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# CLIMATE RESILIENCE

(innovative)

# FUNDING INSTRUMENTS

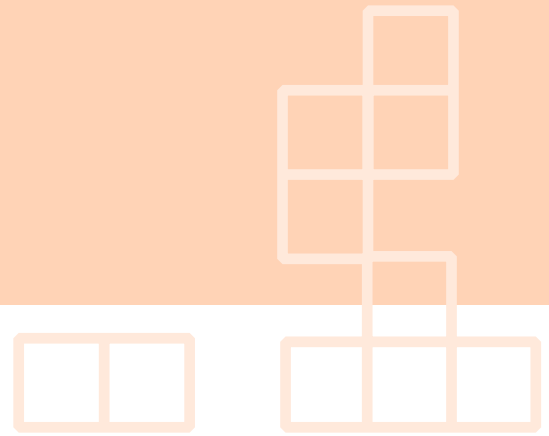
on the

# MUNICIPAL LEVEL

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- ✓ FINANCING CLIMATE ADAPTATION MEASURES ON THE MUNICIPAL LEVEL
- ✓ INNOVATIVE FUNDING INSTRUMENTS

# Executive Summary



The introduction briefly lists and defines important aspects for this "knowledge base". It explains why climate protection is an important municipal cross-cutting task in **Climate Resilience – What Does It Mean?**, before explaining the concept of climate resilience in **A Major Challenge – Closing The Financing Gap For Climate Resilience In Urban Areas**. In **A Multiple Stakeholder Game** it is shown that the major challenge is to **close the financing gap** for implementing measures for climate resilience in urban areas. In **Municipal Funding Options For Climate Resilience – State Of The Art In Europe** different strategies to bridge the financing gap are shown. It is emphasized that it is important to use innovative financing options. In **Where To Find More Information**, study results are presented that show that innovative financing methods are little known in municipalities and are therefore rarely used. However, the use of innovative financing options is crucial and, according to study results, there are deficits here; innovative financing methods are little known in municipalities and are therefore rarely used.

As shown, the current challenge for municipalities and other actors is often to find out about available financing options for climate resilience activities, to find the options that are suitable for their case and then to use them. In the desk research on this topic, we did not find a generally applicable "reference framework" and thus did not find a "standardized" list of all or at least all of the main financing options – broken down into traditional and innovative instruments, for example. In the five approaches known to us, innovative financing instruments are listed and considered less comprehensively. These five approaches known to us are each briefly presented in **Financing Instruments For Urban Adaptation To Climate Change – An Overview**.

Together with the recognition that financing climate resilience requires a multi-faceted approach that mobilises public funds, private investments and innovative financial instruments, the innovative financial instruments described in more detail in **Innovative Funding Instruments** and backed up with case studies /good practices/ projects and in some cases study results, and additionally enriched with websites, sources and further reading suggestions.

In addition to innovative sources of financing, we have included another topic that is directly relevant to the whole topic – **Green budgeting**. Interest in green budgeting is slowly growing at national and also subnational levels. Although green budgeting is not specifically about financing climate resilience, it seems important to include a chapter on this topic as it could help cities build more sustainable and resilient communities if applied. The inclusion of a chapter on green budgeting in discussions on financing climate resilience highlights the close link between financial decisions and climate change adaptation efforts. Green budgeting is briefly described, supported with case studies /best practices/ projects and additionally enriched with websites, sources and further reading recommendations.

Finally, a brief overview of climate financing options in Europe is provided.

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# Financing Climate Adaptation Measures on the Municipal Level

THE CONTEXT



## Climate Resilience – an Important Municipal Cross-Cutting Task

The climate is changing increasingly: each of the last four decades has been warmer than the previous one, and the past five years have been the warmest since 1850. The consequences of this global warming include the melting of ice and snow, rising sea levels, thawing of permafrost and the further increase in extreme weather events (for more in-depth information see [Copernicus website](#) and especially the [latest European State of the Climate report – ESOTC 2023](#) which provides descriptions and analysis of climate conditions and variations from across the Earth system).

In order to limit the effects of global warming, climate protection targets have been agreed at international and European level, which have to be implemented at EU, federal, state and municipal levels. Municipalities play a particularly important role in this comprehensive transformation process: on the one hand, this is precisely where a large proportion of climate-relevant emissions are generated, for example by buildings, mobility, trade and industry. On the other hand, the municipality, with its diverse functions as a role model, planner, owner, supplier and largest public client, has far-reaching options for action to advance climate protection locally.

### Climate Resilience – What Does It Mean?

In general climate resilience refers to the ability/capacity of a system – whether it's a community, ecosystem, infrastructure, or society as a whole – to **anticipate, withstand, recover from, and adapt to the impacts of climate change**. It encompasses a wide range of strategies, measures, and actions aimed at reducing vulnerability to climate-related hazards and stresses, such as extreme weather events, sea-level rise, changing precipitation patterns, and temperature fluctuations.

By enhancing climate resilience, communities, ecosystems, and societies can better cope with the challenges posed by climate change, minimize potential damages and losses, and build a more sustainable and adaptive future for all.

### **Climate Resilience in Urban Areas**

Climate resilience in urban areas focuses on enhancing the ability of cities and metropolitan regions to withstand, adapt to, and recover from the impacts of climate change. Urban areas are particularly vulnerable to climate-related hazards – such as heat waves, heavy rainfall, floods, storms and droughts. These events can significantly affect the infrastructure, economic stability, social structure and environmental quality of a due to their high population density, concentration of infrastructure, and location in coastal zones or flood-prone areas.

**Key aspects** of building climate resilience in urban areas are e.g.:

**🌿 Green Infrastructure:** Incorporating green infrastructure, such as parks, green roofs, permeable pavements, and urban forests, can help cities manage stormwater, reduce the urban heat island effect, improve air quality, and provide habitat for biodiversity. Green spaces also enhance community well-being and social cohesion.

**🏠 Resilient Buildings and Infrastructure:** Constructing buildings and infrastructure that are designed to withstand extreme weather events, such as hurricanes, floods, heatwaves, and storms, is essential for reducing vulnerability and ensuring public safety. This may include retrofitting existing structures, elevating buildings above flood levels, and strengthening critical infrastructure such as transportation networks, water supply systems, and power grids.

**🏙️ Climate-Responsive Urban Planning:** Integrating climate considerations into urban planning and land-use decision-making processes can help reduce exposure to climate risks and enhance resilience. This involves zoning regulations, building codes, and development standards that prioritize climate adaptation, such as avoiding construction in floodplains, preserving natural buffers, and promoting mixed land uses that reduce reliance on private vehicles.

**👥 Community Engagement and Social Equity:** Engaging communities in the planning and implementation of climate resilience initiatives is essential for building social capital, fostering resilience-building networks, and ensuring that interventions are equitable and inclusive. Empowering vulnerable and marginalized populations, such as low-income residents, people of color, and immigrants, to participate in decision-making processes can help address their unique needs and priorities.

**⚠️ Integrated Risk Management:** Adopting an integrated approach to risk management that considers the interconnected nature of climate-related hazards, such as floods, storms, heatwaves, and sea-level rise, can help cities identify synergies and trade-offs among different adaptation options. This may involve conducting comprehensive risk assessments, developing multi-hazard mitigation plans, and mainstreaming climate resilience across all levels of governance.

**📚 Knowledge Sharing and Capacity Building:** Promoting knowledge sharing, capacity building, and collaboration among cities, stakeholders, and experts can help accelerate the adoption of climate-resilient practices and technologies. Peer-to-peer learning networks, training programs, and technical assistance initiatives can facilitate the exchange of best practices, lessons learned, and innovative solutions for building climate resilience in urban areas.

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By **implementing these strategies and approaches**, cities can enhance their resilience to climate change, protect the well-being of their residents, and foster sustainable and inclusive urban development for future generations.

## In brief

Climate change is a major challenge for urban areas in particular, although not exclusively. It is important to protect as many people as possible in a limited space from the risks and impacts of climate change.

There definitely is an urgent need to implement strategies and approaches for climate resilience – not only in urban areas – to avoid the negative impact of climate change.

This is where climate resilience comes in, as only resilient and adaptable cities will be able to respond quickly and adequately to the challenges posed by climate change. This requires the full participation of the population.

## A MAJOR CHALLENGE

## Closing the Financing Gap for Climate Resilience in Urban Areas

As urban areas are often hotspots for climate-related risks such as floods, heatwaves and infrastructure failures, investments in climate resilience are crucial to protect populations, infrastructure and economic activities. These investments entail significant costs and require innovative solutions to address the new and sometimes unpredictable challenges due to the unique characteristics and complexity of cities. In this transformation process towards climate resilience in urban areas, a – potential – financing gap represents one, if not the central, challenge.

Several factors contribute to the financing gap for climate resilience in urban areas, e.g.:

⑤ **High Costs of Resilience Measures:** Implementing climate resilience measures, such as upgrading infrastructure, constructing green spaces, and retrofitting buildings, can be expensive. The upfront costs of these projects may deter investment, particularly in low- and middle-income cities where resources are limited.

📦 **Limited Fiscal Capacity:** Many cities face budgetary constraints and competing priorities, making it difficult to allocate sufficient resources to climate resilience initiatives. Limited fiscal capacity may also hinder cities' ability to access financing from capital markets or international sources.

⊕ **Lack of Access to Finance:** Cities may face challenges in accessing financing for climate resilience projects. Weak institutional capacity, inadequate creditworthiness, and regulatory barriers can limit cities' ability to secure loans or attract private sector investment.

🏢 **Complexity of Urban Systems:** Urban areas are characterized by complex, interconnected systems that require integrated approaches to resilience planning and investment. Addressing multiple climate-related risks simultaneously—such as flooding, heatwaves, and air pollution—requires coordinated action across sectors and levels of government, which can increase the complexity and cost of resilience projects.

To bridge the financing gap for climate resilience in urban areas, various strategies can be pursued:

🏠 **Mainstreaming Climate Resilience:** Integrate climate resilience considerations into urban planning, infrastructure development, and investment decision-making processes to ensure that resilience is systematically incorporated into city development strategies and budgets.

🌐 **Multisectoral Collaboration:** Foster collaboration among government agencies, private sector entities, civil society organizations, and international partners to pool resources, share expertise, and leverage complementary strengths in financing and implementing resilience projects.

📄 **Innovative Financing Instruments:** Explore innovative financing instruments, such as green bonds, resilience bonds, municipal finance facilities, and public-private partnerships, to mobilize additional resources for urban resilience projects and attract private sector investment.

⚠️ **Risk Transfer Instruments:** Develop and implement risk transfer instruments, such as insurance schemes and risk-sharing arrangements, to protect cities against the financial impacts of climate-related disasters and emergencies, thereby reducing the perceived risks associated with resilience investments.

🏢 **Capacity Building and Technical Assistance:** Provide technical assistance, capacity building, and financial support to strengthen cities' ability to access and utilize climate finance effectively. This may include improving financial management systems, enhancing project preparation and implementation capacities, and building local expertise in resilience planning and governance.

🗣️ **Knowledge Sharing and Peer Learning:** Facilitate knowledge sharing, peer learning, cooperation among cities to exchange best practices, lessons learned, and innovative approaches to financing climate resilience. Platforms such as city networks, conferences, and online forums can serve as valuable forums for sharing experiences and building capacity.

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By adopting a combination of these strategies and approaches, cities can enhance their resilience to climate change, protect vulnerable populations and infrastructure, and foster sustainable and inclusive urban development in the face of growing climate risks.

