

Adapting to climate change in European cities: Towards smarter, swifter & more systemic action

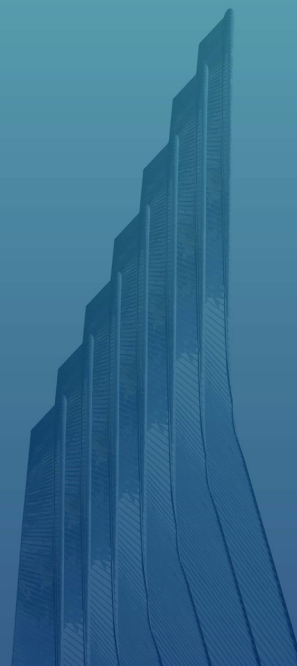


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Key messages

- The new EU Strategy on Adaptation to Climate Change – published by the European Commission in February 2021 – joins a suite of existing strategies and frameworks to tackle climate change at EU level, including the existing Urban Agenda for the EU, the European Green Deal (launched in December 2019) and related European Climate Law (currently being prepared for adoption), and the coming Mission: A Climate Resilient Europe.
- The new EU Strategy aims towards a climate-resilient Europe by 2050, by making climate adaptation action smarter, more systemic and swifter (see Part 1).
- **Actions from the EU Strategy of particular relevance to local and regional authorities are:**
 - Promote common rules and specifications for recording and gathering data on climate-related losses and physical climate risk from the public and private sectors, and support its central storage at EU level through the Risk Data Hub. Local governments should promote knowledge sharing with the private sector – and in particular with insurance companies – on local vulnerabilities and risks, while establishing safeguards to ensure the public interest and privacy of residents are protected (see Part 3).
 - Improve and expand the existing Climate-ADAPT platform, including its capabilities, user and contributor base, outreach, and impact (see Part 3).
 - Improve frameworks for monitoring and evaluating member states’ progress on adaptation, including further development of indicators and a framework for assessing resilience based on the experience gained with adaptation preparedness scoreboards for the 2013 Adaptation Strategy, and in line with work of the UNFCCC Adaptation Committee. Although targeting national level, this development could have implications on the way local governments will monitor their own adaptation progress in the future (see Part 3).
- Finance local resilience thanks to increased financial opportunities to implement adaptation actions at the local scale, support to the local uptake of data, digital and smart solutions related to climate adaptation tailored to local and regional specificities (see Part 4).
- Foster just resilience through development of reskilling and requalification programmes. In particular, further support to local and regional governments will be led by the EU-CoM, through the creation of a “policy support facility” to be likely launched in 2021 (see Part 4).
- Promote the link between blue-green infrastructure (BGI) and adaptation planning, supporting efforts to better identify and quantify the benefits of BGI, a future mechanism to support monitoring of climate mitigation benefits in particular. This could support local authorities’ efforts in the future to quantify and monitor co-benefits related to climate adaptation (see Part 4).
- Accelerate the rollout of adaptation solutions through the Horizon Europe Mission “Adaptation to Climate Change, including Societal Transformation”. The Mission will test integrated solutions to achieve climate-resilience by 2050, emphasising citizen engagement, supporting 200 communities to develop solutions for transformative adaptation, and scaling up 100 deep demonstrations of climate-resilience (see Part 5).
- Reduce climate-related risk by actively integrating a disaster risk reduction (DRR) perspective with adaptation planning. New standards and guidelines will be developed at the European level to support this integration. This approach will target the construction sector in particular for its potential to incorporate emissions reduction with adaptation to climate change and preserve the building stock from disasters (Part 5).
- **Putting the above strategies into practice presents challenges. However many European cities are already active in several of these areas. Examples of action, and supporting tools and resources, are profiled throughout this publication to offer inspiration and guidance to readers working for or with local and regional authorities in Europe.**

This document has been developed by the **Covenant of Mayors for Climate and Energy – Europe Office (Covenant– Europe Office)**¹ following the release of the new EU Strategy on Adaptation to Climate Change in February 2021². At the time of writing, Europe and the world at large remain gripped by the COVID–19 pandemic, which has highlighted in particular the social and economic fragilities of our existing urban systems³, and called into question the often destructive and extractive nature of human relationships with the natural environment.

Chapter 1

Introduction

The new EU Strategy and this historical juncture – presenting an opportunity to ‘build back better’⁴ – make this a timely moment to consider where local and regional governments should best direct their efforts for a more resilient future. In this context, this publication is designed for decision–makers and technical staff working on climate change adaptation and resilience in local and regional governments, aiming to:

◀ Photo by **Simone Hutsch** on Unsplash

- 1 Update readers on the current EU policy context for climate adaptation, outlining broadly what the new EU Adaptation Strategy means for local and regional authorities in EU member states, and highlighting the relevance for local action of other key initiatives (**see Part 2**);
- 2 Highlight financing and funding schemes available for adaptation in cities (**see Part 4**);
- 3 Briefly describe the role of open data (including insurance data) in adaptation and resilience planning (**see Part 3**);
- 4 Outline key co–benefits of adaptation, with a special focus on its relation with climate mitigation (**see Part 3**); biodiversity protection (**see Part 4**); and disaster risk reduction (**see Part 5**).
- 5 Briefly highlight the importance of monitoring and evaluation for urban adaptation (**see Part 4**);
- 6 Briefly illustrate how adaptation measures have been implemented in practice (see example boxes throughout);
- 7 Highlight other existing guidance and decision–support tools, including outputs of EU–funded projects on adaptation for further reading, and relevant standards in existence or under development.

The guidance below complements the Covenant–Europe’s **Urban Adaptation Support Tool (UAST)**⁵, which outlines steps needed to develop and implement an adaptation strategy, in six phases:

- Preparing the ground for adaptation
- Assessing climate change risks and vulnerabilities
- Identifying adaptation options
- Assessing and selecting adaptation options
- Implementing adaptation
- Monitoring and evaluating adaptation

This publication complements existing resources, methodologies and case studies published by the Covenant of Mayors – Europe Office to support local and regional governments implementing climate adaptation in Europe.

¹ <https://www.covenantofmayors.eu/>

² European Commission, *The New EU Strategy on Adaptation to Climate Change*.

³ European Commission, *Overview of Natural and Man–Made Disaster Risks the European Union May Face*.

