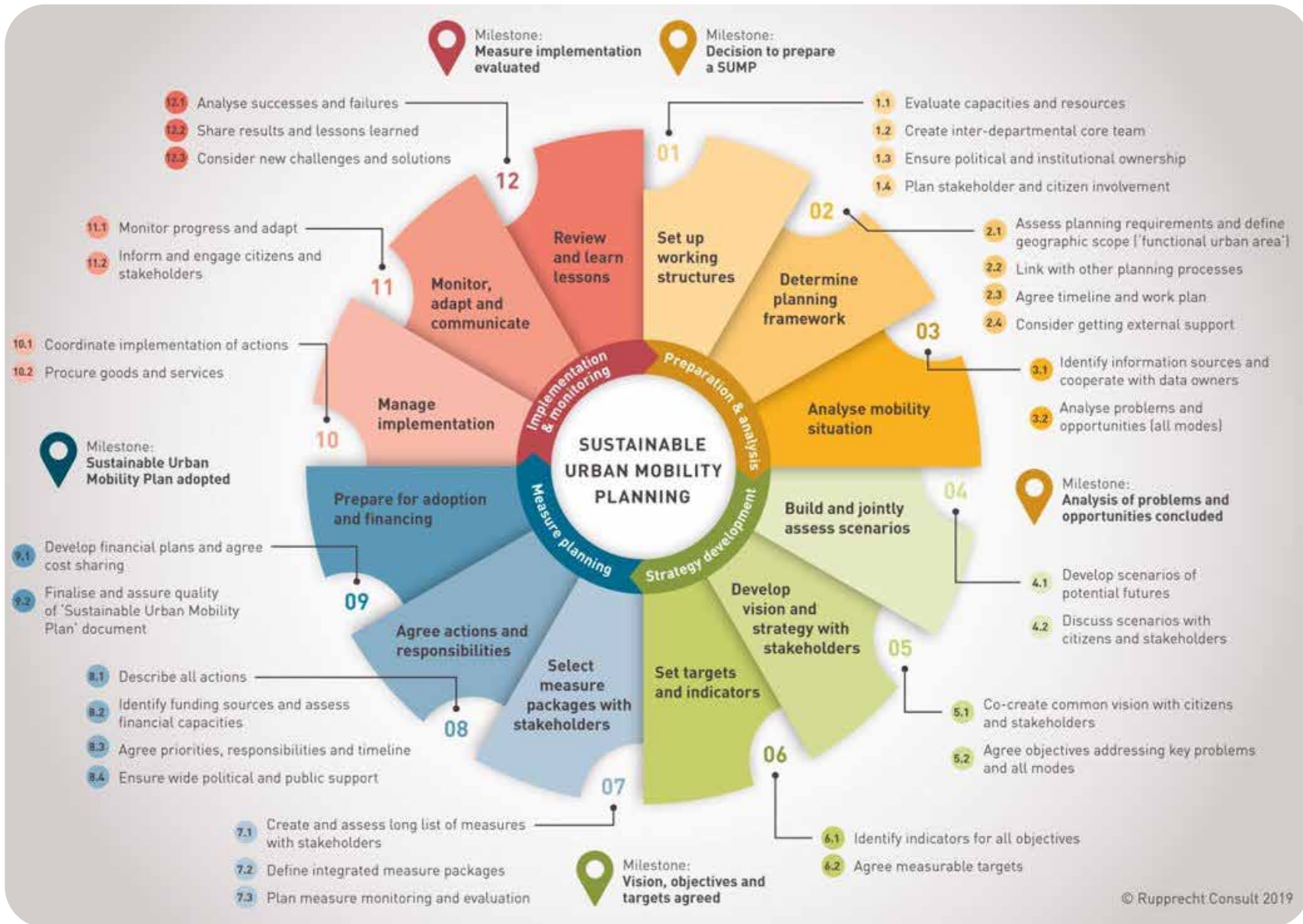
2.4 SUMP – A globally utilised approach for creating a Sustainable Urban Mobility Plan (SUMP)

A Sustainable Urban Mobility Plan (SUMP) is one of the main instruments used worldwide by public administrations to plan mobility systems in an integrated way, looking at environmental and climate change aspects. In response to the EU's commitment to reduce emissions in the transport sector by at least 55% by 2030 and 90% by 2050, all competitive cities across Europe are actively working to develop or update their Sustainable Urban Mobility Plans (SUMPs).

A SUMP combines technical planning with the social-political dimension and builds on relevant sector plans, e.g., urban/economic development plans or climate action plans. This comprehensive process and document thus lays the foundation for future and green investments in the mobility sector in the city or town.

A SUMP may also cover the Functional Urban Area (FUA). This regional approach is of great importance for a better and more sustainable organisation of interurban transport flows of passengers and freight.

- The SUMP establishes horizontal and vertical cross-departmental working structures and provides a highly accepted and evidence-based work programme, which should build the foundation for a mobility transformation towards improved accessibility and quality of life through a shift towards sustainable mobility.
- This transition requires a thorough assessment of the status quo and future trends, a common vision, strategic objectives, and an integrated set of short-, medium- and long-term measures from different policy areas, including regulation, promotion, financing, technology and infrastructure.
- In contrast to traditional master-planning approaches, the SUMP concept emphasises stakeholder cooperation, public-private partnerships, and mobility vision co-creation together with citizens.
- A SUMP also includes scenario building (e.g., zero-emission scenarios) and strives for thorough monitoring and evaluation of the implementation process and the evaluation of the achievements with measurable and time-bound targets.