## A Multiple Stakeholder Game

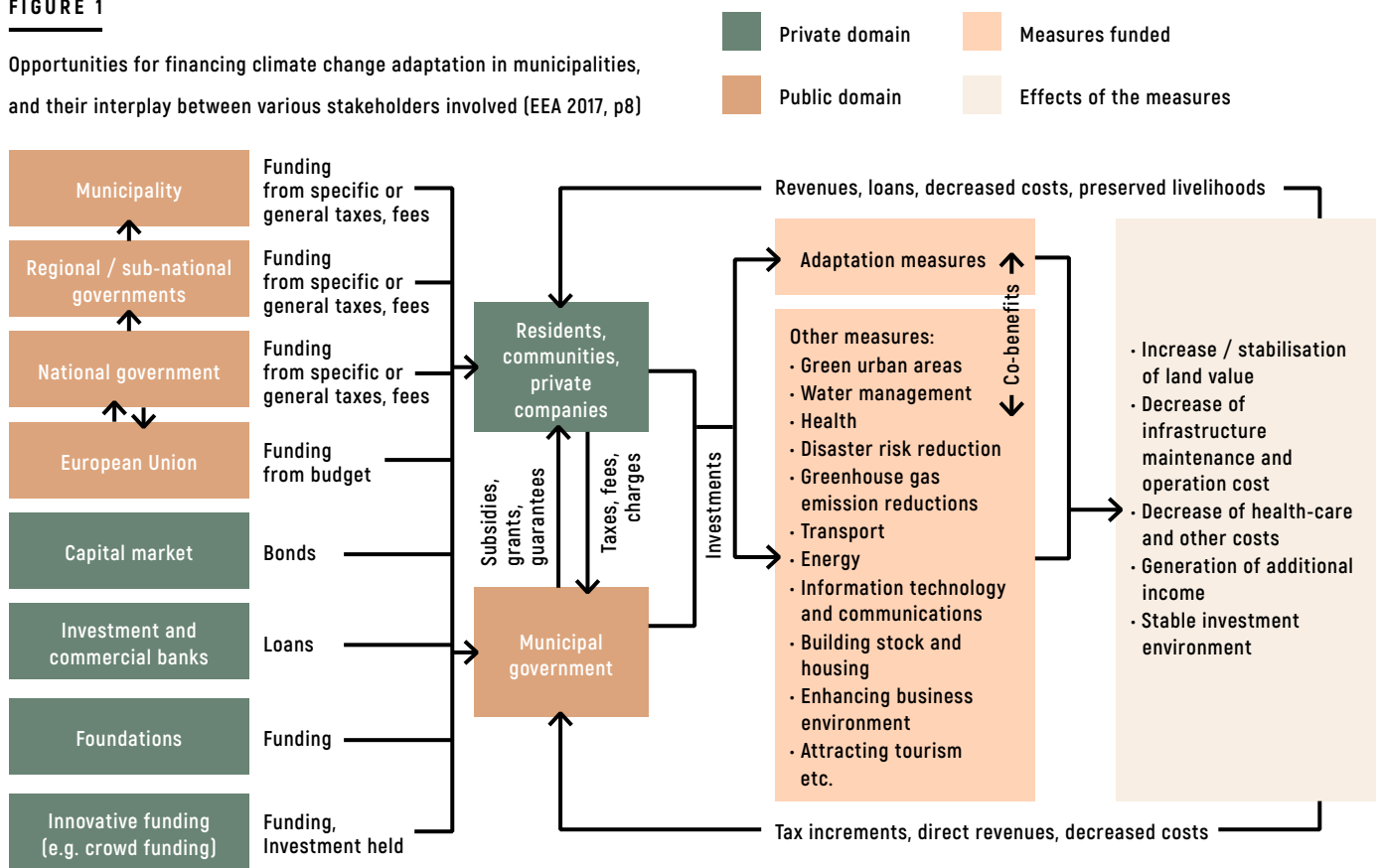
The European Environment Agency – EEA published 2017 a report on “Financing urban adaptation to climate change”. The report underscores the importance of leveraging existing financial instruments while also exploring creative innovative approaches to mobilize additional resources for urban adaptation. It makes clear that it will only be possible to get closer to closing the financial gap through the creative use and combination of various funding opportunities, from public sources, banks and other financial institutions as well as private stakeholders.



The following figure shows the various options for financing climate change adaptation in municipalities and the interplay between the various stakeholders involved:

FIGURE 1

Opportunities for financing climate change adaptation in municipalities, and their interplay between various stakeholders involved (EEA 2017, p8)



Financing for local adaptation measures is generally available through these main sources:

- Governmental sources – mostly grants, including international and EU funding instruments, national, regional and local/ municipality budgets.
- Banks and other financial institutions provide loans or guarantees, either directly or in partnership with local retail banks.

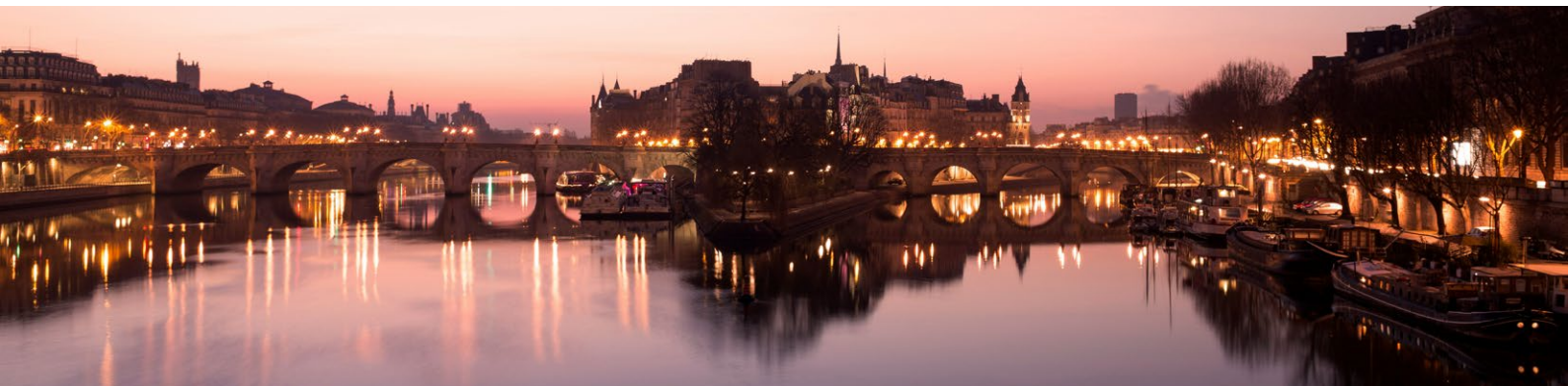
- Private stakeholders, including foundations, real estate developers, companies (especially those facing risks posed by climate change), house owners and individuals, that invest in measures directly or via crowdfunding and green bonds.
- Free/low-cost solutions exist through early integration of adaptation needs into urban planning and design, mainstreaming of adaptation measures into other municipal areas such as water management, health, nature, etc., or through supporting regulations such as building standards.

(EEA 2017, p7)

## Municipal Funding Options for Climate Resilience – State of the Art in Europe

In the framework of the [EU Mission: Climate-Neutral and Smart Cities](#), a large study (Ulpiani et al. 2023) – “Funding and financing the zero emissions journey: urban visions from the 100 Climate-Neutral and Smart Cities Mission” – was published in October 2023. It investigated how

362 cities are fostering climate investment, under three aspects: financial readiness, financial proactiveness, and financial innovation. The results of the study provide an overview of the European state of the art, as presented hereafter.



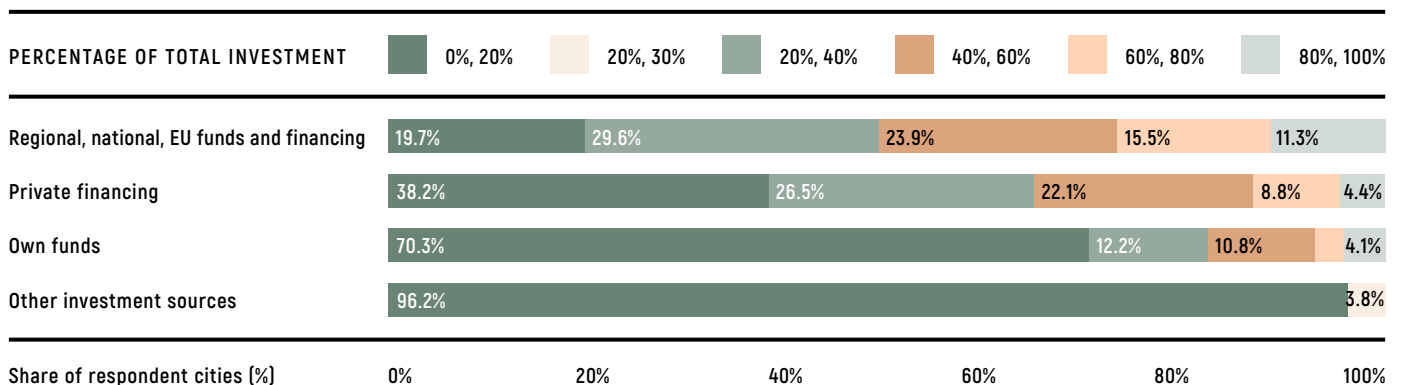
### Sources of Funding in European Cities

The investigated cities were asked about the origin of their funding for climate. The breakdown of the answers shows the following picture:

**FIGURE 2**

Breakdown by funding/financing source of the capital needs estimated by eligible cities. (Ulpiani et al. 2023, p6)

Stacked bars are coloured according to the proportion of the total investment attributed to each source (in percent bands), while the percentages inside the bars indicate the corresponding share of respondent cities.



The results show a strong dependence on conventional instruments (regional, national and EU funds) compared to private sources and, in particular, innovative financing instruments, such as e.g. Energy Performance Contracting, crowdfunding schemes, social impact bonds, and green bonds as well as others.

In addition, the results showed that over 3/4 of the investigated cities have no experience with innovative financing instruments. Among the cities familiar with such innovative financing instruments, the most commonly used are Energy Performance Contracting (EPC) and crowdfunding.





**Different Maturity Levels**

The authors observed that when cities seek funding for climate resilience initiatives, they typically go through a series of steps until they even acquire the expertise necessary to develop the entire field. This development path typically comprises four steps, which are presented in the following table:

**FIGURE 3** City profiles in relation to climate financing (Ulpiani et al. 2023, p11)

Incipient cities	Basic cities	Mature cities	Advanced cities
<p>These cities are not fully aware of national or European funding support programmes for cities, or do not have the capacities to participate in them. Many of them are cities that are in the process of defining their long-term commitments or are just starting with climate action.</p>	<p>These cities participate in national or European calls for proposals, where cities get financing for the development of climate action plans, or the initial steps of a flagship project. These cities have a climate action plan in progress, and are moving to implementation, calling for their initial steps in financing, particularly using national and European funds. Project pipelines are not detailed nor shovel ready.</p>	<p>These cities have a climate action plan already in implementation. They know their business environment. These cities use a combination of grants and subsidies as key mechanism to land private sector investment. They have used project preparation facilities. These cities have a pipeline of projects with several flagship projects.</p>	<p>These cities are cities with a climate action plan that has gone multiple iterations. These cities know very well how to use public support to mobilize private sector investment niches. These cities tap into capital markets, with very strong creditworthiness and transparency standards.</p>

The authors concluded that there is a growing need to create financial instruments that match every stage of development to avoid hindering the shift towards climate

neutrality, especially for incipient cities (usually smaller municipalities) which require establishing a financial foundation to support their goals.

## In brief

Cities are strongly dependent on conventional instruments (regional, national and EU funds) for funding climate resilience activities.

Private sources and innovative financing instruments are essential for municipalities to effectively finance initiatives to strengthen climate resilience. However, municipalities are not yet familiar enough with such instruments and therefore do not use them enough.

Especially incipient cities (usually smaller municipalities) require specific attention and dedicated financial instruments for climate resilience.



## Where to Find more Information

### WEBSITES:

Copernicus website | ESOTC 2023 | [European Mission on 100 Climate-Neutral and Smart Cities](#)

### SOURCES:

#### Ulpiani et al. 2023

Giulia Ulpiani, Enrique Rebolledo, Nadja Vettters, Pietro Florio & Paolo Bertoldi (2023):

[Funding and financing the zero emissions journey: urban visions from the 100 Climate-Neutral and Smart Cities Mission.](#)  
In: [Humanities and Social Sciences Communications](#), volume 10, 647.

### FURTHER READING:

**Difu 2023** | Ines Fauter, Julius Hagelstange, Taina Niederwipper, Paul Ratz, Judith Utz, Corinna Altenburg, Finya Eichhorst, Petra Reinecke, Sophie Werdin, u.a.: Agentur für kommunalen Klimaschutz: [Praxisleitfaden: Klimaschutz in Kommunen](#) (4., aktualisierte Auflage), Berlin.

**Difu 04/2023** | Christian Raffer: [Kommunale Investitionen in Klimaschutz und -anpassung: finanzielle Dimensionen und Rolle der Kämmergeien](#) | Deutsches Institut für Urbanistik, Berlin.

**Difu 09/2023** | Henrik Scheller, Christian Raffer, Frida von Zahn, Oliver Peters: [Sustainable Finance für Kommunen](#) | Deutsches Institut für Urbanistik. Difu Policy Papers, Bd. 3, 2023, Berlin.

# Financing Instruments for Urban Adaptation to Climate Change

## AN OVERVIEW

While there is no standard list of all the available funding instruments for climate resilience activities on the municipal level broken down into traditional and innovative ones, there are some comprehensive sources of information which are presented in this chapter.



## Covenant of Mayors – Alternative Financing Instruments

The [EU Covenant of Mayors for Climate and Energy](#) – launched in 2008 – is an initiative that brings together local and regional authorities committed to secure a better future for their citizens. By joining the initiative, the members voluntarily commit to implementing EU climate and energy objectives. The Covenant of Mayors website lists the following [financing opportunities](#), distinguishing between the following categories: shared management funds, European funding programmes, technical assistance and advisory support, financial institutions' instruments and finally alternative financing instruments.

Within this category the following instruments are listed:

- Citizen cooperatives
- Crowd-funding
- Energy performance contracting
- Green municipal bonds
- On-bill-financing
- Revolving loan funds
- Soft loans, guarantees

More information can be found by following the respective links. In addition to a definition/short description, information is provided on sectors in which the instrument is used, inspiring examples and useful links are also provided.