⁴ UN–Habitat, *Cities and Pandemics: Towards a More Just, Green and Healthy Future*.

⁵ <https://climate-adapt.eea.europa.eu/knowledge/tools/urban-ast>

This section explores the current EU policy context on adaptation to climate change. First, it broadly outlines the main objectives of the new EU Strategy on Adaptation to Climate Change⁶ with a particular view to its relevance for local and regional governments, followed by a brief overview of key European initiatives that also provide support to local and regional authorities working on climate adaptation.

Chapter 2

The EU policy landscape

2.1

The new EU Strategy on Adaptation to Climate Change

In February 2021, the European Commission adopted its new EU Strategy on Adaptation to Climate Change. The new EU Strategy builds on the first version, published in 2013 and evaluated five years later. It complements the European Green Deal⁷ (launched in December 2019) and related European Climate Law (currently being prepared for adoption), with an over-arching goal to achieve net-zero greenhouse gas emissions Europe-wide by 2050, and an obligation for member states to implement their national adaptation strategies.

Directly matching the goal for climate neutrality by 2050, the new EU Strategy aims to achieve climate resilience in Europe by 2050, with an interim goal to embed awareness of adaptation and planning in “every single local authority, company and household”⁸ by 2030. To this end, it establishes four main objectives that all levels of government should pursue:

- Making adaptation smarter: improving knowledge and managing uncertainty.
- Making adaptation more systemic: support policy development at all levels and sectors.
- Making adaptation swifter: speeding up adaptation across the board.
- Stepping up international action for climate resilience.

Acknowledging the difficulties that the process to achieve the four objectives above could generate, the Strategy outlines planned fiscal support to public authorities to implement a just transition. Local authorities, in particular, are ultimately in charge of making this process inclusive, giving to urban communities – and in particular to the most vulnerable groups – the chance to take part in and influence the changes required to make their city resilient.

◀ Photo by **Simone Hutsch** on Unsplash

⁶ European Commission, *The New EU Strategy on Adaptation to Climate Change*.

⁷ Along with adaptation, EU Green Deal initiatives include the: Biodiversity Strategy, Renovation Wave, Farm to Fork Strategy, the Circular Economy

and Zero Pollution Action Plans, Forest Strategy, Soil Strategy, Smart and Sustainable Mobility Strategy, and Renewed Sustainable Finance Strategy.

Cities have the duty and the opportunity to ensure that all climate actions implemented do not affect negatively the population.

The new EU Strategy highlights the importance of cooperation between different levels of governments to achieve resilience in Europe and that all of them have specific roles and potential in this process. In particular, it defines the local scale as the “bedrock of adaptation”⁹, since climate impacts are experienced first-hand locally, and with cities and regions having a leading role to implement climate actions and monitoring their impacts. Cities and regions have at the same time the duty and the opportunity to ensure that all climate actions implemented (or under implementation) do not affect negatively the population from a social, environmental and economic perspective. Action areas of particular relevance to local and regional authorities are outlined in Chapters 3, 4 and 5.

2.2

Further relevant policies for climate adaptation in Europe

Three years after the first EU Strategy was published, the 2016 **Pact of Amsterdam – the Urban Agenda for the EU** served to further clarify a Europe-wide approach to climate adaptation¹⁰. The pact outlined different priority themes and specific actions, including climate adaptation. In particular, the agenda covers the establishment of the Climate Adaptation Partnership to review existing EU legislation, instruments and initiatives¹¹; one of 14 partnerships – all of them exploring improvements to regulation, funding and knowledge. Working in thematic groups to raise awareness on the urgency of an urban response to climate change, the Partnership, has brought together Member States, local

and regional authorities, the European Commission and other EU organisations, observatories and stakeholders, are all involved in framing a suitable and to frame an actionable plan adaptation, including translating the needs of cities into concrete actions. The action plan, along with related outputs from the Partnership, can be found on the European Commission’s **Futurium platform** (a website for open discussion of EU policies).

Establishing continuity with the work of the Climate Adaptation Partnership, the European Commission has recently called a board of experts to define an actionable commitment to resilience for European institutions. Thus, in the framework of the **EU missions**, which aim to solve the greatest European challenges by 2030, a

⁸ European Commission, *The New EU Strategy on Adaptation to Climate Change*, 4.

⁹ European Commission, 9.

¹⁰ European Union, *Urban Agenda for the EU: Pact of Amsterdam*.

¹¹ European Commission, *Urban Agenda for the EU: Climate Adaptation Partnership – Action Plan*

¹² Hedegaard et al., *Proposed Mission: A Climate Resilient*

Cities should take advantage of their proximity to the urban population in order to foster more communication with citizens.

< Photo by **Simone Hutsch** on Unsplash

specific focus on **“Adaptation to climate change including societal transformation” points to climate adaptation as an urgent matter that all levels of governments should address as a priority**. Submitted in September 2020, the proposed Mission, “A Climate Resilient Europe – Prepare Europe for climate disruptions and accelerate the transformation to a climate resilient and just Europe by 2030” gives the chance to turn the challenge of adapting to climate change into an opportunity “to make Europe resilient, climate-prepared and just”¹². The specific targets of the Mission speak in particular to local and regional authorities. Thus, it aims by 2030:

- To ensure all cities and regions have access to risk profiles, early warning systems and other services to deal with climate disruption.
- To co-create in all communities and regions a local transformative vision towards resilience.
- To build deep climate-resilience through societal transformation by scaling-up the concrete solutions of 100 local demonstration projects.

Finally, it is worth noting the **European Green Deal**¹³, the European Commission’s plan to make the European economy sustainable through climate and environmental innovations while integrating a social justice perspective¹⁴. Published

in December 2019, it makes reference to the above-mentioned new EU strategy for adaptation. The EU Green Deal highlights resilience, prevention and preparedness as crucial elements in its overall strategy. In addition, it sets climate adaptation as one important area to deliver large-scale changes through the mobilisation of local and regional stakeholders¹⁵. As part of the EU Green Deal, the **European Climate Pact**¹⁶ calls people, communities and organisations to take action in the battle against climate change. In this process, cities are considered to have a critical role and should take advantage of their proximity to the urban population in order to foster more solid communication with citizens. For this reason, the new EU strategy gives cities a primary role in coordinating the interests of different stakeholders to design and implement urban actions. The Climate Pact establishes the basis to integrate social justice within climate adaptation and progress with a view to achieving a just transition¹⁷.