2.5 SUMP – City Resilience Strategies – Learnings from 100 Resilient Cities, Tbilisi, Georgia

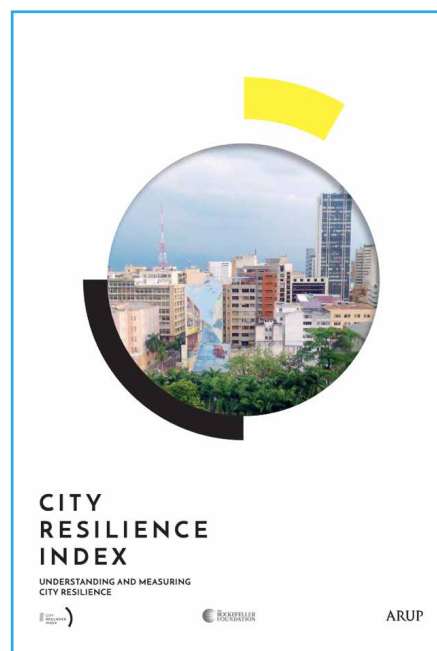
100 Resilient Cities (100RC) was a programme founded by The Rockefeller Foundation that provided technical support for cities to develop their City Resilience Strategy.

Tbilisi, Georgia appointed a Chief Resilience officer who led the resilience strategy that was launched in May 2019.

Tbilisi used 100RC’s resilience strategy process that takes the Resilience Framework and the “seven qualities of resilient systems” as a base for assessing the city resilience baseline.

The seven qualities of resilient systems are:

- **REFLECTIVE:** using experience to inform future decisions.
- **ROBUST:** well-conceived, constructed, and managed systems.
- **REDUNDANT:** spare capacity purposively created to accommodate disruption.
- **INCLUSIVE:** Wide-ranging consultation and sharing in decision-making processes.
- **INTEGRATED:** bring together a range of distinct systems and institutions.
- **RESOURCEFUL:** recognizing alternative ways to use resources.
- **FLEXIBLE:** willingness and ability to adopt alternative strategies in response to changing circumstances.



Read more about the City Resilience Index here.

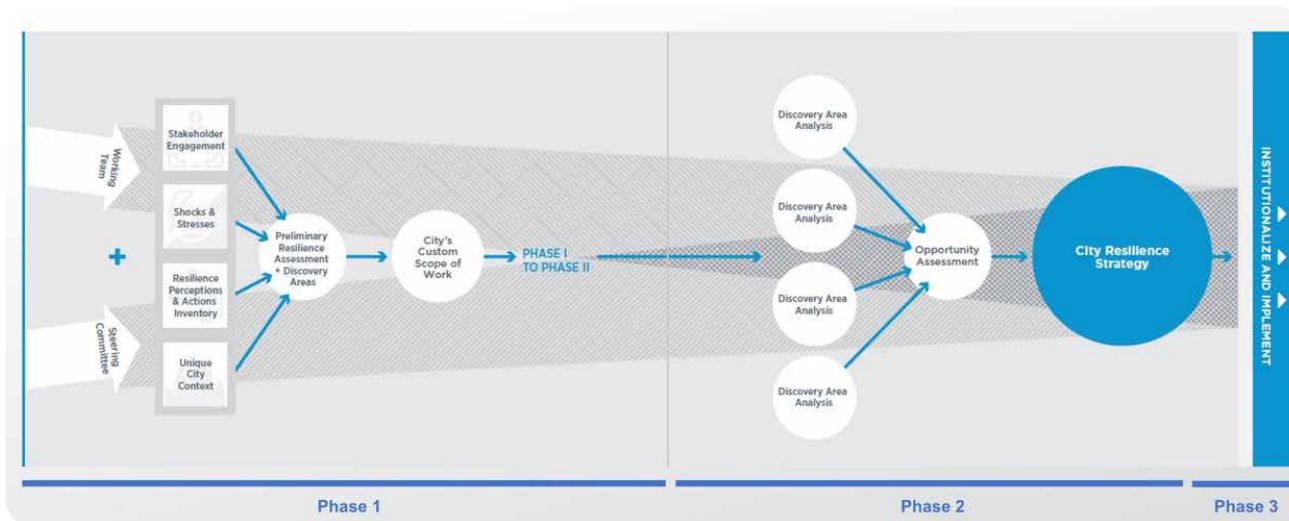
The 100RC resilience strategy process was developed in two phases, with a third phase for institutionalisation and implementation of the strategy.

Phase 1:

- Launch of the strategy process. Undertake an “agenda-setting workshop” with key stakeholders.
- Establish a working team and a steering committee to support the working team long the strategy development.
- Develop a strong resilience assessment baseline, including a deep understanding of shocks and stresses, perceptions, actions inventory and the unique city context.
- Consolidate initial assessment and findings in a “Preliminary resilience assessment” (PRA), a document including early findings and discovery areas, which are broad priorities for the city to improve its resilience.
- Based on the PRA, to define and agree on a “City custom scope of work”, which enlists “discovery areas” for resilience. These are key resilience aspects that need further detailed understanding.

Phase 2

- Deep dive research and analysis of the discovery areas, developing a more detailed understanding of those aspects that are a key priority for building the city resilience.
- Define an “Opportunity Assessment”, a vision that summarises all the analysis and learning to date.
- Develop and launch the City Resilience Strategy, which includes specific actions grouped in resilience pillars.



Source: Resilience Cities Network (100RC)

3 Test your learning and reflect on the lessons learned

3.1 Quiz

Q1: Which of these is a basic principle of a climate action planning process? (Select all that apply.)

- A) Setting ambitious goals and vision
- B) Involving multiple departments, stakeholders, citizens and communities
- C) Aligning with economic development priorities
- D) Mitigation and adaptation action across all relevant sectors
- E) Consider only short-term strategies according to next year's budget

Q2: Which of these is a component of a Climate City Contract?

- A) Commitments towards achieving climate neutrality by 2030
- B) Investment Plan that addresses how to attract private capital for funding and financing
- C) A portfolio of strategies, interventions, actions or policies that outline how to reach climate neutrality by 2030
- D) All of the above
- E) None of the above

Q3: Which of these is not a key element of a SECAP? (Select all that apply.)