## Cities Climate Leadership Alliance – Financial Instruments Toolkit

The [City Climate Finance Leadership Alliance – CCFLA](#) is a global partnership formed to promote sustainable urban development by mobilizing investments in climate-resilient infrastructure and low-carbon initiatives. It brings together cities, financial institutions, and other stakeholders to collaborate on innovative financing solutions for climate change adaptation and mitigation in urban areas. The alliance aims to address the financing gap for climate-related projects in cities and support the transition to a more sustainable and resilient urban future.

CCFLA has published a [Financial Instruments Toolkit](#) (and is actively seeking updates; additional instruments can be suggested). The goal was to develop an effective taxonomy and database of innovative instruments, funding instruments and cases utilized for climate smart and resilient infrastructure in cities worldwide.

[The Toolkit](#) – which can be downloaded (excel file) – is divided into two main parts.

## 1. In the database of the financial instruments the following information is provided:

**FIGURE 4** The financial instruments library – state-of-the-art financial instruments available for urban climate projects (CCFLA)

Instrument category (in total 13)	<ol style="list-style-type: none"> <li>1. Municipal own source revenue (OSR) and policy steering instruments (9)</li> <li>2. Land value capture (LVC) (3)</li> <li>3. National government transfers (4)</li> <li>4. International climate finance (5)</li> <li>5. National, regional and municipal funds (4)</li> <li>6. Debt financing (16)</li> <li>7. Equity financing (3)</li> <li>8. Public-private partnerships (PPP) (6)</li> <li>9. Risk mitigation instruments (5)</li> <li>10. Aggregation models (5)</li> <li>11. Leasing and asset finance models (6)</li> <li>12. Payment for ecosystem services (PES) (3)</li> <li>13. Individual and community financing (3)</li> </ol>
Instruments (in total 66)	e.g 3 for Individual and community financing Crowdfunding   Community fund   Philanthropic organizations and charities
Description	e.g for Philanthropic organizations and charities can play an important role in financing climate action. In this case, funds often come from individual donations for a specific cause or project.
Implementation status (in total 3)	1. High - much evidence available   2. Moderate - tried and tested   3. Low - limited evidence available
Funding sources (in total 10)	<ol style="list-style-type: none"> <li>1. Governments</li> <li>2. International financial institutions and development banks</li> <li>3. Institutional investors and sovereign funds</li> <li>4. Capital markets</li> <li>5. Commercial banks</li> <li>6. Private equity funds</li> <li>7. Infrastructure and specialist funds</li> <li>8. Insurance companies</li> <li>9. Private companies</li> <li>10. Communities and individuals</li> </ol>
Sectors (in total 8)	<ol style="list-style-type: none"> <li>1. Transport and mobility</li> <li>2. Buildings and energy</li> <li>3. Waste and wastewater</li> <li>4. Urban development and management</li> <li>5. Green spaces and nature-based solutions</li> <li>6. Disaster risk management</li> <li>7. Industry, extractive industries, manufacturing and trade</li> <li>8. Policy and national budget support and capacity building</li> </ol>
Climate objectives (in total 3)	1. Adaptation   2. Mitigation   3. Mitigation and adaptation
City by income level (in total 3)	1. High-income country   2. Medium-income country   3. Low-income country
City sizes	1. Large   2. Medium   3. Small
Enabling conditions and success factors	<ul style="list-style-type: none"> <li>- Philanthropic funds are usually grants and can play an important role in funding small scale infrastructure and access to services without any systemic enabling factors.</li> <li>- However, the sustainable use and maintenance of infrastructure may depend on durable business models or renewed philanthropic support.</li> </ul>
Instrument benefits	Ability to address small scale climate action in contexts where commercial models for implementation are unfeasible.
Challenges and risks to implementation	Risks to sustainable success if there is a lack of maintenance of infrastructure etc.
References and websites	<a href="http://www.sustainability.aboutamazon.com/about/the-climate-pledge/the-climate-pledge-fund">www.sustainability.aboutamazon.com/about/the-climate-pledge/the-climate-pledge-fund</a>

**2.** The **case studies repository** provides examples of successful financial instrument implementations:

**Information provided per case study**

Project, Implementer, description, sector, location, region, climate objective, barriers addressed, instrument category, instrument, secondary instruments, year of financial closure, project site (range), project size (details), client, financing structure, primary financier, other co-financers, other contributions, other transaction participants, city size, suitability for cities in low-and-middle income, weblinks, references

**German Institute of Urban Affairs – Financing Municipal Climate Protection Measures**

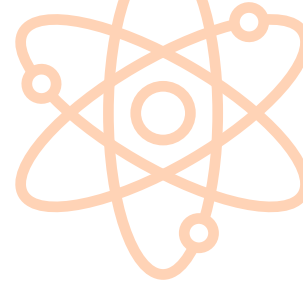
The Deutsches Institut für Urbanistik – Difu (German Institute of Urban Affairs) is an independent research and training institution for cities and municipalities in Germany. It offers practice-oriented research, advice and further training on topics such as urban development, administrative management and municipal infrastructure. Difu supports cities and municipalities in the development and implementation of sustainable and future-oriented urban development strategies through analysis, expertise and knowledge transfer.

In the 4th edition of the “Praxisleitfaden: Klimaschutz in Kommunen” (2023) – “Practical guide to climate protection in municipalities” chapter A.5 “Financing municipal climate protection measures” deals with the financing and different options and instruments available to municipalities. Since the financial situation of municipalities varies greatly between individual cities, municipalities and districts depending on the region and federal state, it is repeatedly emphasized that alternative financing is important, particularly for financially weak municipalities, which relieves the burden on the municipal budget and promotes local climate protection.

The practical guide distinguishes between the following measures (Difu 2023, p78-91):

**FIGURE 5**  
Financing municipal climate protection measures (Difu 2023, p78-91)

Financing municipal climate protection measures	
Self-financing	... is the most common form of financing municipal measures, whereby all income available to a municipality without repayment obligation is considered self-financing
Intracting	... is a special form of self-financing that offers municipalities the opportunity to implement climate protection and efficiency measures without external financing
Contracting	By cooperating with external partners (contractors), cities, municipalities and districts can access external know-how and capital that they usually do not have themselves due to limited budgets or human resources.
Use of funding programs	EU, federal governments, federal states
Alternative financing options	<ul style="list-style-type: none"> <li>- Citizens can be recruited as investors for investments in wind turbines, biogas, solar or wood pellet systems, for example</li> <li>- Municipalities can support operating companies that were created on the initiative of citizens by leasing roof areas on municipal properties for photovoltaic systems</li> <li>- Municipalities can win companies as sponsors for climate protection projects (for example in schools).</li> <li>- Inter-municipal cooperation for the joint implementation of climate protection and climate adaptation measures</li> <li>- Public-Private Partnerships (PPP)</li> </ul>
Alternative financing approaches	
Financial market instruments	Public-private partnerships (PPP)   Contracting   Intracting   Leasing   Municipal bonds   Green bonds   Promissory bills
Financing approaches based on citizen participation	<ul style="list-style-type: none"> <li>- Crowdfunding / citizen loans</li> <li>- Energy cooperative / citizen energy systems</li> </ul>
Community involvement	Municipal energy efficiency and climate protection funds
Third Party Financing	Sponsoring   Municipal companies (municipal utilities)



## Innovation in Financial Products, Arrangements and Engagement with the Private Sector

The authors of the study “Funding and financing the zero emissions journey: urban visions from the 100 Climate-Neutral and Smart Cities Mission” differentiate between

three categories): innovation in financial products, innovation in financial arrangement and innovations in engaging with the private sector.

**FIGURE 6** Innovation in financial products/financial arrangements (Ulpiani et al. 2023, p6f)

Innovation in financial products	
Innovative loan schemes	in cooperation with banking institutions to finance the energy transition, linking citizens, financiers, and investors;
Innovative crowdfunding schemes	(i) where the city partners with local energy communities and rents public building roofs to install solar power or (ii) stipulated under a fund structure instead of a company;
Innovation in tax design,	by defining a series of green financial instruments and fiscal incentives, including taxing packaging, property taxes, and accelerated depreciation;
Leasing contracts	for solar equipment to avoid facing the steep initial capital expenses;
Loans to citizens	for energy retrofits, typically paid back under an on-bill financing scheme;
Financing instruments, such as public-private partnerships (PPPs)	where the new transport lines are financed with national funds matched with city investments in real estate and raised through land value capture to further scale up private investments.
Innovation in financial arrangements	
“Innovative financing is not limited to the introduction of a financial product or instrument, as financial arrangements are critical when it comes to defining the institutional architecture for implementation.”	
Climate action financed through publicly owned companies	(e.g., transport or energy/water utilities) or through dedicated funds that link the business community and the academia/R&I institutions;
Funds coupled with public companies	that invest in energy savings in municipal real estate, following an EPC approach. The fund collects revenues obtained via solar and wind installations owned by the municipality, distributing benefits among citizens;
Revolving funds	with an equity participation dedicated to energy efficiency and renewable energy;
Climate funds	Climate funds not only focused on the implementation of climate action measures, but also on financing pilot and demonstrative projects;
Power purchase agreements	Power purchase agreements on buildings;
Innovations in green procurement	Innovations in green procurement by adding a series of sustainability considerations to the energy performance contracting, including smart city functions and less pollution;
Use of standardised systems	to access debt markets, where the city can raise funds under a transparent and efficient system, such as that offered in the context of online auction platforms.”

The study results show that a high percentage of respondents consider the private sector to be an important stakeholder. However, these are not primarily stakeholders like financial institutions, energy communities and utilities,

but rather cooperation and compensation programs based on donations or sponsorships that link climate protection with other societal priorities such as job creation and the circular economy.

**FIGURE 7** Innovation in engaging with the private sector (Ulpiani et al. 2023, p7)

Innovation in engaging with the private sector	
One-stop-shops	with information and credit intermediation services to facilitate citizens access to finance (including crowdfunding instruments, loans and guarantees) in line with recent evidence.
Foundations	aimed at introducing climate action as a catalyser for job creation;
Sponsorship based initiatives	to foster urban greenery, funded by the private sector;
Compensation mechanisms	where companies or citizens can offset their residual greenhouse gas emissions by purchasing carbon credits and supporting local transition projects, on a voluntary basis.



## Where to Find more Information

### WEBSITES:

[European Environment Agency](#)

[EU Covenant of Mayors for Climate and Energy](#) | [Financing opportunities](#)

[City Climate Finance Leadership Alliance – CCFLA](#) | [Financial Instruments Toolkit](#)

[Deutsches Institut für Urbanistik – Difu](#)

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[Financing urban adaptation to climate change – European Environment Agency \(europa.eu\)](#). Report No 2; Copenhagen.

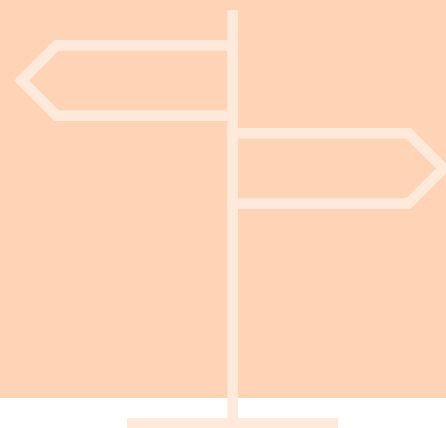
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[Praxisleitfaden: Klimaschutz in Kommunen \(4., aktualisierte Auflage\) \(difu.de\)](#), Berlin.

**Ulpiani et al. 2023** | Giulia Ulpiani, Enrique Rebolledo, Nadja Vettors, Pietro Florio & Paolo Bertoldi (2023):

[Funding and financing the zero emissions journey: urban visions from the 100 Climate-Neutral and Smart Cities Mission. Humanities and Social Sciences Communications](#), volume 10, 647.

# Innovative Funding Instruments



Climate resilience in urban areas focuses on improving the ability of cities and metropolitan areas to withstand, adapt to and recover from the impacts of climate change. Implementing measures to protect a place's infrastructure, economic stability, social structure and environmental quality requires significant financial resources. For many small and medium-sized cities, securing the financial resources required for climate projects and investment needs is a challenge. But this financial gap "must" be closed.

Municipalities tend to rely on EU funds, national and regional funds and neglect other sources of funding that are described as **innovative/alternative/creative**. But innovative financing instruments are essential for municipalities to effectively finance climate resilience initiatives. A lack of information is also responsible for this lack of use of innovative sources of funding. Municipalities are not yet sufficiently familiar with innovative financing approaches and therefore make too little use of them.

For this reason, **immediate** action has to be taken in stepping ahead.

In general, financing climate resilience requires a multi-faceted approach that leverages public funds, private investments and innovative financial instruments. Collaboration between municipalities and private actors is crucial to mobilize the necessary resources and implement effective resilience measures. By working together, these actors can strengthen the resilience of communities, protect economic assets and ensure sustainable development in the face of climate change.