Europe Prepare Europe for Climate Disruptions and Accelerate the Transformation to a Climate Resilient and Just Europe by 2030

¹³ European Commission, *The European Green Deal*.

¹⁴ https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

¹⁵ European Commission, *The European Green Deal*, 18.

¹⁶ https://europa.eu/climate-pact/index_en

¹⁷ “Just Transition is a vision-led, unifying and

Action area 2.1.2**More and better climate-related risk and losses data**

The new EU Strategy recognises the centrality of data collection and analysis to effective climate adaptation planning, specifically:

*“The Commission will promote common rules and specifications for the recording and collection of data on climate-related losses and physical climate risk, and support the central recording of this data from the public and private sector at EU level through its **Risk Data Hub**¹⁸. It will encourage at the national level a voluntary approach of public private partnerships for the collection and sharing of loss data based on enhanced cooperation with Member States, cities and industry.”*

Chapter 3

Smarter adaptation:

Improving knowledge & managing uncertainty

◀ Photo by **Simone Hutsch** on Unsplash

¹⁸ <https://drmkc.jrc.ec.europa.eu/risk-data-hub#/>

¹⁹ <https://www.eea.europa.eu/publications/sharing-adaptation-information-across-europe>

Action area 2.1.3**Making Climate-ADAPT the authoritative European platform for adaptation**

Based on an evaluation of its use and capacity¹⁹, the existing Climate-ADAPT platform will be expanded, including its capabilities, user and contributor base, outreach, and impact.

“It will boost the exchange of knowledge, good practices and solutions, including from EU-funded projects, reaching out to and involving a growing network of users. It will also collect and process data from all relevant sources and subsequently develop high-quality information. Links to transnational, national and subnational adaptation platforms will be further developed, as well as connection and interoperability with relevant resources for climate impacts.”

3.1**The importance of data for building resilience**

An effective adaptation planning process relies on access to sound data on anticipated future climate impacts in order to conduct a reliable risk and vulnerability assessment (RVA). Georeferenced data is particularly important to enable a spatially explicit RVA. The **European Climate Data Explorer** on Climate-ADAPT provides an overview of climate-related hazard indices in the areas of health, agriculture, forestry, energy, tourism and coastal locations – obtained from **Copernicus Climate Services**.

²⁰ Bertoldi, Guidebook *How to Develop a Sustainable Energy and Climate Action Plan (SECAP)* – Part 2.

Global climate data needs to be downscaled in order to make accurate assessments and predictions city-wide.

Another useful source of spatially explicit climatic data is the Urban Adaptation Map Viewer, which provides details of the historic and projected spatial distribution and intensity of hazards including extreme heat, flooding, water scarcity, wildfires and vector-borne diseases, along with characteristics of cities and their communities that influence exposure and vulnerability. Another source of accessible spatial data across Europe is the **Climate Risk Typology**, with data available at NUTS3 regional level – useful for a preliminary, low-resolution impression of a city’s vulnerabilities. This interactive online map helps to describe, compare and analyse climate risks across Europe, particularly useful during the early stages of assessing vulnerability and risks. Key sources of demographic and socio-economic data include the **Urban Audit database**, National Census Bureaus and National Statistical Institutes²⁰.

Obstacles to accessing data

Global climate data needs to be downscaled in order to make accurate assessments and predictions city-wide. At city level, data-informed decision making may be hampered by barriers to access: e.g. gaps in data that is collected in the first place or outdated data sets, associated lack of skills or capacity, the dispersal of existing data sets across different departments that do not typically cooperate, or data sets that are only available at a cost from private providers. Obtaining high resolution, georeferenced data is often a particular challenge for small cities.

Increasing open access to data

Making more data open access offers potential both to improve collaboration and effective decision-making in local and regional authorities, and to boost trust in institutions. However, many local administrations would need to plan and implement specific measures in order to make the transition towards an open-data scenario possible, such as:

- provide supportive governance,
- continuously engage with data-users,
- mobilize financing for capacity building
- invest in communication with the general public²¹

Photo by **Simone Hutsch** on Unsplash

²² <https://climate-adapt.eea.europa.eu/>

²³ Jarzabkowski et al., *Insurance for Climate Adaptation: Opportunities and Limitations*

²⁴ Keskitalo, Vulturius, and Scholten, *Adaptation to Climate Change in the Insurance Sector: Examples from the UK, Germany and the Netherlands.*

²⁵ European Commission, *Using Insurance in Adaptation to Climate Change.*

Cooperation between local and regional authorities and insurance companies could be very beneficial for the public sector.

< Photo by **Simone Hutsch** on Unsplash

One important existing source of open data is **Climate-ADAPT**²², the European platform for adaptation knowledge. Here staff at local and regional authorities can find all kinds of policy frameworks, funding opportunities, tools, indicators and case studies about adaptation to climate change in Europe.

Working with insurers

Insurance data, and the expertise of insurance companies, offers promise to tackle some of the data gaps facing municipal staff²³.

Private insurance companies can be a valuable asset for local authorities in their

attempt to adapt to climate change, offering a service for identifying, assessing and covering climate risks, where an effective collaboration can be established²⁴. In this regard, the European Commission highlights that governments and the insurance sector need to exchange data, set common objectives and divide responsibilities in order to “promote the sharing of risk, hazard and impact data across stakeholders and the spreading of risk by allowing cities to pool their insurance”²⁵. A cooperation between local and regional authorities and insurance companies could be very beneficial for the public sector since it would enable access to very precise and up-to-

date climate data. A study by the Mercator Research Institute on Global Commons and Climate Change published in 2021 used anonymised health records from German health insurer AOK, which is Germany’s largest health insurer covering about one in three people to estimate that suffering from heat stress among elderly people could increase sixfold by the year 2100, depending on future climate policy²⁶. Other examples include Barcelona, where the Spanish Insurance Compensation Consortium provided the municipality with historical compensations data, from 1996 to 2018, related to pluvial floods in Barcelona, to assist in understanding financial losses from past flooding events²⁷, and a similar case in Norway with nine pilot municipalities²⁸. Where insurance companies are invited to collaborate with local administrations, it is of course crucial that safeguards are developed and implemented to ensure the public interest is not made secondary to private profit, and that residents’ privacy is protected.