- A) A GHG Baseline Emissions Inventory
- B) Administrative set-up of local authority
- C) Citizens and stakeholder engagement
- D) Mitigation and adaptation targets
- E) Strategies and actions until 2030
- F) None of the above

4.2 Reflection Questions

Based on the topics covered in this module, please reflect and discuss the following questions:

Q1. Does your city or town have an action plan that addresses climate mitigation, adaptation or resilience? What are the main actions covered and their time horizons?

Q2. Think of the basic principles of Climate Action Planning presented in this module. Which of these principles apply the most to your city's or town's planning processes and why?

Q3. What is the current state of implementation of these plans? What were the significant barriers or enablers in implementing the actions?



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Module 4

**Integrated
Pathways
for Monitoring,
Evaluation &
Learning (MEL)**

Module 4

Integrated Pathways for Monitoring, Evaluation & Learning (MEL)

1 What this module will cover

Module Description and links with the P4EG Course

This module aims at supporting cities in better understanding and describing their short-term, medium-term, and long-term impacts and outcomes for their P4EG efforts, as outlined in the P4EG Course Modules:

- Strategy-making (Module 5), Action Planning and Selection (Module 6) and,
- Monitoring, Evaluation and Learning MEL approach (Module 7).

While conventional methods like log-frames have long been used for project monitoring and reporting, newer approaches like impact logic and pathways take a much more complexity-appropriate, systemic and non-linear approach.

This approach helps cities and towns make explicit their processes to reach their long-term impacts and goals, while also informing their strategies and actions for continuous learning. This module outlines the basic steps for cities or towns to adopt this approach in their P4EG journeys, with an example from the P4EG Pilot City of Baghdati in Georgia.

Learning Objectives

- Understand how to logically align and orient actions and strategic goals towards short-term, medium-term and long-term impacts through your city or town’s Pathways for economic growth and climate action planning.
- Learn how to utilise a complexity-appropriate strategic learning process (as part of Monitoring, Evaluation and Learning steps) that addresses both quantitative targets and qualitative insights.
- Understand how to select the right evidence key performance indicators (KPIs) needed to measure their progress while integrating both their P4EG Actions and Strategic Goals with climate action planning.

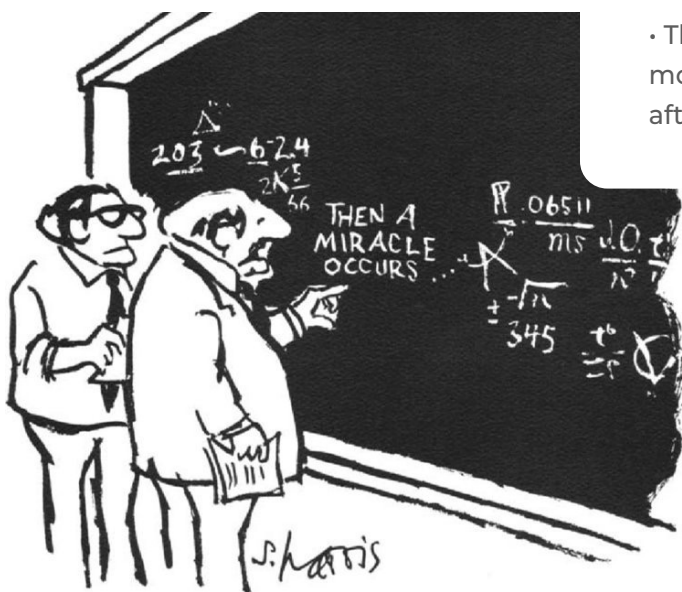
1.1 MEL and Impact Logic

The Monitoring, Evaluation, and Learning (MEL) framework is a systematic approach used by organizations to assess and enhance the effectiveness of their projects. It involves continuous tracking (monitoring), systematic assessment of progress towards objectives (evaluation), and using the insights gained to improve future strategies and activities (learning).

The main principles of MEL include relevance, effectiveness, efficiency, impact, and sustainability, which help ensure that the projects are aligned with their intended goals. MEL is connected to impact logic, which maps out the expected sequence of changes that lead to a project's ultimate goal, helping to clarify how and why a desired change is expected to happen in a specific context. This connection ensures that each step of a project contributes towards achieving measurable and impactful results.

The need for thinking about an impact logic for a city or town for their P4EG:

- Systemic impacts are complex, multi-dimensional, uncertain, non-linear and may take a long time, especially those outlined in the Green Deal objectives.
- Many indirect impacts or co-benefits of P4EG Actions are subjective (governance reforms, behaviour changes, social impact etc.) and difficult to define objectively.
- Actions and P4EG steps to achieve some critical impacts may be outside the town or city's control or mandate, or less aligned with national policies.
- For effective implementation and building consensus internally within local authorities or external stakeholders, there is a need to agree on what 'success' looks like.
- Cities need to look for relevant evidence and data for understanding and communicating impacts to all stakeholders.
- There is a need for continuously measuring and monitoring change as it starts happening, not after the Actions have been implemented.



"I THINK YOU SHOULD BE MORE EXPLICIT HERE IN STEP TWO."

Source:

Cartoon by Sydney Harris Inc.

It is hard to predict how change happens!



Impact Logic: What is it?

• Impact Logic is a method for explaining how envisioned change is expected to happen across a timeline and how a particular initiative, action or project contributes to impacts through systemically interconnected pathways.

- Activity to be co-developed to create a shared understanding of how change is expected to happen and how the different actions and actors are connected and collectively contribute to achieving desired impact goals.
- A tool to prioritize, communicate and monitor progress.
- Supporting municipalities in building consensus on defining what 'success' looks like and how their P4EG actions are expected to produce the series of changes and results that will lead to the collective impacts of sustainable economic growth alongside a green and just transition.