The current challenge for municipalities and other actors is often to learn about innovative financing options for climate resilience activities, to find the options that are suitable for their case and then to use them. The present

chapter aims to display the most commonly used of those innovative instruments.

In addition to innovative financing sources, we have included another aspect, which is of direct relevance to the whole topic: Green Budgeting. Although green budgeting is not specifically about financing climate resilience, it seems important to include a chapter on this aspect in the discussions, as it could help cities build more sustainable and resilient communities if applied. Incorporating green budgeting in discussions on financing climate resilience underlines the close link between financial decisions and climate change adaptation efforts.

Green budgeting and the following innovative financing instruments are discussed. Finally, a brief overview of climate financing options in Europe is provided.

## MUNICIPALITIES

Green budgeting

## ALTERNATIVE / INNOVATIVE / CREATIVE FINANCING

### Municipalities

**Private stakeholders**, including foundations, real estate developers, companies, house owners and individuals

- Contracting
  - » Energy performance / saving contracting (EPC)
  - » Energy supply contracting (ESC)
- Funds
  - » Local climate funds
  - » Revolving funds
- Crowdfunding
- Green bonds (climate bonds)
- Energy communities / cooperatives
  - » Energy communities
    - › Renewable energy communities (RECs)
    - › Citizens energy communities (CECs),
  - » Energy cooperatives / Citizen energy cooperatives
- Public-private-partnership
- Sponsoring

## GOVERNMENTAL SOURCES

International and EU funding instruments, national, regional



## FUNDING INSTRUMENT 1

# Green Budgeting – a Necessary Prerequisite to Support Climate Resilience in Municipalities?

Green budgeting is a financial strategy that integrates environmental and climate considerations into the budgetary process of governments and municipalities. The goal is to ensure that public funds are allocated in ways that support environmental sustainability and climate resilience.

The European Commission defines green budgeting as follows:

Green budgeting means using the tools of budgetary policymaking to help achieve climate and environmental goals. Green budgeting is a process whereby the environmental contributions of budgetary items and policies are identified and assessed with respect to specific performance indicators, with the objective of better aligning budgetary policies with environmental goals.

[Green budgeting in the EU – European Commission](#)

## Green Budgeting, a Brief History on National Level

The term “green budgeting” first emerged in 1987 from the Brundtland report. This was followed by the experimental integration of environmental considerations into public financial management in countries such as Norway and France (around 1989). In 1999 the Parliament in Italy instructed the national government to highlight all environment-related resource allocations in the annual budget to produce an environmental budget. In the late 1990s and early 2000s, a handful of subnational governments in Europe began experimenting with linking environmental considerations to their budgetary processes. Green budgeting remained relatively unexplored until the early 2010s, when several national and subnational practices emerged. In 2017, the OECD launched the [Paris Collaborative on Green Budgeting](#). In 2019, the [Coalition of Finance Ministers for Climate Action](#) was launched to foster collective engagement for a transition toward low-carbon and resilient development.

The EU is also committed to this goal. Since 2017, the European Commission has required Member States to submit reports on government environmental spending and spending

on resource management activities. The [EU Green Deal](#) has at least enshrined legally binding targets for climate-related spending in many parts of the EU Commission’s multiannual financial framework. The 2019 European Commission’s Green Deal Communication highlights that “a greater use of green budgeting tools will help to redirect public investment, consumption and taxation to green priorities and away from harmful subsidies”.

[The report Green Budgeting in OECD Countries 2024](#) (OECD 2024) shows that many “OECD countries have introduced green budgeting into their public financial management frameworks, policies and practices to help pursue climate and environmental objectives. In 2022, two-thirds of the OECD countries surveyed (24 of 36 countries) had implemented green budgeting measures. This compares to 14 countries that had implemented green budgeting in 2020, according to a similar survey. The proportion of OECD countries that were using green budgeting in 2022 shows the strong interest that governments have in integrating climate and environmental objectives into budget processes.” (OECD 2024: [Executive summary](#))

While being a relatively new practice, the interest in green budgeting is obviously growing on national side. But how does the situation look on the municipal side?

## Green Budgeting in Cities and Regions

Green budgeting on subnational level “is new but progressing” (OECD 2023, p4). The status and adoption of green budgeting vary across different cities and regions, but there is a growing momentum globally because “green budgeting is particularly relevant for regional and local governments given the important role that they play in tackling climate change and catalysing the transition to a carbon-neutral economy.” (ibid) A stocktake of existing green budgeting practices shows that there is “no one-size fits all approach” (ibid) because budgeting and accounting systems differ considerably both from country to country and at different levels.

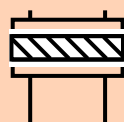
Nevertheless “Green budgeting is a concrete, practical tool that regions and cities can use to integrate climate and environmental considerations throughout the budgetary process, from the initial drafting phase through to the budget vote and ex-post reporting. Fully incorporating environmental and climate concerns into the budgetary process complements the range of tools available to subnational governments for concrete climate action”. (OECD 2023, p5)

Green budgeting offers numerous opportunities and is challenging to develop and implement:



Green budgeting presents several **opportunities** for subnational governments, including:

- Aligning** their expenditure, investment, and revenue raising decisions with environmental and climate objectives.
- Fostering** a whole of government approach for policy- making.
- Instilling** a science-based understanding of climate and environmental issues across the administration.
- Improving** the evaluation of public policies.
- Enhancing** the transparency and accountability of government climate action.
- Prioritising** low-carbon and resilient investment and spending.
- Identifying** funding and financing gaps for their green objectives.
- Mobilising** additional sources of public and private finance to bridge financing gaps.



Four main categories of **challenges** in developing and implementing a green subnational budgeting practice:

- Methodological Challenges:** defining and measuring the needs for reaching their green objectives; adapting accounting and reporting tools to the specific budgeting contexts of subnational governments and ensure that the methodology can adapt to changing scientific evidence and climate challenges.
- Resource Challenges:** training of subnational government staff to carry out the exercise in a timely manner; allocating sufficient resources to upgrade existing information management systems in line with green budgeting needs.
- Operational Challenges:** establishing a dedicated organisational structure based on horizontal coordination amongst departments; involving stakeholders and communicating widely; implementing internal and external auditing processes.
- Political Challenges:** ensuring sustained, high-level political support for from both administrative and elected officials; reconciling green and social objectives; ensuring follow-up to identify trends and implement medium- and long-term strategies.

**FIGURE 8** Green budgeting – opportunities and challenges for subnational governments (OECD 2023)

### In brief

Green budgeting is a powerful tool for municipalities to align their financial strategies with environmental sustainability goals.

By integrating environmental considerations into every stage of the budgeting process, municipalities can ensure that public funds are used effectively to address climate change, protect natural resources, and promote a sustainable future.

## Green Budgeting in Cities and Regions

### EU Green Budgeting Reference Framework (GBRF)

The European Commission has developed a [EU Green Budgeting Reference Framework – GBRF](#) as a toolkit for Member States willing to implementing or upgrade green budgeting practices. It has also produced two [lists of budgetary items](#) whose net environmental impact could be considered broadly as ‘green’ or ‘brown’.

### Guidelines from the OECD

The OECD has defined guidelines to implement green budgeting on the level of subnational governments, cities and regions:

1. **Conduct a diagnostic of local environmental and climate challenges** as a pre-requisite to launching a green budgeting practice
2. **Ensure strong, high-level involvement and support** from both the administrative and elected sides of government
3. **Ensure the practice relies on a robust, shared scientific basis** to facilitate public trust and ensure the practice can adapt to changing scientific evidence
4. **Adopt a step-wise approach to implementing green budgeting** in order to learn from previous steps and reinforce the alignment of the practice with local strategic priorities
5. **Integrate the green budgeting practice into existing public financial management procedures and tools** to help ensure the practice endures
6. **Include revenues within the scope of the green budgeting practice** to ensure the entire budget aligns with green objectives

FIGURE 9 “Six main guidelines for starting and developing a subnational green budgeting practice” (OECD 2023)

## Where to Find more Information

Discover good practices and projects from European cities on our websites:

[www.interreg-central.eu/projects/mission-ce-climate/](http://www.interreg-central.eu/projects/mission-ce-climate/)

[www.climatehub.si](http://www.climatehub.si)

### WEBSITES:

[EU – Green budgeting in the EU – European Commission \(europa.eu\)](#)

The EC website Green budgeting in the EU offers the following information:

- Overview (Why is Green Budgeting important)
- Tools (EU Green Budgeting Reference Framework; EC Green Budgeting Survey; Green and Brown budgetary items lists; Training)
- Publications
- Events and Other relevant material

[OECD – Green Budgeting](#)

[GreenGov](#)

GreenGov – GREEN finance and Do No Significant Harm principle implementation for a better regional GOVERNANCE | Interreg Europe – Sharing solutions for better policy. Project: 01 April 2024 – 30 June 2028

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[KOWID Nachhaltiger Haushalt Leipzig – Good Practices im Vergleich](#)

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**OECD 2024** | OECD (2024), Green Budgeting in OECD Countries 2024, OECD Publishing, Paris.

[Green Budgeting in OECD Countries 2024 | OECD](#)

The full book is accessible at:

**OECD 2022** | OECD (2022): [Aligning Regional and Local Budgets with Green Objectives: Subnational green budgeting practices and guidelines](#). OECD Publishing, Paris.

## FURTHER READING:

**CCFLA 2022** | Cities Climate Finance Leadership Alliance (March 2022):

[Greening-City-Budgets-Practical-Approaches \(citiesclimatefinance.org\)](#). Policy brief.

**CoR 2022** | EU Committee of the Regions (30 September 2022): [Opinion of the European Committee of the regions – The implementation of green budgets at local and regional levels \(europa.eu\)](#)

**Difu 2022** | Deutsches Institut für Urbanistik (10/11/2022): Point of view:

[Municipal budgets in the age of sustainability | German Institute of Urban Affairs \(difu.de\)](#)

**OECD 2023-2** | OECD (25 May 2023): [Green Budgeting: Governing Green through the budget cycle. 45th Annual Meeting of Senior Budget Officials. Athens, Greece \(oecd.org\)](#)

**OECD 2017** | [OECD Green Budgeting Framework Highlights](#)



FUNDING INSTRUMENT 2

# Energy Contracting

Energy Contracting is a service in which the energy balance of a building is improved through energy efficiency measures in order to reduce energy costs and greenhouse gas emissions. In contracting, a building owner transfers tasks related to increasing the energy efficiency of his building to a specialized energy service provider, the so-called contractor. The contractor reduces

the energy requirements or energy consumption of the building through optimization measures. The contracting model represents an "energy-saving partnership" between a building owner and an energy service provider. The business model aims to achieve energy savings from which both contracting parties benefit.

The aim of all contracting models is to reduce energy consumption and energy costs. There are essentially two models in contracting, which essentially have the same goal but pursue a different approach:

- Energy performance/saving contracting (EPC).
- Energy supply contracting (ESC).

## Energy Performance / Saving Contracting (EPC)

**Energy Performance Contracting (EPC)** is a form of 'innovative financing' for increasing energy efficiency in buildings and facilities which allows funding energy upgrades from cost reductions.

"Under an EPC arrangement an external organisation (ESCO) implements a project to deliver energy efficiency, or a renewable energy project, and uses the stream of income from the cost savings, or the renewable energy produced, to repay the costs of the project, including the costs of the investment. Essentially the ESCO will not receive its payment unless the project delivers energy savings as expected."

[\(JRC - Energy Performance Contracting | E3P \(europa.eu\)\)](#)

With EPC, the building owner transfers the energy optimization of his buildings to a specialized service company, the contractor. The contractor looks at the building or building pool holistically with the aim of minimizing energy consumption, energy costs and CO<sub>2</sub> emissions. To do this, the contractor plans, implements and finances technical, structural and organizational measures. The contractor guarantees the level of savings contractually and also takes care of the maintenance of the new technology. Through monitoring and continuous optimization, the contractor ensures that the savings are actually achieved. The services and investments are refinanced through a portion of the energy costs saved, which the contractor receives during the contract term of usually 7-12 years.