²⁶ <https://www.mcc-berlin.net/en/news/information/information-detail/article/heat-stress->

[look-for-the-future.html](https://www.mcc-berlin.net/en/news/information/information-detail/article/heat-stress-look-for-the-future.html)

²⁷ https://www.covenantofmayors.eu/index.php?option=com_attachments&task=download&id=901

²⁸ <https://climate-adapt.eea.europa.eu/metadata/case-studies/use-of-insurance-loss-data-by-local-authorities-in-norway>

3.2 Co-benefits: Climate adaptation and mitigation

Adaptation and mitigation together represent two joint pillars of climate policy. On the one hand, a long-term strategy to fulfil the EU mitigation targets is necessary to reduce greenhouse gas emissions. At the same time, local and regional authorities need to adapt to current and near future climate impacts, addressing immediate risks and vulnerabilities while planning for longer term impacts that can be expected even if future emissions are radically reduced. Nevertheless, today cities tend to have a higher number and more developed strategies regarding the reduction of CO₂ emissions than for adapting to the effects of climate change, while the two streams of climate action continue to be largely silo-ed from one another. Developing integrated strategies for climate change can both bring benefits to local action, in particular in the sectors of buildings, urban infrastructure, forestry and agriculture. Importantly, mainstreaming mitigation into climate adaptation policies at the local level serves to:

- Maximise the use of climate funding to achieve comprehensive goals.
- Make climate action more attractive for private investors by including long-term mitigation targets while also adapting to current threats.
- Provide a local understanding and contextualising climate mitigation actions, normally developed at higher levels.
- Raise awareness on complex climate issues in local communities, while improving residents' quality of life.

[porting-adaptation-action-in-small-and-medium-size-enterprises-in-turin-italy/](https://climate-adapt.eea.europa.eu/meta-data/case-studies/insurance-company-supporting-adaptation-action-in-small-and-medium-size-enterprises-in-turin-italy/)

Example:

Public-private partnership for climate adaptation²⁹

Location

City of Turin, Italy

Year

2015–2018

General description

The city government, local insurers and SMEs created public-private partnerships aiming at transferring knowledge on risk assessment and management from insurers to public and private adaptation planners, and promoting the development and implementation of adaptation plans for SMEs and industrial districts.

Key points

- The Italian financial services company Unipol supported the municipality and the SMEs to design an Integrated District Adaptation Plan, as well as Company Adaptation Action Plans (CAAP)
- The **CRAM**³⁰ online tool was created to give open access to climate-related risks data based on geographic location. The tool automatically generates outputs relevant for the CAAPs on the basis of questionnaire responses provided by SMEs. The Italian language tool can also be used by external stakeholders who need access to climate data.

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On the other hand, a lack of integration of the two climate perspectives in local policies can lead to trade-offs, lock-ins or conflicts, and potential maladaptation (actions that may lead to increased risk of adverse climate-related outcomes, increased vulnerability to climate change, or diminished welfare, now or in the future³¹). In particular, some adaptation measures aimed at giving an immediate response to existing threats, could hinder long-term mitigation strategies³². In this context,

³⁰ <https://cram.derris.eu/welcome>

³¹ IPCC (2014). Annex II: Glossary [Mach, K.J., S. Planton and C. von Stechow (eds.)]. In: Climate

²⁹ <https://climate-adapt.eea.europa.eu/meta-data/case-studies/insurance-company-supporting-adaptation-action-in-small-and-medium-size-enterprises-in-turin-italy/>

< Photo by **Simone Hutsch** on Unsplash

the European Commission is providing funding opportunities to overcome these barriers and enable better integration of climate action. Specifically, as a structural fund, the European Regional Development Fund (ERDF) supports local and regional development by co-financing investments in different sectors and explicitly highlights the importance of integrating low-carbon strategies with adaptation plans. In addition, the new LIFE programme 2021–2027 has developed a dedicated sub-programme for climate mitigation and adaptation.

The municipality of Karlova Ves in Slovakia is benefiting from LIFE funding to renovate a public school and kindergarten using low-carbon materials, to achieve both mitigation and adaptation goals, as part of the project. Developing resilient, low-carbon and more liveable urban residential area (Deliver) (2018–2023). The project is also developing an online tool ‘Klimasken’ for monitoring, evaluation, management and presentation of information on adaptation and mitigation actions, aiming to support Covenant signatories in preparing and monitoring their SECAPs³³. For more examples and guidance on integrating adaptation and mitigation planning, see [Upgrading from SEAP to SECAP for integrated climate action: a quick access guide](#).

³² <https://www.sciencedirect.com/science/article/pii/S0197397508000623?via%3Dihub>

Change[Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, pp. 117–130.

Example:
Integrating climate adaptation and mitigation through mobility³⁴

 Location City of Bydgoszcz, Poland	 Year 2019–ongoing
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General description

The city aims at promoting low carbon strategies (particularly in the built urban environment), including support for sustainable mobility and adaptation measures having a mitigating effect on climate change.

Objectives

- Increase the use of urban public transport.
- Incentivise the use of low-emission vehicles.
- Support Intelligent Managements Transport System.
- Make existing infrastructure more resilient through the use of new technologies and innovations.

Summary

Including adaptation and mitigation actions in its Climate Plan, Bydgoszcz is taking advantage of a transition to smart mobility not only to reduce CO₂ emissions in the long-term, but also to improve resilience of existing infrastructure, including transportation system.

The funding needed to implement smart technologies with reduced emissions has, in this case, been exploited to also strengthen the existing transport network from an adaptation perspective.

³³ European Environment Agency. Urban Adaptation in Europe: How Cities and Towns Respond to Climate Change. EEA Report 12, 2020.

<https://www.eea.europa.eu/publications/urban-adaptation-in-europe>.

³⁴ <https://www.interregeurope.eu/2050climobcity/>

Climate change impacts do not respect sectoral boundaries are not limited to specific sectors only, thus any response needs to be cut across sectors and consider interdependencies between systems. This section provides cities and regions with an overview of systemic approaches and opportunities at the European level to implement adaptation.