Impact Pathway: What is it?

• An Impact Pathway is a logical sequence of outcomes, culminating into long-term impacts and co-benefits for the P4EG or Green & Just Transition actions along a long-term timeline.

• Impact Pathways focuses on the most relevant outcomes and the evidence needed for learning and strategy-making.

- They logically map how outcomes and impacts are directly or indirectly connected to each other and the activities. Some changes will emerge that were not possible to predict up-front and need to be revised/tracked later during implementation.
- They help understand which long-term goals/impacts lie outside the direct scope of the P4EG action planning but contribute to them. Pathways also help frame a clear strategic objective and a roadmap from a 'shared' vision.
- They serve as both a communications tool and a framework for selecting the right indicators and tracking progress through MEL. They also make certain assumptions clear to accommodate and highlight the uncertainty in reaching the stated outcomes and impacts.

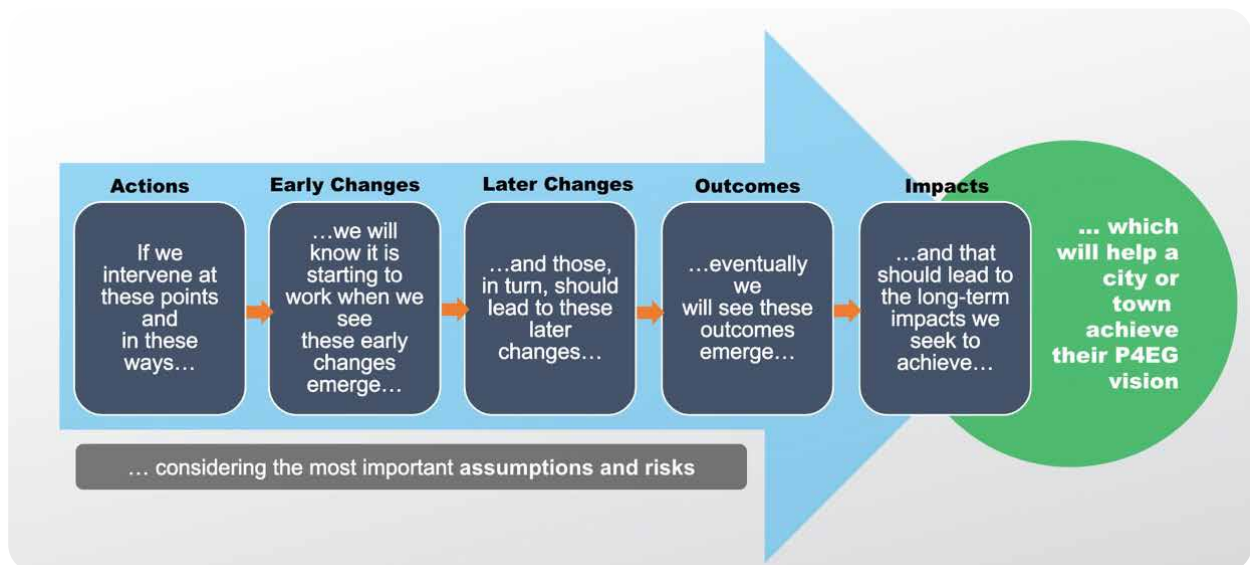
1.2 How can cities or towns use the impact logic approach in their practice?

Impact Logic: A method to define outcomes/impacts

An impact pathway tells a narrative about how systemic transformation is expected to be achieved through your city or town’s P4EG actions. They allow us to continuously evaluate outcomes as they happen, not only whether the final targets of a plan were (or weren’t) achieved.

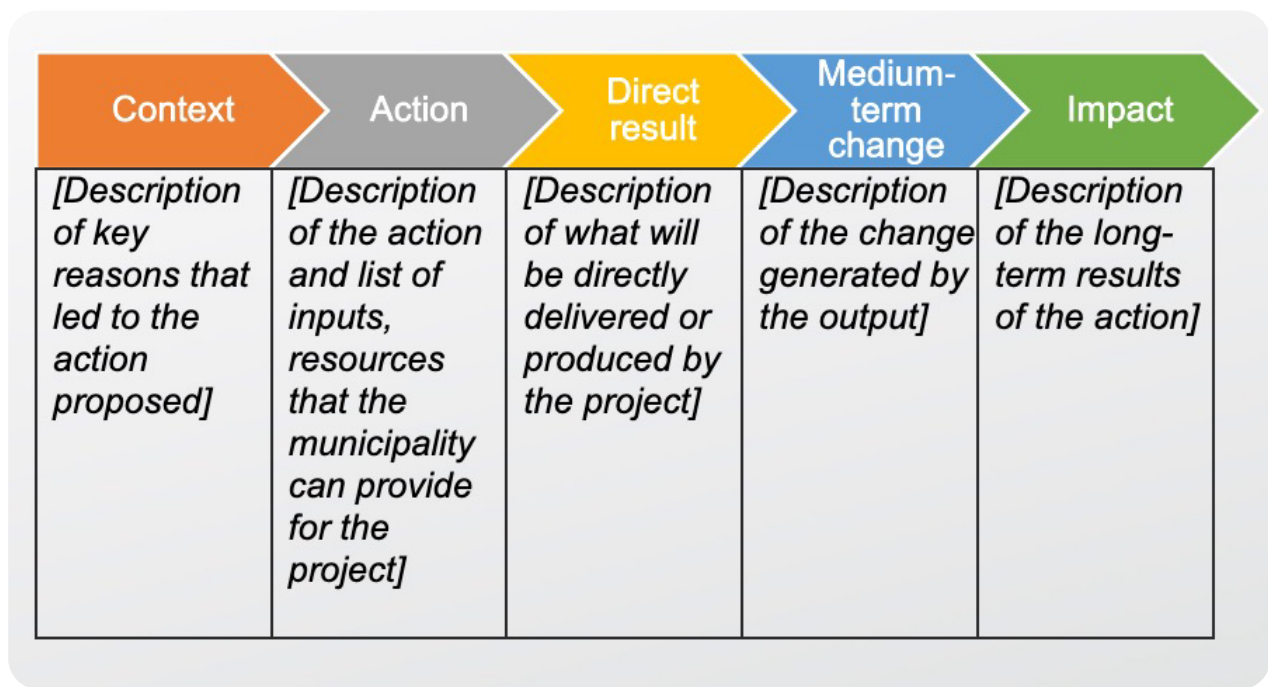
These pathways outline the fundamental and connected change mechanisms through which complex long-term systems transition is envisioned.