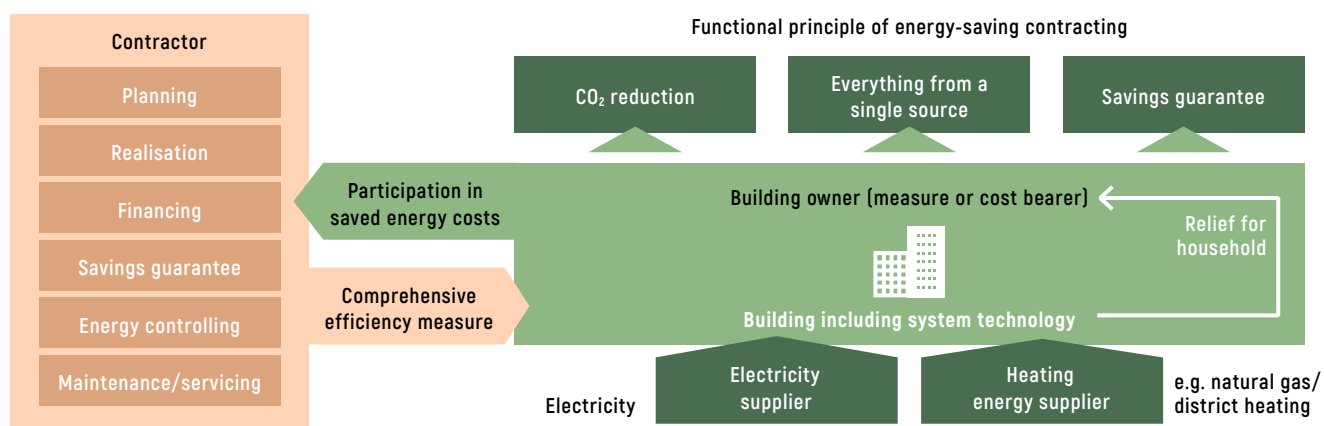
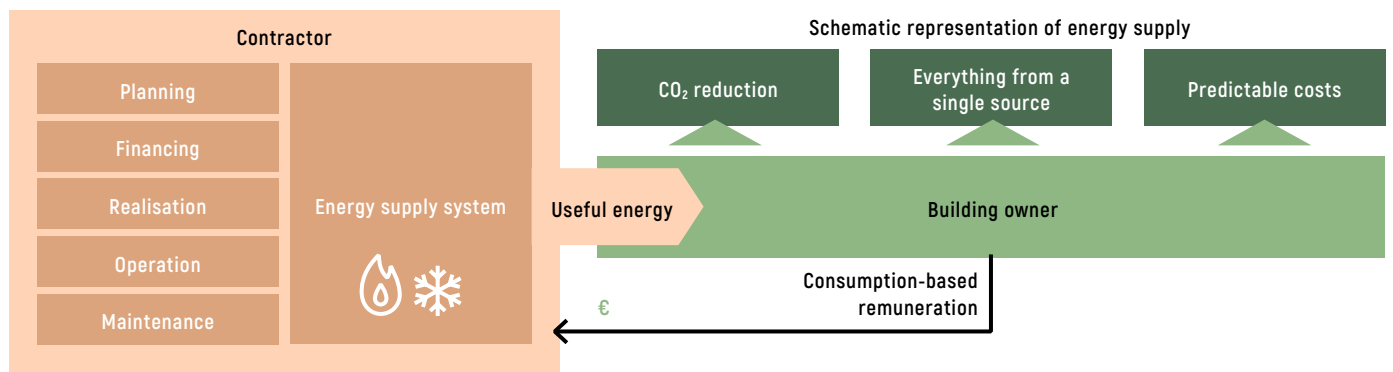


FIGURE 10 Schematic representation of energy performance/saving contracting (EPC) (translated from German) [\(dena - Kompetenzzentrum Contracting\)](#)

**Energy Supply Contracting (ESC)**

ESC often also referred to as heat supply contracting, focuses on the installation or renewal of a building's energy generation system and its supply with useful energy.

Depending on the scope of services required, the contractor takes on planning, financing, construction, operation and maintenance as well as fuel procurement. The contractor is remunerated for the services via fixed price conditions through the sale of the generated useful energy (e.g. heat, electricity, cold) to the building owner. The contractor's interest here is therefore also in the system operating very efficiently.



**FIGURE 11** Schematic representation of energy supply contracting (ESC) (translated from German) [\[dena – Kompetenzzentrum Contracting\]](#)



**In brief**

Energy contracting offers the following benefits:

- **Guaranteed savings:** The service contractor guarantees certain energy savings specified in contractual agreements.
- **No upfront costs:** The client does not need to make any initial investment as the service contractor provides the financing.

- **Performance-based compensation:** The service contractor is paid from the actual savings, minimizing financial risks for the client.
- **Comprehensive service:** The service contractor offers a full range of services including energy audit, project planning, implementation and monitoring.

## Where to Find more Information

Discover good practices and projects from European cities on our websites:

[www.interreg-central.eu/projects/mission-ce-climate/](http://www.interreg-central.eu/projects/mission-ce-climate/)

[www.climatehub.si](http://www.climatehub.si)

### WEBSITES:

[dena](#) | Deutsche Energie-Agentur: [Kompetenzzentrum Contracting](#)

There is a lot of other interesting information on the dena website:

- Contracting (Introduction, contracting models, implementation of contracting, contracting glossary)
- Model projects
- Application (Application areas, dena practice database contracting, ...)
- Implementation aids (dena publications, tools & practical aids, ...)

In addition to informative materials in the form of guidelines, dena also offers practical application aids for contracting, e.g. for comparing offers for energy supply contracting. Most of the tools are also part of the contracting guidelines.

For concrete examples, see the [dena Praxisdatenbank Contracting](#), which offers an overview of different application areas, such as universities, hospitals, museums, schools, swimming pools, sports facilities, administrative buildings, residential buildings and includes a wide variety of measures, such as steam boilers, storage, photovoltaics, condensing boilers, refrigeration systems.

[JRC](#) | Joint Research Center: Energy Performance Contracting

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**Difu 2023** | Ines Fauter, Julius Hagelstange, Taina Niederwipper, Paul Ratz, Judith Utz, Corinna Altenburg (Projektleitung), Finya Eichhorst, Petra Reinecke, Sophie Werdin, u.a., Agentur für kommunalen Klimaschutz: Praxisleitfaden: [Klimaschutz in Kommunen \(4., aktualisierte Auflage\) \(difu.de\)](#), Berlin.

**Difu 2020** | Corinna Altenburg, Philipp Reiß, Henrik Scheller, Katharina Heinbach, Johannes Rupp, Bernd Hirschl (2020): [Klimaschutz in finanzschwachen Kommunen: Mehrwert für Haushalt und Umwelt](#) | Deutsches Institut für Urbanistik (difu.de). Eine Handreichung für Kommunen. Hrsg.: Deutsches Institut für Urbanistik (Difu); Berlin.



FUNDING INSTRUMENT 3

# Local Climate Funds and Revolving Funds



“ A city climate fund is an institution set up to finance and support projects in a city that reduce emissions or improve climate resiliency. The fund uses different financial tools to support projects, programmes and instruments with environmental benefits and – in most cases – social and economic benefits. ”

(C40 Cities 2016, p5)

In order to overcome the financial gap/ challenges of funding local climate action, some municipal governments have developed local climate funds. Local climate funds share one core mission – use of limited public funds to leverage additional private resources, with the goal of financing the climate transition at local level.

Local climate funds are, however, not standard private sector funds that serve as an investment opportunity for those involved and generate return. Instead, municipalities and, where applicable, companies and citizens pay into the fund to enable local or regional climate protection measures. The return in this case is the distribution of the funds in climate protection measures.

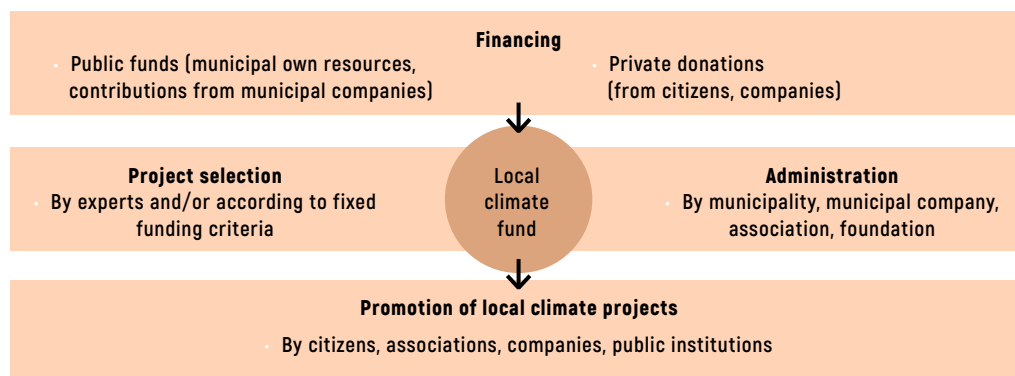
Local climate funds – though funds can be diverse in structure and ways of operating – are commonly defined by the following shared attributes:

- They are owned, controlled, or supported by local governments;
- Execute a public, development-oriented mandate;
- They are off balance sheet special purpose investment vehicles;
- Act as financial intermediaries to catalyse and aggregate public and private financing.

(Alliance 2022, p2)

The basic structure of a local climate protection fund is as follows:

**FIGURE 12** Basic structure of a local climate protection fund (adelphi 2022, p7)



The figure shows the questions that municipalities face with regard to the establishment of a climate fund:

- What does a local climate fund do?  
Which tasks need to be coordinated?
- Who manages the climate fund administratively?
- What are the funding sources for the fund?
- Which organizations and projects can be supported by the local climate fund? How are they selected?
- Which local and regional climate projects are particularly effective?
- Which municipal legal conditions need to be observed?



## Revolving Funds

Climate funds and revolving funds are "close relatives". Both are financial instruments aimed at supporting sustainable development, particularly in the context of mitigating climate change. However, they have different structures, functions and operating models.

As seen before, climate funds are pools of financial resources specifically dedicated to supporting projects and initiatives. In revolving funds, the capital is also used to finance projects, with the returns from these being reinvested in new projects, creating a sustainable financing cycle.

A revolving fund is a pool of capital that is used to provide loans or grants for projects, with the expectation that the funds will be repaid or replenished. The repayments are then used to finance additional projects, creating a sustainable funding cycle.

### KEY STRATEGIES

## C40 Cities Good Practice Guide on City Climate Funds

The C40 Cities Good Practice Guide on City Climate Funds (published 2016) focuses on key elements necessary to create successful city climate funds. The good practice guide – based on a survey of five best practices from Amsterdam, London, Melbourne, New York and Toronto – summarises the key strategies highlighted by the cities representatives to share this knowledge with other cities that may be planning to launch or already have similar funds in place.

Revolving funds typically start with an initial investment or seed funding, which can come from government sources, international organizations, private investors, or grants. The fund provides financial support to projects in the form of loans or sometimes grants. Loans are often provided at low or zero interest rates to encourage uptake. The projects repay the funds over a specified period, often from the cost savings or revenue generated by the projects. Repaid funds are reinvested into new projects, allowing the fund to continue financing initiatives without needing additional external funding.

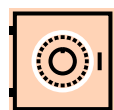
By continuously recycling capital, revolving funds provide a sustainable source of financing for long-term projects. Initial investments can be leveraged multiple times, enhancing the impact of the original capital. Projects financed through revolving funds have a built-in incentive to be financially viable and efficient to ensure that they can repay the loans. Revolving funds can attract additional private investment by demonstrating the viability and success of funded projects. These funds can be tailored to support a wide range of projects, including energy efficiency, renewable energy, water conservation, and other sustainability initiatives.

These key strategies are:



### **Convene Key Stakeholders**

Create a fund that progresses the city's sustainability strategic goals and acts as a facilitator between the property industry, financiers and local governments. Convene key stakeholders to ensure continuous collaboration. Discover market gaps and create innovative, sustainable products.



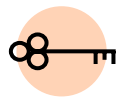
### **Mobilise Private Investment**

Use a revolving fund structure and mobilise private investment at both fund and project level to ensure financial sustainability and achieve leveraging effects. Understand financing obstacles and market shortcomings from day one to develop a clear investment strategy flexible enough to adapt to future market changes.



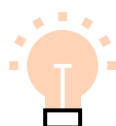
### Become a Specialty Lender

Provide loans and alternative financing solutions for building-scale energy efficiency and clean energy projects. Become a specialty lender using creative financing tools to scale up climate action in sectors with greatest opportunities and barriers through lending partnerships with like-minded partners.



### Set Up Project-Specific Funds

Set up project-specific fund, employing different strategies and criteria for commercial projects with a higher financial return vs. smaller scale projects that have no commercial targets and lower risk. Provide funding for sustainable projects that traditional financiers would not normally support.



### Finance Innovative Solutions

Structure money creatively and allocate a part of the fund to innovation, incubation and capital mobilisation. Finance innovative solutions to de-risk green technologies, incubate climate solutions, and demonstrate low-carbon investment opportunities.

(C40 Cities 2016, p3)

## In brief

Climate funds and revolving funds are similar in many aspects. However, the two differ fundamentally in the projects funded.

In principle, a local climate fund supports selected projects that, in addition to ongoing measures by the local authority, reduce emissions locally. The fund's priorities are as needed to make a targeted contribution to municipal climate goals (e.g. stimulating innovation, integrating climate protection and adaptation or promoting technical measures). Financial viability of the fund itself is not necessarily a priority.

In the revolving fund, the focus is on projects that lead to cost savings and thus generate income for repayment particularly in the areas of climate action, energy efficiency, and water conservation. The project selection is based on financial viability and repayment ability.