Chapter 4

More systemic adaptation: Support policy development at all levels and sectors

As indicated in the new EU Adaptation Strategy, in fact, the European Commission commits and encourages all levels of governance to actively mainstream climate resilience considerations into all relevant policy fields – extending beyond sectors targeted in the earlier 2013 Strategy.³⁵ This has already been incorporated in key EU strategies such as the Green Infrastructure Strategy³⁶ and the Biodiversity Strategy for 2030³⁷, which explicitly include climate adaptation as one of their focuses or main goals.

More specifically, the Strategy highlights some important considerations that local and regional authorities should include to make their adaptation policies more systemic:

- To mainstream monitoring and evaluation throughout the whole process of planning and development of climate actions.
- To ensure the economic feasibility of adaptation projects, and for this to be aware of the financial opportunities available at the European level.
- To mainstream climate adaptation into different policy sectors, and in particular to consider the co-benefits of a possible integration between climate adaptation and biodiversity protection.

The following sub-chapters present these three aspects in detail.

4.1

Monitoring and evaluating climate adaptation actions

The evaluation of the project is a very important iterative step that should start during the planning of an adaptation project or at the latest when defining an adaptation approach³⁸. It should, be in continuity with the risk and vulnerabilities assessment, in order to identify suitable indicators that enable to control the implementation of programmes, and make adjustments when necessary³⁹.

³⁵ European Commission (2021): Forging a climate-resilient Europe – the new EU Strategy on Adaptation to Climate Change, p. 7

³⁶ https://ec.europa.eu/environment/nature/ecosystems/strategy/index_en.htm

³⁷ https://ec.europa.eu/environment/strategy/biodiversity-strategy-2030_en

³⁸ Chapter 4: Planning adaptation to climate change

³⁹ European Environment Agency, *Urban Adaptation in Europe: How Cities and Towns Respond to Climate Change*.

At the same time, monitoring adaptation projects represents an opportunity for cities to communicate their progress and results to their own communities, fostering adaptive behaviour also outside of municipal operations⁴⁰. In brief, the evaluation of an adaptation programme has some main objectives:

- To track the progress of the local plan
- To assess the effectiveness of actions through pre-defined indicators
- To communicate accomplishments
- To investigate tailored adaptation options for the local context
- To launch new rounds of the adaptation process⁴¹

Despite the relevance of the project evaluation phase, no standards for monitoring adaptation in cities have been developed so far⁴². For this reason, local authorities are called to look at what has been developed by cities and other institutions (e.g. indicator sets provided by the CoM-Europe⁴³) and adapt this to define local indicators for the evaluation of projects. This can be a hard job for local administrations under different points of view. In particular, a set of main barriers should be taken into consideration:

- Compared to climate mitigation, success of climate adaptation measures is difficult to quantify.
- The uncertainty of future climate scenarios hinders the definition of middle to long-term adaptation strategies.
- The involvement of different interests and stakeholders in the process requires a high level of coordination and communication.
- The lack of local capacities for adaptation, specifically in public administrations, impedes the delivery of high-quality strategies⁴⁴.

⁴⁰ Jackson, Barry, and Marzok, *Changing Climate, Changing Communities: Guide for Municipal Climate Adaptation*.

⁴¹ Jackson, Ewa, Leya Barry, and Nicole Marzok. *Changing Climate, Changing Communities: Guide for Municipal Climate Adaptation*. ICLEI Canada

⁴² Hanania and Latinos, *Standardisation in Local Climate Change Adaptation*.

⁴³ The Covenant of Mayors – Europe has defined a

set of indicators as a source of inspiration for cities and regions. They are available in the Annex IV of the Covenant of Mayors Reporting Guidelines (2016)

Action area 2.2.1

Improving adaptation strategies and plans

All levels of government, including local government, are encouraged to further develop their adaptation strategies, and the Commission intends to improve frameworks for monitoring and evaluating member state progress on adaptation. Although targeting national level, this development could have implications for the way local authorities monitor their own adaptation progress in future.

“The Commission will further develop suitable indicators and a resilience assessment framework based on the experience gained with adaptation preparedness scoreboards for the 2013 Adaptation Strategy, and in line with work in the UNFCCC Adaptation Committee.”

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Hutsch on Unsplash

Notwithstanding, the example of many cities around Europe shows that overcoming these barriers is possible and cities can define their climate plans to integrate monitoring as a major element for the success of their projects (see the example of Barcelona in the box below).

Reporting on the assessment process can help cities better understand the weaknesses and strengths of their plan.

Example:

Barcelona Climate Plan: Annual indicators for climate action⁴⁵

Location

City of Barcelona, Spain

Year

2018–ongoing

General description

In order to assess progress towards the different goals and targets of its **Climate Plan 2018–2030**, the city has identified a series of indicators, grouped in six categories:

- Impact
- Resource
- Perception
- Action
- Environment
- Performance

Specific indicators to assess each of these aspects are defined for all the lines of action of the plan.

Expected outputs

- 1 Annual monitoring of the progress of projects within all lines of action of the climate plan (including adaptation actions) through a series of defined indicators.
- 2 A monitoring report is published every two years to show if the results are in line with the commitments taken in the framework of the Covenant of Mayors – Europe.

Key points

- 1 The monitoring of climate plans is a complex process that needs to take into consideration different social, economic and environmental results of local actions. Thus, Barcelona includes different groups of indicators that quantify the resilience of local services and infrastructures from a technical but also environmental, social and economic point of view. For example, for the action line 1 of the Barcelona Climate Plan “Improving and adapting services, facilities and people’s homes, especially those of the most vulnerable to climate change” five monitoring indicators are defined:
 - Number of renovated dwellings incorporating energy efficiency criteria.
 - Number of interventions in households incorporating energy efficiency criteria.
 - Number of people benefiting from grants and subsidies.
 - Number of journeys made in specific transport services for vulnerable people.
 - Number of jobs created.
- 2 The assessment of the plan throughout its whole implementation enables the Barcelona administration to verify the achievement of expected outcomes and adjust actions according to changing circumstances.
- 3 Periodically reporting on the assessment process can also help cities to benchmark themselves against each other, and to better understand the weaknesses and strengths of their own plan.

⁴⁴ European Environment Agency, *Urban Adaptation in Europe: How Cities and Towns Respond to Climate Change*.

⁴⁵ https://www.barcelona.cat/barcelona-pel-clima/sites/default/files/documents/climate_plan_maig.pdf

⁴⁶ Bertoldi, *Guidebook How to Develop a Sustainable Energy and Climate Action Plan (SECAP) – Part 3*.