An Impact Logic may include one or several interconnected Impact Pathways depending on the number of actions selected. For an overview of various elements of an impact pathway, please see the figure below:



A fully developed Impact Logic comprises (see table below):

- A diagram, or visual representation of how changes are expected to happen outlining the essential elements (Action/Interventions, Outputs, Outcomes, Direct Impacts and Co-Benefits).
- A narrative description that tells the story of change and explains the diagram.
- List of the assumptions and risks associated with the change processes.
- Linkages or connections between the elements that illustrate pathways.



1.3 Baghdati Case-study: Refining Actions to Enable Impact

Step 1

- Understanding what the entry points for systemic transformation for a specific context are, based on sectoral and cross-cutting actions selected in the P4EG Strategy-making and Action-planning.
- Thinking about how the overall portfolio of actions on one side and direct or indirect impacts (co-benefits) on the other.



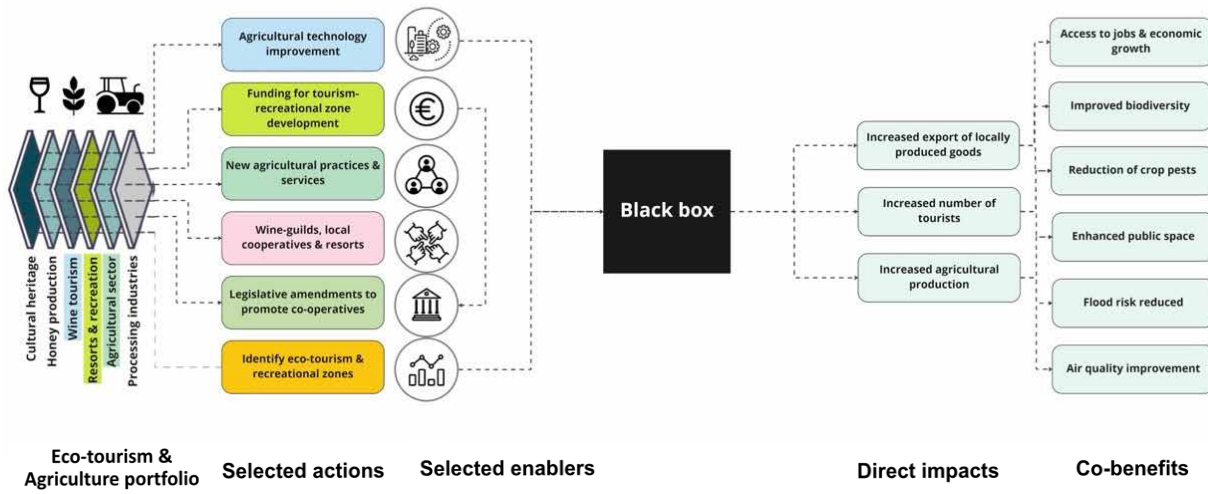
The figure provided maps out a structured approach for sustainable community development with a focus on agriculture, tourism, and local participation. Here are the key steps outlined:

- 1. Community Participation & Human Resources Development:** Initiating community involvement and developing human resources to improve agriculture and tourism.
- 2. Agricultural Improvements:** Implementing new agricultural technologies and practices to enhance productivity.
- 3. Tourism Development:** Identifying eco-tourism and recreational zones to boost local tourism.
- 4. Infrastructure & Support Systems:** Establishing infrastructure and legislative support to promote local cooperatives and small enterprises.
- 5. Outcome Achievements:** This process aims to achieve several outcomes including economic growth, improved biodiversity, better air quality, and reduced flood risks through increased local production and sustainability practices.

Each step of the process contributes to a larger strategy of enhancing local capabilities and sustainability, with the ultimate goal of fostering inclusive and equitable economic development.

Step 2

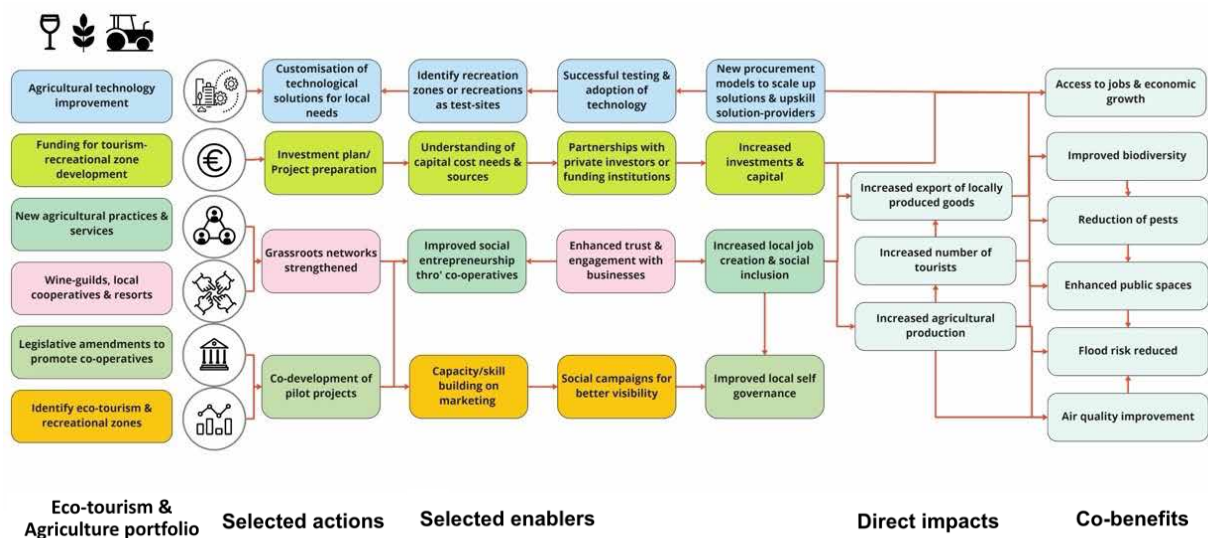
- Opening the 'black box' of how present-day actions are connected to long-term goals & impacts.
- Thinking about how the long-term impact will be achieved.