## Where to Find more Information

Discover good practices and projects from European cities on our websites:

[www.interreg-central.eu/projects/mission-ce-climate/](http://www.interreg-central.eu/projects/mission-ce-climate/)

[www.climatehub.si](http://www.climatehub.si)

### WEBSITES:

[Green City Freiburg](#)

[The Climate Protection Fund becomes the Future Climate Protection Fund](#)

[Almada's Less Carbon Climate Fund, \(r\)Evolved – a good practice:](#)

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Eine Handreichung für Kommunen. Hrsg.: Deutsches Institut für Urbanistik (Difu); Berlin.

**Freitas 2018** | Catarina Freitas (2018): [Almada Climate \(r\)Evolved Fund Catarina Freitas Head of Department for Environment, Climate, Energy and Mobility City Council of Almada, Portugal Capturing savings and contributing for the financial sustainability of the climate fund and investment in mitigation and adaptation](#). Department for Environment, Climate, Energy and Mobility City Council of Almada, Portugal. Presentation at Covenant of Mayors Investment Forum 2018.

**ICLEI 2021** | ICLEI (2021): [Innovative Financing for low emissions development: Revolving funds, Intracting and Community Funding. What do they mean?](#) Urban Leds project, funded by EU.

## FURTHER READINGS:

**Wuppertal Institut 2017** | Kaselofsky, Jan, Schüle, Ralf; Fischer, Jonas (2017):

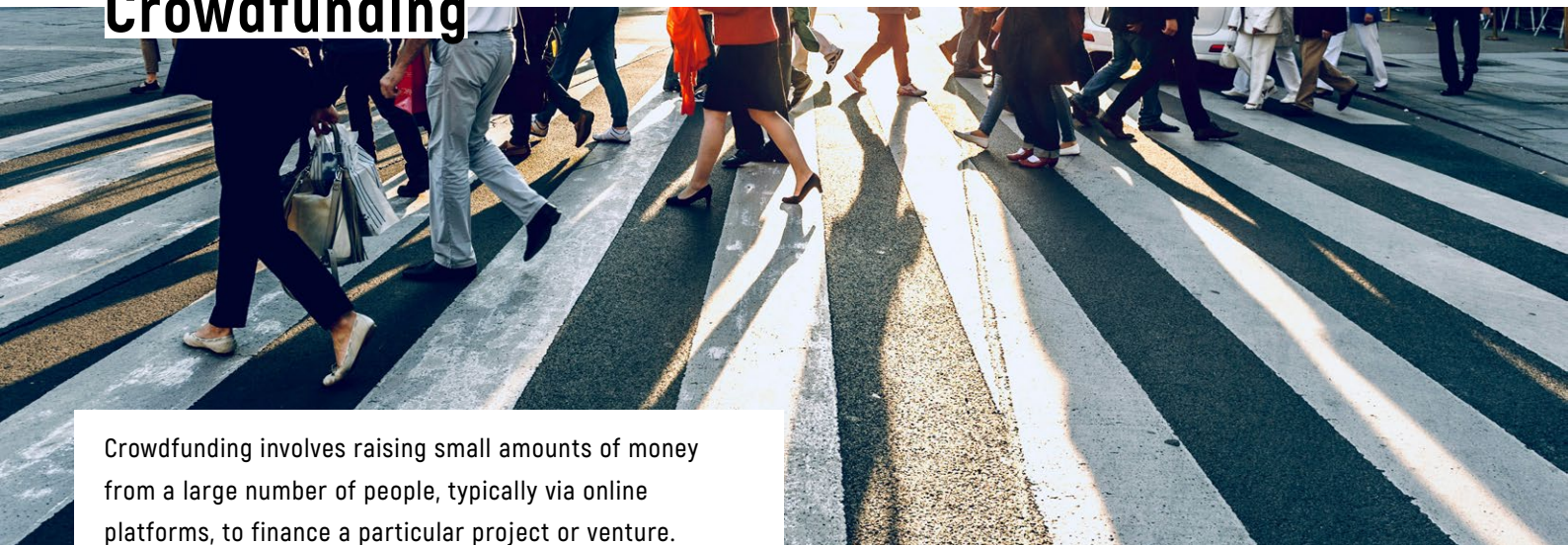
[Energieeffizienz- und Klimaschutzfonds – Recherche bestehender Modelle und erste Aussagen zu einer Übertragbarkeit auf das Ruhrgebiet](#). Wissenschaftlicher Abschlussbericht, Wuppertal: Wuppertal Institut für Klima, Umwelt, Energie gGmbH.

**INFINITE 2016** | INFINITE (2016): [Solutions Local and regional financing schemes increasing energy efficiency and renewable energy use in public and private buildings – comparative analysis](#)



FUNDING INSTRUMENT 4

# Crowdfunding



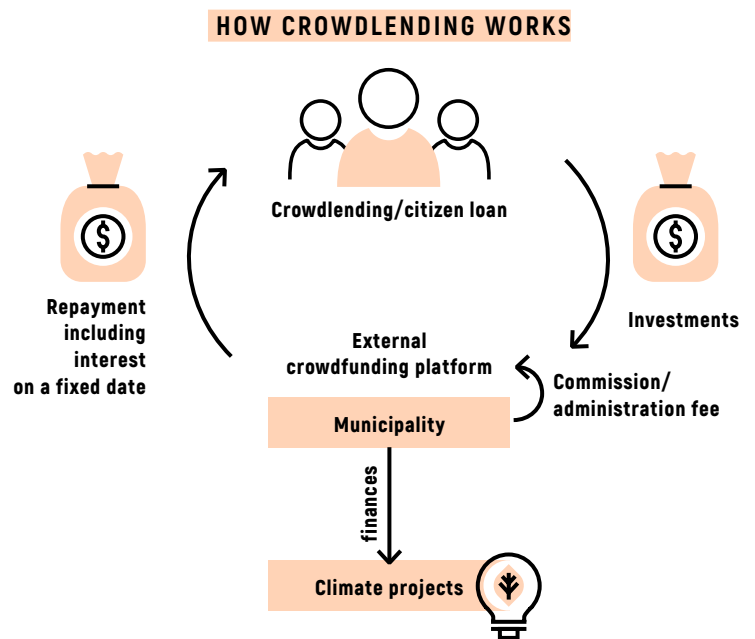
Crowdfunding involves raising small amounts of money from a large number of people, typically via online platforms, to finance a particular project or venture. This method democratizes funding by allowing individuals to contribute to projects they care about, often receiving rewards or benefits in return.

Crowdfunding has emerged as a viable method for financing climate resilience projects. By leveraging the power of collective contributions, communities and organizations can fund initiatives aimed at enhancing resilience to climate change impacts such as extreme weather events, rising sea levels, and temperature fluctuations.

The most common crowdfunding forms to finance municipal climate projects are:

- donation-based crowdfunding, also known as **civic crowdfunding**,
- credit-financed crowdfunding, which is also known as **crowdlending**.

FIGURE 13 Crowdlending (translated from German) (SK:KK 2020, p8)



The following steps provide guidance on how to implement crowdfunding:

1. **Identify and design projects** Define clear, impactful climate resilience projects that can attract public interest and support.
2. **Choose the right platform** Select a suitable crowdfunding platform that aligns with the project's goals and target audience.
3. **Create a compelling campaign** Develop a persuasive campaign narrative that explains the project's purpose, benefits, and impact. Use engaging visuals, videos, and testimonials.
4. **Set funding goals and rewards** Establish realistic funding goals and offer attractive rewards or incentives for different contribution levels.
5. **Promote the campaign** Utilize social media, email marketing, local events, and media outreach to promote the campaign and attract backers.
6. **Engage and update backers** Maintain communication with supporters, providing updates on the project's progress and how funds are being used.

The advantages of crowdfunding are reflected in the following points:

**👥 Broad Engagement:** Involves a wide range of stakeholders, from local communities to international supporters.

**📣 Public Awareness:** Raises awareness about climate resilience issues and mobilizes public support.

**⚡ Diverse Funding Sources:** Reduces reliance on traditional funding sources by tapping into a broader base of contributors.

**≈ Innovation and Flexibility:** Encourages innovative solutions by allowing a variety of projects to be proposed and funded.

Challenges and mitigation strategies are seen as:

**👁️ Campaign Visibility:** Ensuring the campaign reaches a wide audience can be challenging. Utilizing a mix of online marketing, partnerships with influencers, and local community engagement can help increase visibility.

**🔒 Trust and Credibility:** Potential backers need to trust that their contributions will be used effectively. Providing detailed project plans, regular updates, and transparency about fund usage can build trust.

**🎯 Funding Target:** Setting a realistic funding target is crucial. Research similar successful campaigns and adjust goals accordingly to avoid underfunding or over-promising.

### In brief

• Crowdfunding offers a dynamic and inclusive way to finance climate resilience projects.

• By engaging a broad base of supporters, raising public awareness, and promoting innovative solutions, crowdfunding can play a crucial role in building resilient communities that are better prepared to face the challenges of climate change.

## Where to Find more Information

Discover good practices and projects from European cities on our websites:

[www.interreg-central.eu/projects/mission-ce-climate/](http://www.interreg-central.eu/projects/mission-ce-climate/)

[www.climatehub.si](http://www.climatehub.si)

WEBSITES:

[crowdfunding.gent](http://crowdfunding.gent)

**Climate ADAPT:** Case Studies (2023) |

[Ghent crowdfunding platform realising climate change adaptation through urban greening, Belgium](#)

**INTERLACE HUB** | [Crowdfunding for urban greening – Ghent \(Belgium\)](#)

[citizenenergy.eu](http://citizenenergy.eu)

**Climate Change** | [Non-profit charity and social enterprise fundraising](#) (chuffed.org)



## SOURCES:

**adelphi 2023** | Anger, Kathrin; Jan Fjornes, Andreas Schneller and Philipp Wagner (2023):

[Strengthening the role of crowdfunding platforms in the energy transition](#). Berlin: adelphi re search gGmbH.

**Difu 2020** | Altenburg, Corinna; Reiß, Philipp; Scheller, Henrik; Heinbach, Katharina; Rupp, Johannes; Hirschl, Bernd (2020):

[Klimaschutz in finanzschwachen Kommunen: Mehrwert für Haushalt und Umwelt | Deutsches Institut für Urbanistik \(difu.de\)](#).

Eine Handreichung für Kommunen. Hrsg.: Deutsches Institut für Urbanistik (Difu); Berlin.

**SK:KK 2022** | Sommer, Britta (2022): [Klimaschutzfonds, Crowdfunding und Sponsoring](#). Hrsg.: Service- und

Kompetenzzentrum: Kommunaler Klimaschutz (SK:KK) am Deutschen Institut für Urbanistik gGmbH (Difu).

**RES coop 2023** | REScoop; CEE Bankwatch Network; CAN Climate Action Network:

[Briefing: Public Financing Opportunities for Energy Communities in Europe](#).

## STUDIES:

**Adhami et al. 2017** | Adhami, Saman; Giudici, Giancarlo; Huy Pham Nguyen Anh (2017): [Crowdfunding for green projects in](#)

[Europe: success factors and effects on the local environmental performance and wellbeing](#).

**Maehle et al. 2021** | Maehle, Natalia; Otte, Pia Piroeschka; Huijben, Boukje; de Vries, Jorick (2021):

[Crowdfunding for climate change: Exploring the use of climate frames by environmental entrepreneurs](#)

(sciencedirectassets.com) In: Journal of Cleaner Production, Volume 314, 10 September 2021.

**Adamska Mieruszewska et al. 2023** | Adamska Mieruszewska, Joanna; Zientara, Piotr; Mrzygłód, Urszula, Fornalska, Anna

(2023): Anna (2023): [Motivations for participation in green crowdfunding: Evidence from the UK](#). *Environment, Development and Sustainability*



## FUNDING INSTRUMENT 5

# Green Bonds (Climate Bonds)

## Green Bonds

"Green Bonds are any type of bond instrument where the proceeds or an equivalent amount will be exclusively applied to finance or re-finance, in part or in full, new and/or existing eligible Green Projects (...) and which are aligned with the four core components of the GBP." (ICMA 2021, p3)

The four core components for alignment with the Green Bonds Principles are:

1. Use of Proceeds
2. Process for Project Evaluation and Selection
3. Management of Proceeds
4. Reporting (see ICMA 2021, p4ff)

## Green Municipal Bonds

"Bond is a debt investment in which an investor loans money to an entity (typically corporate or governmental) which borrows the funds for a defined period of time at a variable or fixed interest rate. Bonds are issued by companies, municipalities, states and sovereign governments to raise money and finance their projects and activities. **Green bonds are all those instruments which are used exclusively to fund qualifying green investments.** They can be made attractive via tax-exemptions." (Covenant of Mayors - Europe)

Green bonds are financial instruments used by governments, municipalities, or community organizations to fund environmentally sustainable projects. These bonds align with broader goals of sustainability and environmental stewardship, offering a way to invest in the future while addressing pressing environmental concerns.