⁴⁷ European Commission, *Action Plan: Financing Sustainable Growth*.

4.2

Financing local adaptation

Staff in many cities cite limited access to financial resources as the most problematic barrier to implement their energy and climate action plans⁴⁶.

Recognising the related need for guidance at the supranational level, the European Commission published an action plan for financing sustainable growth in 2018⁴⁷. In this document, climate adaptation is described as one of the investment sectors where sustainable financing should be implemented (i.e., long-term investment in sustainable economic activities and projects which take into account environmental, social and governance considerations⁴⁸). Selected financing options of relevance for local governments are outlined below:

- **Green bonds:** financial instruments aiming at environmental projects, issued to raise capital from private markets⁴⁹. They are currently particularly incentivised for investment in climate action by the European Union⁵⁰.
- **Resilience and catastrophe (CAT) bonds:** used to fund resilient infrastructure, CAT bonds involve local authorities and insurance companies and need to be underwritten by both, serving to insure a city's assets in case of a natural disaster. Resilience bonds have been recently created, based on the model of CAT bonds, and first issued in 2019 by the European Bank for Reconstruction and Development⁵¹. Resilience bonds can

finance climate adaptation by providing liquid cash for risk reduction investments, while being feasible for investors.⁵²

- **Energy Performance Contracting (EPC):** an external organisation implements an energy efficiency or renewable energy project and uses the income to repay the costs of the project. See for example its application to public lighting renovation in the municipality of Águilas, Spain⁵³.
- **Local energy cooperatives:** offer cities the opportunity to own and/or participate in renewable energy and energy efficiency projects. Members share profits and can buy energy at a fair price. See for example the experience in German county Neustadt an der Waldnaab⁵⁴.
- **On-tax financing:** deploys private capital as up-front financing to homeowners. Based on the experience of the US “PACE

⁴⁹ European Environment Agency, *Urban Adaptation in Europe: How Cities and Towns Respond to Climate Change*.

Action area 2.2.2**Fostering local, individual and just resilience**

The actions of city and regional governments are defined as a priority for adaptation in the new EU Strategy, to be supported through increased technical and financial support, including:

- Increased financial opportunities to implement adaptation actions at the local scale,
- Support to the local uptake of data, digital and smart solutions related to climate adaptation tailored to local and regional specificities
- Strengthening of the Covenant of Mayors – Europe to help cities to concretely define adaptation actions.
- Development of reskilling and requalification programmes to implement a just transition and thus achieve resilience in an equitable way. In particular, further support to local and regional authorities will be led in the framework of the Covenant–Europe, through the creation of a “policy support facility” for accelerating adaptation implementation on the ground – to be likely launched in end-2021 and implemented in 2022–2023.

scheme”, the European Commission is developing a similar approach with the “EuroPACE”.

More sustainable financing opportunities can be found in publications mentioned in Chapter 7 ‘Further reading’ and in particular on the latest **Innovative financing schemes** brochure developed by the European Covenant of Mayors. In addition, cities and regions can find guidance on how to best collaborate with the public and private sector financial bodies on the Covenant of Mayors’ **Financial institutions instruments**. It should be highlighted that innovative approaches to financing adaptation to climate change integrate different funds to develop one project, increasing its economic sustainability in the mid to long-term.

⁵⁰ https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/eu-green-bond-standard_en

⁵¹ European Environment Agency, *Urban Adaptation in Europe: How Cities and Towns Respond to Climate Change*.

⁴⁸ https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/overview-sustainable-finance_en

Example:
Optimisation of public-private funding for climate adaptation⁵⁵

Location

City of Malmö, Sweden

Year

1990-ongoing

General description

The city of Malmö is applying climate adaptation measures through its new development projects. To this end, the local administration organises a stakeholder partnership process where the sustainability goals of the city are defined and the coordination of the interests of different institutions and companies involved is encouraged. The process consists of workshops and meetings, kick-started with a field visit to the area of interest. The organisation of the process is initially set by the city but then taken over by private stakeholders.

Financially speaking, the roles of the different parties are defined at the beginning. The developers provide initial private funding for the realisation of the project (including for the adaptation measures defined by the local administration), but can take advantage of reduced costs by conducting shared studies together with others in the partnership. In the meantime, the city can apply for additional public funding to ensure the environmental quality of the project.

Malmö has been using this approach on different projects since the 1990s, and as a result has been able to develop entire neighbourhoods and large areas of the city that perform highly on both sustainability and resilience. An outstanding example is the realisation of the Western Harbour, where a former brownfield was developed as an eco-city.

Expected outputs

- Establishment of a stakeholder partnership, the composition and organisation of which depend on the project's needs.
- Collection of both private and public funding from companies and institutions at different levels (local, regional, national, European).
- Identification of possible synergies between stakeholders for future – financial – collaborations.

Key points

The Malmö approach is based on the strict collaboration between public and private stakeholders. This type of process needs trust between parties to be successful.

To this end, the city kicks-off its projects with the in-site engagement of stakeholders.

Projects including stakeholder partnerships can benefit from different European funding opportunities. The Western Harbour project in Malmö, for example, received funding through a European R&D project called SURE/RESECO.

⁵² <https://www.preventionweb.net/news/view/72119>

⁵³ https://compete4secap.eu/fileadmin/user_upload/Fact_Sheets_English/5._Fact_Sheet_EPC.pdf

⁵⁴ https://compete4secap.eu/fileadmin/user_upload/Fact_Sheets_English/7._Fact_Sheet_Energy_Cooperatives.pdf

⁵⁵ <https://climate-adapt.eea.europa.eu/metadata/case-studies/climate-bond-financing-adaptation-actions-in-paris>

4.3

European funding opportunities

As previously mentioned and described in the example above, local and regional governments can access many funding opportunities at the supranational level for their adaptation projects. The EU Strategy on Adaptation announces that the European Commission has strengthened its financial support to cities and regions aiming to implement climate adaptation actions. The Covenant of Mayors – Europe office has developed on its website a comprehensive **Interactive Funding guide**, including all programmes that local and regional authorities in Europe can access to fund their adaptation projects. An overview of the main funding options is provided below:

- European structural and investment funds⁵⁶, in particular the European Regional Development Fund (ERDF)⁵⁷, promoting balanced development. In this framework, Interreg Europe (financed through the ERDF), aims to develop and deliver better policies, in particular it includes a specific category for environment and resource efficiency.