In step 2 a process model connecting community-driven initiatives to sustainable outcomes is illustrated. The process begins with community participation and resource development, which fuel enhancements in agricultural technology and tourism, supported by infrastructure and cooperative development. These activities are processed through a "Black Box" which symbolically represents the conversion of these inputs into quantifiable outputs such as improved biodiversity, economic growth, and enhanced public spaces. This box highlights the transformation of inputs (development efforts) into desirable sustainable outcomes, emphasizing the underlying mechanisms that are not explicitly detailed but are crucial for achieving these results.

Step 3

- Illustrating how are short-term and medium-term outcomes connected to long-term impacts or co-benefits.
- Deciding on the timeline for actions to achieve impacts.

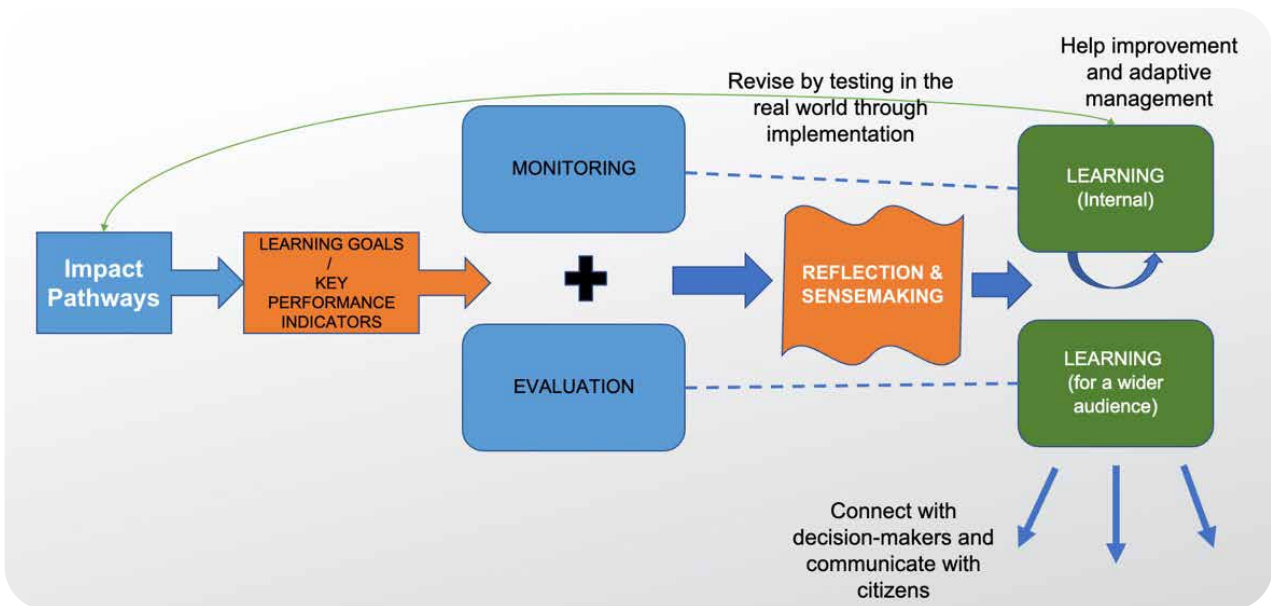


1.4 Using the Impact Logic for MEL and Strategic Learning

Using Impact Pathways to gather and learn from data (see figure below):