**Green bonds focus on funding green projects** within a specific geographic area, ensuring that the investments directly benefit local environments and economies. They are issued by local governments or municipalities to finance projects that have positive environmental impacts. These bonds focus on local-scale projects that directly benefit the community, such as: Renewable energy installations (e.g., solar, wind), localized energy efficiency

programs (e.g. energy efficiency upgrades in public buildings), water and wastewater treatment facilities, public transportation improvements, green infrastructure and spaces (e.g., parks, green roofs, permeable pavements), urban agriculture initiatives, green urban forestry projects.

The following benefits are usually associated with it:

- **Community Empowerment / Local Engagement / Community Support:** Strengthens local governance and high level of engagement and support from local residents who see the benefits of these projects.
- **Localized and Targeted Impact:** Funds raised are used for projects that have a direct and visible impact on the community.
- **Environmental Impact:** Funds raised are directed towards reducing carbon footprints and promoting sustainability.
- **Community Health:** Projects often improve public health and quality of life.
- **Investor Appeal:** Growing interest from investors who prioritize ESG (Environmental, Social, and Governance) criteria.
- **Economic Growth:** Can stimulate local economic growth through job creation and infrastructure development.



### Issuance and Market Trends

📄 **Certification and Standards:** To ensure transparency and credibility, many green bonds adhere to standards like the Green Bond Principles (GBP) (see ICMA 2021, p4ff) or Climate Bonds Standard (see Climate Bonds Initiative). Certification can attract more investors by guaranteeing that funds are used as promised.

📈 **Market Growth:** The market for green bonds has been expanding rapidly, driven by increased awareness of climate change and a shift towards sustainable investment practices.

🏛️ **Incentives:** Governments and regulatory bodies may offer incentives, such as tax breaks or subsidies, to encourage the issuance and purchase of green bonds.

### Challenges and Considerations

🔍 **Verification:** Ensuring that the funds are used appropriately and that the projects deliver the promised environmental benefits can be challenging.

🌐 **Market Development:** While growing, the green bond market is still developing, and there can be a lack of liquidity and standardization.

💰 **Costs:** The process of certifying and issuing green bonds can be more expensive compared to traditional bonds.

🏠 **Resource Constraints:** Smaller communities may have limited financial and administrative resources to issue and manage green bonds.

🛠️ **Expertise:** Developing the necessary expertise for project selection, management, and reporting can be challenging.

### In brief

- Local-level green bonds in Europe have proven to be effective tools for financing a wide range of sustainable projects. Green bonds provide especially smaller European communities with a powerful tool to finance their sustainability initiatives.

- By addressing local environmental challenges through projects funded by green bonds, these communities can achieve significant environmental, social, and economic benefits. As more smaller communities recognize the potential of green bonds, their adoption is likely to increase, contributing to broader sustainability goals across Europe.





## Where to Find more Information

Discover good practices and projects from European cities on our websites:

[www.interreg-central.eu/projects/mission-ce-climate/](http://www.interreg-central.eu/projects/mission-ce-climate/)

[www.climatehub.si](http://www.climatehub.si)

### WEBSITES:

[City of Gothenburg \(Sweden\) Green Bonds](#)

[Climate Bonds Initiative](#)

[Covenant of Mayors – Europe](#)

[Green Finance Institute](#)

[Local Climate Bonds](#)

[Local Climate Bonds: Case studies](#)

[Local Climate Bond Toolkit](#)

European Council: [European green bonds – The first environmental and sustainable global bond standard.](#)

BaFin: [EU Green Bond Standard: Hohe Anforderungen für mehr Klarheit.](#)

ICMA | [Labelled Green Bonds Data: Latest 3 Months](#)

### SOURCES:

**City of Gothenburg (Sweden)** [Green Bonds](#)

Framework (2022) – [City of Gothenburg Green Bond Framework](#), September 2022

Second Opinion (2022) – CICERO: [The City of Gothenburg Green Bond Second Opinion](#), September 2022

[Limited assurance Green Account](#) (annual reports)

[Investment projects](#) (annual reports)

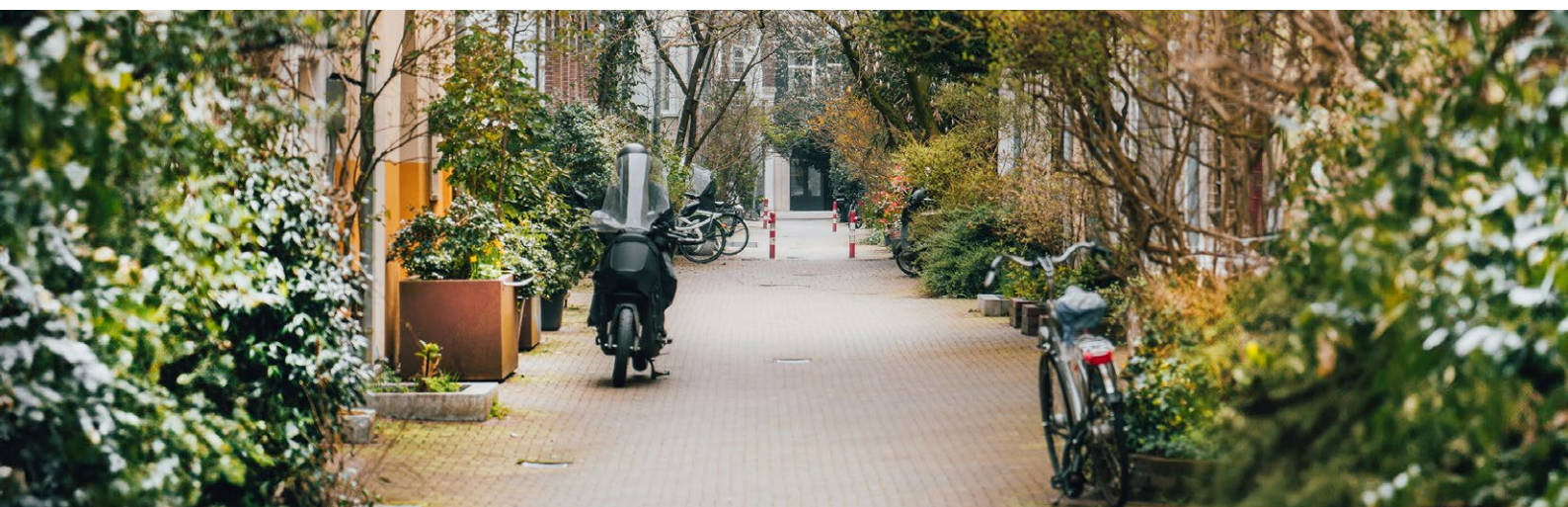
[Impact report](#) (annual reports)

[Pricing supplement](#) (19.06.2024)

**ICMA 2021** | ICMA (2021 with June 2022 Appendix 1):

[Green Bond Principles: Voluntary Process Guidelines for Issuing Green Bonds.](#)

**Nordic 2019** | Nordic Public Sector Issuers: [Position Paper on Green Bonds Impact Reporting.](#) (2019)



## FUNDING INSTRUMENT 6

# Energy Communities and Citizen Energy Cooperatives or Energy Cooperatives

While dealing with the topic of energy cooperatives, several other terms come to mind, such as energy communities, renewable energy communities (RECs), citizens energy communities (CECs), which will first be briefly introduced in order to be able to classify them later.

First, a fundamental distinction: **Energy communities** and **energy cooperatives** are both collaborative initiatives aimed at **managing and promoting sustainable energy**, but they differ in their structure, scope, and operational focus.

In general:

- An **energy community** is a **collaborative initiative** where individuals, households, businesses, and/or local organizations come together to produce, manage, and consume energy collectively. These communities aim to enhance local energy security, promote the use of renewable energy sources, reduce carbon emissions, and empower members by giving them more control over their energy resources. Energy communities can take various forms and operate under different structures, including cooperatives, municipal projects, and informal associations.
- An **energy cooperative** is a **member-owned and member-governed organization** that produces, distributes, and/or manages energy resources for the benefit of its members. These cooperatives operate based on cooperative principles, emphasizing democratic decision-making, community involvement, and equitable distribution of benefits. Energy cooperatives can be involved in various aspects of the energy sector, including generation, distribution, and retailing, and they often focus on renewable energy sources such as solar, wind, and biomass.

The **Covenant of Mayors – Europe** defines **citizen cooperatives** as follows:

“Energy cooperatives refer to a business model where citizens jointly own and participate in renewable energy (RES) or energy efficiency (EE) projects. In energy cooperatives citizens are involved in both the decision making and financial & economical participation. All citizens are eligible to participate. After purchasing a cooperative share and becoming a member or co-owner of local RES and EE projects, members share in the profits and often are given the opportunity to buy the electricity at a fair price. In addition, members can actively participate in the cooperative: they can decide in what and where the cooperative should invest, and are consulted when setting the energy price.”

[CoM]



Following **CEE Bankwatch & REScoop.eu** "An energy community is first and foremost an organisational concept based around three main principles:

- It is **owned and controlled by private consumers, municipalities and/or small and medium-sized enterprises (SMEs)**. It is usually controlled through a democratic governance mechanism.
- It is **open and guarantees voluntary participation**. All participants should be welcome and enjoy similar governance rights.
- It is **primarily dedicated to social and environmental benefits**, rather than financial profits.

To put it briefly, an energy community is a group of citizens cooperating on an energy transition project. The most commonly used model is citizens collectively owning renewable energy systems, such as wind turbines and solar photovoltaics. These communities always take a collective approach with democratic governance, irrespective of what legal form, business model, or technologies are used." (CEE 2022, p2)

The main difference between energy cooperatives and energy communities lies in the legal status that cooperatives have.



## Anchoring in EU Policy

"Through the **Clean energy for all Europeans package**, adopted in 2019, the EU introduced the concept of energy communities in its legislation, notably as citizen energy communities and **renewable energy communities**.

More specifically, the **Directive on common rules for the internal electricity market** (EU/2019/944) aims to support the uptake of energy communities. It introduced new rules to enable active consumer participation, individually or through citizen energy communities, in all markets, by generating, consuming, sharing or selling electricity, or by providing flexibility services through demand-response and storage.

The **revised Renewable energy directive** (2018/2001/EU) strengthens the role of renewables self-consumers and renewable energy communities. EU countries should enable this through available support schemes, ensuring energy communities can participate on equal footing with larger participants." (**Energy communities (europa.eu)**)

## REScoop.eu – European Federation of Citizen Energy Cooperatives

The European federation of citizen energy cooperatives – REScoop.eu was founded 2013. The growing network has 2,250 members with around 1,500,000 citizens who are actively involved in the energy transition.

The objectives of REScoop are to:

- represent the voice of citizens and energy cooperatives to European policy makers;
- support starting and established energy cooperatives and provide them with tools and contacts to help them grow and prosper;
- facilitate international exchanges and cooperation between energy cooperatives;
- promote the cooperative business model in the energy sector. [\[REScoop.eu\]](#)

REScoops are defined as “energy cooperatives, a business model where citizens jointly own and democratically control an enterprise that works on renewable energy or energy efficiency projects.” [\[REScoop.eu\]](#) Following this definition, REScoop.eu emphasizes that renewable and citizens energy

communities (RECs, CECs) are also considered.

The difference – Energy communities do not necessarily have the legal statute of a cooperative, but rather distinguish themselves by the way they do business.

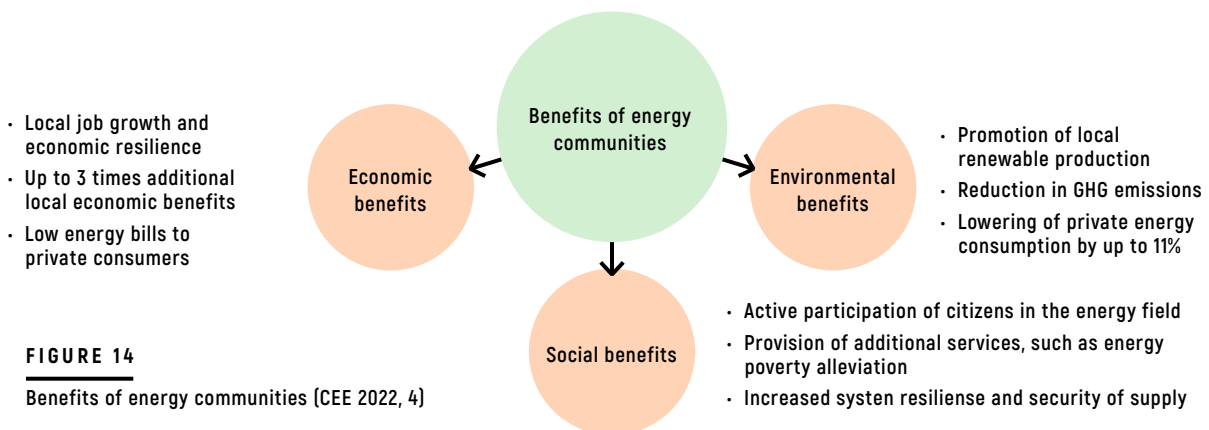
REScoops typically respect seven principles outlined by the [International Cooperative Alliance](#):

1. Voluntary and Open Membership
2. Democratic Member Control
3. Economic Participation through Direct Ownership
4. Autonomy and Independence
5. Education, Training and Information
6. Cooperation among Cooperatives
7. Concern for Community

“All citizens are eligible to join a REScoop. After purchasing a cooperative share and becoming a member or co-owner of local renewable energy or energy efficiency projects, members share in the profits and are usually given the opportunity to buy the electricity at a fair price. In addition, members can actively participate in the cooperative: They can decide where the REScoop should invest, and are consulted when setting the energy price.”