⁵⁶ <https://ec.europa.eu/info/funding-tenders/funding-opportunities/funding-programmes/>

- Smart Cities Marketplace⁵⁸ for adaptation projects including smart solutions.
- The new LIFE programme, which includes a sub-programme on climate adaptation and mitigation⁵⁹.
- The new Horizon Europe programme, having as one of its main objectives to strengthen resilience and crisis preparedness, and giving continuity to the Horizon2020 programme.

[overview-funding-programmes/european-structural-and-investment-funds_en](https://ec.europa.eu/info/funding-tenders/funding-programmes/european-structural-and-investment-funds_en)

The European Commission has strengthened its financial support to cities and regions aiming to implement climate adaptation actions.

Photo by **Simone > Hutsch** on Unsplash

These and other funding opportunities are described in detail in the latest **EU Funding programme** leaflet published by the Covenant of Mayors – Europe office, which includes guidance to apply for European funding. As part of the same series, the **Project development assistance** brochure provides more details on the technical assistance facilities that can help cities to plan and implement EU funded projects.

⁵⁷ https://ec.europa.eu/regional_policy/en/funding/erdf/

⁵⁸ <https://smart-cities-marketplace.ec.europa.eu/>

⁵⁹ https://cinea.ec.europa.eu/life/climate-change-mitigation-and-adaptation_en

⁶⁰ <https://ec.europa.eu/social/main.jsp?catId=1223>

The recognition of ‘unequal exposure and vulnerability to climate impacts’ within Europe is a key development in the new strategy.

4.4 Socially-just adaptation

A key development in the new Strategy is the recognition of ‘unequal exposure and vulnerability to climate impacts’ within Europe. In particular, in order to avoid reinforcing inequalities that make some groups of society more vulnerable (depending on gender, physical and mental abilities, age, economic availability, and other social factors) or inadvertently creating new inequalities through adaptation measures, the Commission will promote different programmes to foster education, training and reskilling, including:

- The European Skills Agenda⁶¹, with specific links to the European Digital Strategy⁶¹ and the Recovery Plan for Europe⁶², setting specific goals of citizen participation and inclusion already for 2025.

⁶² https://ec.europa.eu/info/strategy/recovery-plan-europe_en

- The reinforced Youth Guarantee⁶³, aiming at employment for people under-30.
- The European Social Fund Plus⁶⁴, ensuring fairer job opportunities for all.
- The Recovery and Resilience Facility⁶⁵, developed in the framework of the NextGenerationEU⁶⁶ by member states, offering important budget allocations that cities will be able to access to implement concrete strategies.

These measures aim at providing cities with the necessary economic support to implement social measures that they should plan and develop according to their own local context.

⁶³ <https://ec.europa.eu/social/main.jsp?catId=1079>

⁶⁴ <https://ec.europa.eu/esf/main.jsp?catId=35&langId=en>

4.5 Co-benefits: Climate change and biodiversity protection

Human-made climate change has huge impact on biodiversity, threatening or even destroying habitats for wildlife worldwide. The urgent need to respond to this phenomenon and reverse the damage for future generations makes clear that goals for biodiversity protection must be integrated with those for adapting to climate change and reducing greenhouse gas emissions. In fact, many local authorities are already working in this direction, understanding not only that green spaces and biodiversity in cities are now threatened by climate change, but also that the development of integrated greening plans can mitigate extreme improve readiness for future disasters and mitigate adverse climatic

⁶⁵ https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility_en

⁶¹ <https://ec.europa.eu/digital-single-market/en/content/european-digital-strategy>

trends, e.g., rising temperatures and water scarcity. In the City of Edinburgh (Scotland) for example, the ‘Living Landscape’ nature network has been established to introduce nature across the city and demonstrate that investment in natural capital also makes economic sense. According to the 2014–2017 impact report, 12–13% of a total 840 hectares of urban grassland have been transformed into biodiversity-rich living landscape grasslands. Other quantitative impacts include the creation of 74 new floral meadows and 0.52 ha of woodland habitats⁶⁷. Another interesting example comes from Ludwigsburg (Germany), which is directing particular attention to the implementation of nature-based solutions (NBS) and biodiversity protection, involving citizens in their development and management, and creating multifunctional green spaces which enhance urban climate comfort in areas with heavily sealed surfaces⁶⁸.

To further empower local authorities in implementing this type of measure, the European Commission and the European Investment Bank have set up a financing facility under the LIFE programme – namely the **Natural Capital Financing Facility** (NCOFF) – with a focus on biodiversity and ecosystem-based adaptation to climate change.

Action area 2.2.3

Promoting nature-based solutions for adaptation

The link between blue-green infrastructure (BGI) with adaptation planning is highlighted in the Strategy, with indications that efforts to better identify and quantify the benefits of BGI are required, and plans for a future mechanism to support monitoring of climate mitigation benefits in particular. This could support local authorities’ efforts in future to quantify and monitor benefits related to climate adaptation.

“Blue-green (as opposed to grey) infrastructures are multipurpose, “no regret” solutions and simultaneously provide environmental, social and economic benefits and help build climate resilience. [...] It is vital to better quantify their benefits, and to better communicate them to decision-makers and practitioners at all levels to improve take-up. In addition, the Commission will develop a certification mechanism for carbon removals, which will enable robust monitoring and quantification of the climate benefits of many nature-based solutions.”

⁶⁶ https://ec.europa.eu/info/strategy/recovery-plan-europe_en

⁶⁷ <https://oppla.eu/casestudy/21288>

⁶⁸ <https://oppla.eu/casestudy/17555>

Action area 2.3.1**Accelerating the rollout of adaptation solutions**

“One of the proposed Horizon Europe Missions will be on “Adaptation to Climate Change, including Societal Transformation”⁴⁹. The Mission would test integrated solutions that can achieve the vision of climate-resilience by 2050 with an emphasis on citizen engagement. These solutions could then be scaled up and rolled out in Europe and beyond. The Mission proposal aims to support 200 communities to develop solutions for transformative adaptation, and scale up 100 deep demonstrations of climate-resilience.”