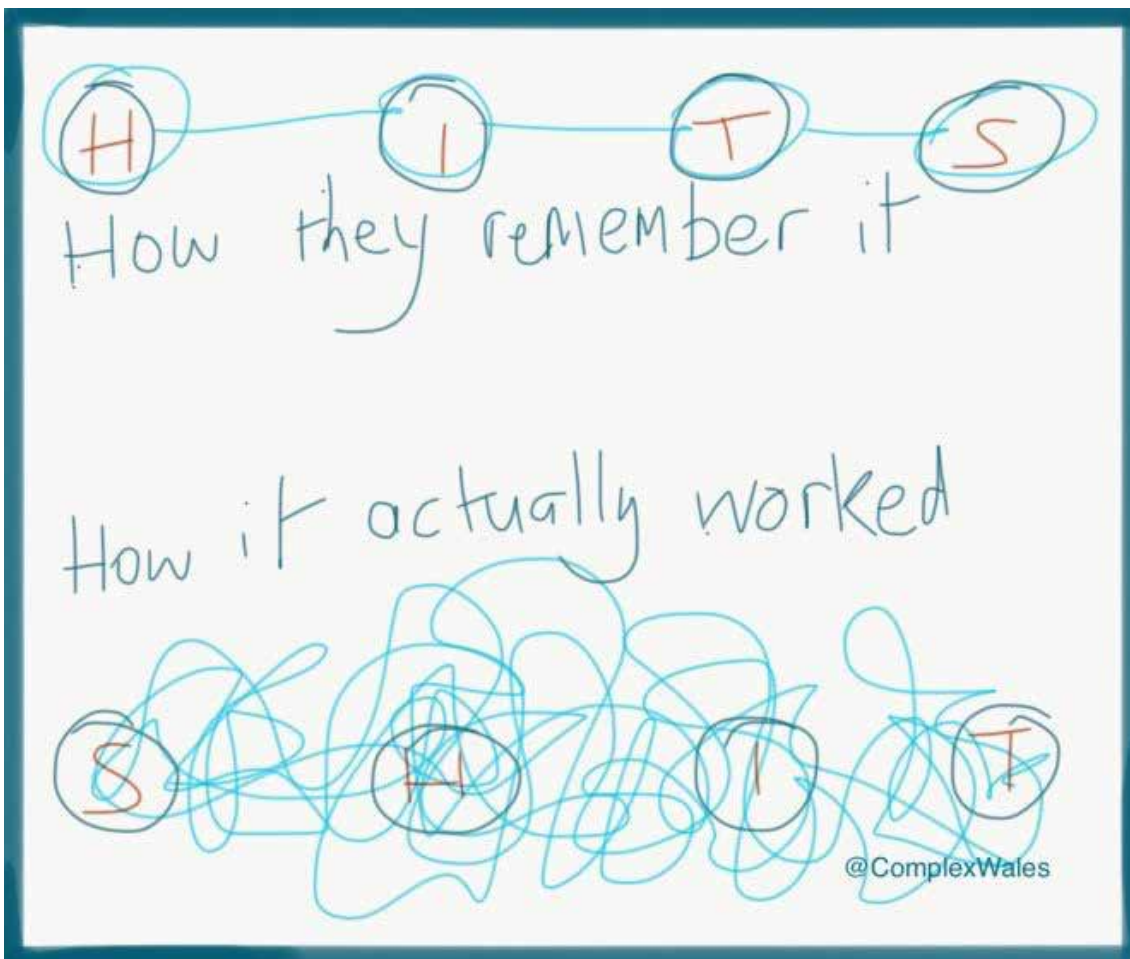
As the M-E-L acronym implies, there are three activities to consider: Monitoring, Evaluation and Learning. After impact pathways have been developed, cities or towns need to consider how the P4EG progress can be best measured through:

- Monitoring activities and outputs during implementation through ongoing data collection using pre-defined KPIs and data sources.
- Periodic and systematic observation, reflection, stocktaking (i.e., sensemaking) and learning activities.
- Whether it is necessary to conduct more in-depth internal or third-party evaluation based on KPIs after implementation of actions.



What do we mean by 'Strategic Learning'?

- Understand what works, in what contexts, for whom and why.
- Support direct and rapid course correction for strategy-making, action-planning and decision-making through testing and implementing solutions/actions.
- Support the development of capabilities/ capacities of all stakeholders.
- Evaluate and generate evidence/knowledge on the scalability and transferability of solutions across contexts.
- Enable knowledge sharing with the network to learn collectively (also from failures and barriers)
- Reflect on 'how' stakeholders learn through action implementation and learning goals.

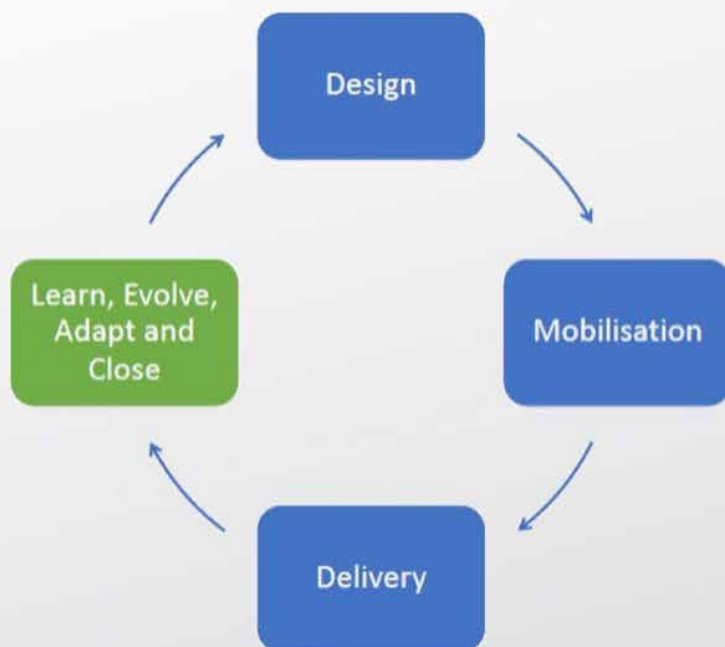


Source: Complex Wales

How is a strategic learning cycle different from a traditional project cycle?

- Based on the outlined pathways, cities or towns would be able to choose from key performance indicators based on their key sectors of action planning.
- Through continuous learning and sensemaking cities can observe, reflect, take stock and synthesise the progress data to generate real-time insights.
- It enables more agile governance: understanding which solutions are working, in what contexts, for whom and why.
- Local authorities' response to these insights with actions can support the scalability and transferability of interventions across the priority sectors identified in their P4EG.
- These Learning Cycles can also help M4EG cities or towns move away from a traditional project cycle where MEL only happens at the end (see diagram below).