Chapter 5

Faster adaptation: Speeding up adaptation across the board

5.1**Mission on “Adaptation to Climate Change, including Societal Transformation”**

As noted above (see Part 1), the proposed Mission “A Climate Resilient Europe – Prepare Europe for climate disruptions and accelerate the transformation to a climate resilient and just Europe by 2030”, published in September 2020, seeks to effect large-scale transformative adaptation in cities

Action area 2.3.2**Reducing climate-related risk**

Local action on adaptation should actively include a disaster risk reduction (DRR) perspective to design comprehensive strategies for resilience. New standards and guidelines will be developed at the European level to help cities implement their climate plans.

“Climate adaptation action must better leverage synergies with broader work on disaster risk prevention and reduction. Both provide a range of complementary approaches to managing climate risks in order to build resilient societies.”

The construction sector in particular is singled out as a key target to integrate adaptation to climate change with reducing emissions, recognising the need to better understand and address synergies between adaptation and DRR:

“Extreme weather and long-lasting climatic changes can damage buildings and their mitigation potential [...] However, buildings can also contribute to large-scale adaptation, for example through local water retention that reduces the urban heat island effect with green roofs and walls.”

◀ Photo by **Simone Hutsch** on Unsplash

The incorporation of disaster risk reduction (DRR) measures is key at the local level to be resilient to natural threats.

and regions across Europe. In this regard, research impact in cities and regions, in particular involving local communities in building resilience, will be a central agenda of the recently-published Horizon Europe funding calls. Local and regional authorities may benefit from the funding available by participating in a consortium.

5.2 Co-benefits: Climate adaptation and disaster risk reduction

The incorporation of disaster risk reduction (DRR) measures in climate adaptation is key at the local level to be resilient to natural threats and reduce urban vulnerabilities⁷⁰. For this reason, economic resources should be properly allocated to allow transversal regulation⁷¹. In this sense, working on DRR could be an opportunity to invest in

eliminating the social, economic, health-related and cultural vulnerabilities of the population in the face of future disasters. These investments should be implemented at different levels, and in particular at the local scale should focus on improving the resilience of infrastructure⁷². In this sense, the integration of DRR in adaptation planning can be particularly helpful for cities and regions to:

- Develop a comprehensive risk and vulnerability assessment.
- Include a wide group of stakeholders in the planning process with interest in both climate action and DRR.
- Raise awareness on recovery and climate-related issues as interrelated urban problems.
- Design new resilient infrastructure.

In this regard, the European Solidarity Fund (EUSF)⁷³, representing the major financial scheme to support responses to disasters, should be used – in particular by regional entities – as it presents an opportunity to complement immediate post-disaster action with a longer-term adaptation perspective.

⁶⁹ <https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/>

[missions-horizon-europe/adaptation-climate-change-including-societal-transformation_en](https://ec.europa.eu/info/research-and-innovation/missions-horizon-europe/adaptation-climate-change-including-societal-transformation_en)

⁷⁰ This is also highlighted as a priority by the Sendai framework for disaster risk reduction



Example:**Post-disaster recovery due to severe winter conditions in Bulgaria with the European Union Solidarity Fund⁷⁴**

Location
Bulgaria

Year
2015

General description

Over five days in early 2015, torrential rains and gale force winds caused severe flooding and landslides, leading to serious damage to infrastructure across Bulgaria, including roads and railways, agricultural land and electricity supply, and localised evacuations. Bulgarian authorities applied for EUSF funding to aid the recovery, and a total of 6.14M EUR in EUSF funding was deployed in the 12 months following the disaster. The majority of the funding (over 80%) went towards infrastructure repairs, while 15% went towards securing preventive infrastructure and cultural heritage assets. While about half of the funds went to the national Road Infrastructure Agency, just under half of the funds went to municipalities from the 12 districts (prioritized according to need), based on a call for proposals arranged by the managing authority of Operational programme “Regional Development 2007-2013”. Local needs were generally related to the clean-up process and return of infrastructure to basic working condition.

Key points

- Established cooperation between key institutions aided the speed and efficiency of implementation. In particular, the General Directorate for Fire Safety and Protection of the Population’s regional units in each district town proved instrumental due to their good working relationships with local authorities.
- Access to EUSF funding for the recovery effort was largely significant in terms of economic, cooperation and learning benefits. The financial support provided local authorities with some relief to financial pressure, and aided restoration of damaged infrastructure. The process of securing and deploying the funds helped institutions to organize themselves better and to increase the knowledge and skills of their personnel. This learning and operational impact was more significant in small municipalities, which had limited experience with EU financed projects, compared to regional public authorities such as Burgas municipality which already had considerable EC-funded project implementation experience.
- Policy impacts on longer-term preventive planning were limited due to the immediate response focus of the action, though some limited impact can be noted in clean-up of riverbeds and restoration of water infrastructure.

Investments should focus on improving the resilience of infrastructure.

⁷¹ UCLG, UN Habitat, and UNDRR, *Resilience Learning Module I: Fundamentals of Resilient Governance & Development*.

⁷² ParlAmericas and UNDRR, *Parliamentary Protocol for Disaster Risk Reduction and Climate Change Adaptation*.

⁷³ https://ec.europa.eu/regional_policy/en/funding/

Closing words

The 2021 EU Strategy on Adaptation to Climate Change sets all levels of government an ambitious target, to be Europe climate-resilient by 2050, by making climate adaptation action smarter, more systemic and swifter. To this end, national, regional and local governments are urged to ensure climate adaptation policies are integrated with climate mitigation, biodiversity protection and disaster risk reduction so as to enhance the potential related co-benefits and reduce possible conflicts. A key development in the new Strategy is the recognition of ‘unequal exposure and vulnerability to climate impacts’ within Europe, and associated imperative to avoid reinforcing inequalities that make some groups of society more vulnerable or inadvertently creating new inequalities through adaptation measures. To support a just transition, the Commission will promote key programmes to foster education, training and reskilling. The Covenant of Mayors – Europe will continue to offer support to local and regional authorities implementing climate adaptation in Europe through its established and growing resource bank, and its upcoming policy support facility.

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Adapting to climate change in European cities: Towards smarter, swifter & more systemic action

The EU Covenant of Mayors Office is responsible for the overall coordination of the initiative in Europe. It is composed of networks of local and regional authorities: Energy Cities, Climate Alliance, EUROCITIES, CEMR, FEDARENE and ICLEI Europe.

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