Traditional Project Cycle

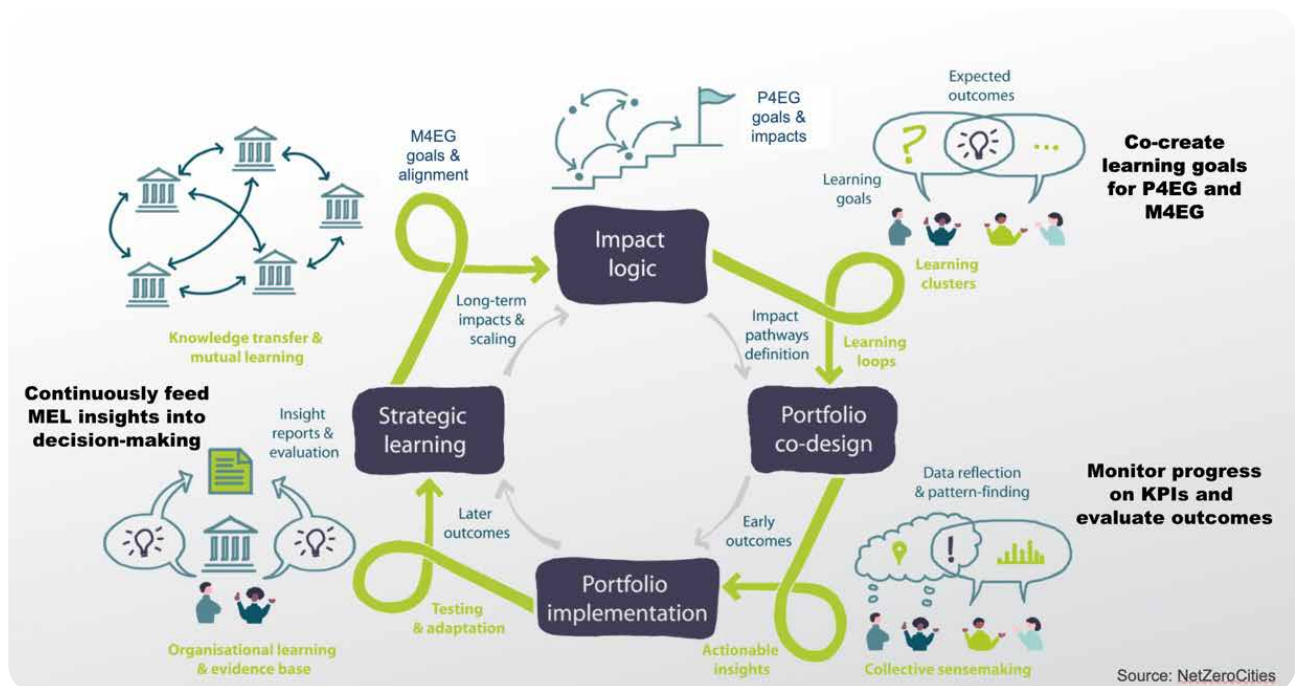


Using the Strategic Learning Cycle to support MEL

Peer-to-peer learning spaces are important to build trust and synergies, creating a safe learning environment in which cities or towns feel empowered to exchange insights on barriers and failures, encouraging necessary course-correction of their respective pathways.

Collective sensemaking can support the measurement of progress towards P4EG goals by interpreting and evaluating both qualitative and quantitative data and comparing them with the expected impacts and outcomes.

The insights and knowledge collected through these strategic learning activities can be collated and synthesised to make them useful to others within the local authorities and across the M4EG network. This ensures that lessons learnt are widely shared across the network and can help inform each town's or city's actions and decision-making (see diagram below).



1.5 Workshop / Discussion Activity 1

Co-designing the Impact Pathways to refine P4EG Actions

The co-creation of impact pathways is aimed at supporting the municipality in identifying the most critical actions to monitor, evaluate, report, and learn during their P4EG and climate action plan's implementation.

To co-design an Impact Logic, a participatory co-creation process is generally organised, consisting of facilitated workshops with key stakeholders for the P4EG.

Workshop 1 guiding questions:

A step-by-step deliberation and co-creation process focused on relevant thematic areas and sectors could use the following set of guiding questions:

- What changes (outcomes) are you currently seeking through P4EG actions and climate actions?
- Which co-benefits/impacts are you aiming to achieve through your P4EG?
- When do you expect to achieve these changes (earlier and later in the timeline)?
- Where and under what contexts are the P4EG or climate action impacts going to happen?
- How do you think implementation will work in practice and how will one change lead to another in a sequence?
- What else needs to occur for the changes to happen (assumptions)?
- What will your city or town and other external stakeholders do to make the changes happen (actions or interventions)?

1.6 Workshop / Discussion Activity 2

Co-designing the Impact Pathways to refine P4EG Actions

Workshop 2:

Once the draft Impact Pathways are co-designed through the co-creation process, they should be checked to see whether they provided a plausible and coherent account of the pathways towards impact goals and whether the causal connections were clear. The guiding questions below are useful for this step:

Workshop 2 guiding questions:

- Does this set of outcomes sufficiently capture the intent of the initiative? If not, what's missing?
- Are the outcomes clearly and specifically defined? (i.e., one outcome per statement)
- Are there any gaps in the outcomes chain? (e.g., is there an intermediate outcome/another level that needs to be included)
- Are the causal links as mechanisms for change clear? Can they be explained as a narrative? What is the rationale and evidence that supports the links between the various Impact Logic elements?
- What are the assumptions related to the achievement of each outcome?
- Are there any other contributions that are critical to success? (e.g., other related initiatives/projects/programmes running in parallel that are contributing to the same outcomes)
- How do the planned and selected actions connect and contribute to outputs?
- Is the rationale for outputs contributing to outcomes supported by any existing evidence? If not, what are the evidence gaps? Once identified, these identified evidence gaps can be potentially addressed through data collection, analysis, and evaluation, depending on available resources.

CHECK YOUR ANSWERS

Module 1

- **Question 1**

All options except for C are correct

- **Question 2**

F is correct

- **Question 3**

B is correct

Module 2

- **Question 1**

C is incorrect

- **Question 2**

C is incorrect

Module 3

- **Question 1**

All options except E are incorrect

- **Question 2**

D is correct

- **Question 3**

F is correct



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