[\[REScoop.eu\]](#)

REScoops provide a wide range of economic, environmental and social benefits as the following picture shows:



**FIGURE 14**  
Benefits of energy communities (CEE 2022, 4)

### In brief

Energy Communities and Citizen Energy Cooperatives (or Energy Cooperatives) are groups of individuals or organizations that collaborate to produce, manage, and distribute renewable energy locally. These initiatives empower communities to reduce reliance on large energy corporations and promote sustainability.

Energy Cooperatives operate democratically, with members owning and controlling the energy projects collectively. By pooling resources, they can invest in renewable technologies such as solar, wind, or biomass, making clean energy more accessible and affordable for local participants.

## Where to Find more Information

Discover good practices and projects from European cities on our websites:

[www.interreg-central.eu/projects/mission-ce-climate/](http://www.interreg-central.eu/projects/mission-ce-climate/)

[www.climatehub.si](http://www.climatehub.si)

### WEBSITES:

**Covenant of Mayors - Europe** | [Citizen Cooperatives](#)

[Eno Energy Cooperative](#). Good Practice; Interreg Europe.

### Several EU websites

[Energy communities](#)

[Energy communities, energy cooperatives, energy clusters](#)

[Clean energy for all Europeans package](#)

[Directive on common rules for the internal electricity market](#)

[International Cooperative Alliance](#)

**REScoop.eu** | The [REScoop.eu](#) website offers a lot of information:

[toolbox](#) – REScoop.eu created and collected tools, reports and papers aiming to support a local, community-led renewable energy revolution in Europe.

[European projects](#) – REScoop.eu works on a number of different EU-funded projects, covering a broad range of topics, to find solutions for the energy transition to energy democracy together with partner organisations.

[Services](#) – REScoop.eu provides a range of services to support citizens, businesses and local authorities that want to work on community energy. Depending on your needs, we can offer tailored services.

[News, reports and events](#)

**COMPILE project** | Integrating Community Power In Energy Islands

In the [COMPILE project](#) interesting materials have been produced:

COOLKIT – [Best Practice Guide](#)

[Stakeholder Guidance](#) – The Municipal Guide

COOLKIT – [Financing Guide](#)

### SOURCES:

**CEE 2022** | CEE Bankwatch Network; REScoop.eu (2022): [Energy Communities – A brief explainer for managing authorities in central and eastern Europe](#). Examples of successful energy communities mentioned are:

- Village of Kněžice (Czech Republic)
- KLIK energy community (Croatia)
- Electra Energy Cooperative (Greece)

**Difu 2020** | Corinna Altenburg, Philipp Reiß, Henrik Scheller, Katharina Heinbach, Johannes Rupp, Bernd Hirschl (2020):

[Klimaschutz in finanzschwachen Kommunen: Mehrwert für Haushalt und Umwelt | Deutsches Institut für Urbanistik \(difu.de\)](#).

[Eine Handreichung für Kommunen](#). Hrsg.: Deutsches Institut für Urbanistik (Difu); Berlin.

**EUCENA 2022** | European Citizen Energy Academy (2022): [Best Practice Guide for Southeast Europe](#) – Inspiring community energy initiatives practices.

**FURTHER READINGS:**

**Adelphi 2023** | Anger, Kathrin; Jan Fjornes, Andreas Schneller and Philipp Wagner (2023):

[Strengthening the role of RES cooperatives in the energy transition](#). Policy Brief; Berlin: adelphi research gGmbH.

**PLP 2022** | Policy Learning Platform (2022): [Empowering Citizens for Energy Communities](#) | Interreg Europe – Sharing solutions for better policy. Policy Brief; Interreg Europe.

Seven good practices are mentioned – all from Interreg Europe projects:

1. Oldham Community Power
2. Eno Energy Co-operative
3. Solar Photovoltaic Communal Farm Scheme
4. Templederry Community Wind Farm
5. Community Energy England
6. SUN Nordhessen
7. Citizen ownership and leasing of solar panels for self-consumption

**REScoop 2023** | REScoop.eu; CEE Bankwatch Network; CAN Climate Action Network (2023):

[Briefing Public Financing Opportunities for Energy Communities in Europe \(bankwatch.org\)](#)

The following good (financing) practices are mentioned:

- Revolving funds for energy communities – Energie Samen, Netherlands
- The development fund (DF), Netherlands
- (Social) Tendering designed around energy communities, Italy
- Citizen-led financing models, Greece

**REScoop 2020** | REScoop.eu & ClientEarth (2020): [Energy Communities under the Clean Energy Package: Transposition Guidance](#).

**WECF 2020** | WECF Germany with the contribution of Melis Yilmaz; Oral Kaya; Gunnar Olesen; Judit Szoleczky; Jan Ruszkowski:

[The Power of Community Energy – Analysis of Energy Cooperatives in the Partner Countries Denmark, Poland, Turkey and Germany](#).



FUNDING INSTRUMENT 7

# Public-Private-Partnership (PPP)



“A public-private partnership (“PPP”) is an arrangement between a public authority and a private partner designed to deliver a public infrastructure project and service under a long-term contract. Under this contract, the private partner bears significant risks and management responsibilities. A PPP differs from conventional public procurement in several respects. PPPs typically share the following features:

- a long-term contract between a public authority and a private partner focusing on the provision of services rather than assets;
- the transfer of certain project risks to the private partner, notably with regard to designing, building, operating/maintaining and/or financing the project;
- a focus on the specification of project outputs rather than project inputs, taking account of the whole life cycle implications for the project;
- the application of private financing (often “project finance”) to underpin the risks transferred to the private partner; and
- the public authority makes performance-based payments to the private partner for the provision of the service (e.g. for the availability of a road) or grants the private partner a right to generate revenues from the provision of the service (e.g. tolls from users of a bridge).

[\[EIB\]](#)

The following figure illustrates the basic structure of a common PPP:

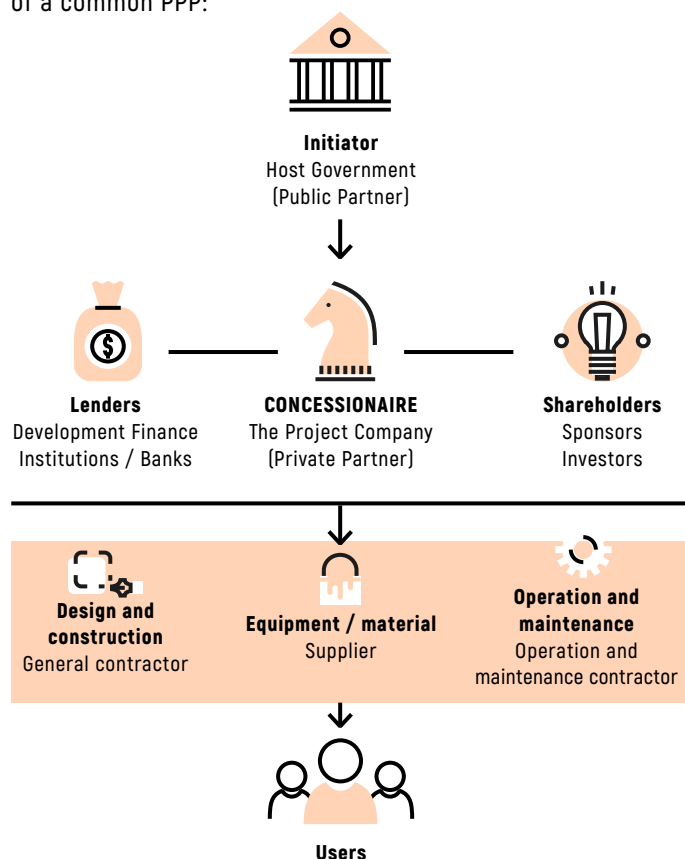
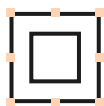


FIGURE 15 Basic structure of a common PPP (CRIO Handbook 2021, p17)

“PPPs are a useful way to procure climate-resilient infrastructure projects for several reasons:



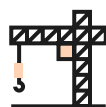
**Incentive Framework:** The private sector is remunerated through their participation in the PPP, either from mechanisms like user fees (e.g. highway tolls) or through availability payments, in which the public sector pays the private party based on an assessment of performance indicators. Remuneration to the private contractor is typically based on contractual project specifications, creating an incentive for the contractor to deliver the asset according to those specifications. This provides an opportunity to include climate resilience principles into these incentive structures.



**Output Focus:** PPP structures are typically focused on outputs defined by the public client (service levels) rather than input specifications – that is, the what it needs to be achieved rather than how it needs to be achieved. This provides the opportunity for private sector innovation, such as integrating the use of NbS in infrastructure projects from the outset. For that, tender requirements should promote incentives for innovation and harness the benefits provided by the natural environment, for example, by giving additional points in the evaluation of bids.



**Longer Duration and Whole-of-Life Costing:** PPPs are also longer in duration than typical public sector procurement. Instead of the relationship between the public sector and the private contractor ending upon completion of constructions, the private contractor is responsible for operating and maintaining – that is, managing – the asset for a specified duration. The long-term view of PPPs incentivises the integration of climate resilience principles into the design of the asset. If a private contractor must be responsible for the design, operation and maintenance of the asset over several decades, it is in their interest to design the asset to be resilient to a changing climate as a means to reduce costs.



**Efficiency in Recovery after a Hazard**

**Occurrence:** PPPs can reduce the strain on governments by maximizing private sector efficiencies during the operation and maintenance phase in the event of a climate hazard. As part of the climate resilience component of the project, the private partner needs to ensure that infrastructure continuity of service is maintained in the event of a hazard, or restored rapidly. By sharing the burden of recovery, the public partner would be able to direct its resources to other aspects of recovery.



**Widespread Use:** PPPs are a relatively common tool for procuring infrastructure projects across the globe. Governments and private organisations alike already have skills and capacity around these arrangements. Climate resilience can be integrated into the PPP project cycle, rather than (or in addition to) using novel mechanisms which would take time to gain traction.



**Risk Transfer:** PPPs support risk-sharing among partners. Risks are reviewed at the outset and allocated to the partner that is best-placed to absorb and manage that risk, although in practice this may be the partner who is least able to refuse the risk. Therefore, ensuring good governance of infrastructure delivery is key. Some types of climate-resilient infrastructure, like NbS, diverge from traditional infrastructure assets, and risk transfer from the private to the public partner can help to attract and stabilise investment into these novel types of infrastructure. Integrating NbS into the project and not as a stand alone measure can help make the climate-resilient infrastructure project viable and bankable.”

(CRIO Handbook 2021, p24f)

**In brief**

- PPPs have the potential to significantly enhance climate resilience by combining the strengths of both the public and private sectors.
- While there are challenges to their implementation, the benefits – such as increased resource mobilization, risk sharing, efficiency, and innovation – make PPPs a valuable tool in addressing the impacts of climate change. Success depends on careful planning, alignment of interests, supportive policies, and active stakeholder engagement.



## Where to Find more Information

Discover good practices and projects from European cities on our websites:

[www.interreg-central.eu/projects/mission-ce-climate/](http://www.interreg-central.eu/projects/mission-ce-climate/)

[www.climatehub.si](http://www.climatehub.si)

### WEBSITES:

**EPEC** | [European PPP Expertise Centre](#)

**Climate ADAPT:** Case Studies (2024) | [Public-private partnership for a new flood proof district in Bilbao, Spain](#)

**Climate ADAPT:** Case Studies (2024) | [Room for the River Waal – protecting the city of Nijmegen](#)

### INSTITUTION WEBSITES:

**The World Bank** | PPPRC – PPP legal resource center

This section of the PPPRC website – [Climate-Smart PPPs](#) – provides links to policies, legislation, project documents and other resources that are relevant for developing, structuring and implementing climate-smart PPP projects:

1. [Climate-Smart PPP Legal and Regulatory Framework](#)
  - Climate-Smart PPP Policies and Legislation
  - Nationally Determined Contributions (NDCs)
  - Climate-Smart Policies, Legislation and Guidelines
2. [Preparing, Procuring and Implementing Climate-Smart PPPs](#)
  - Developing Climate-Smart PPPs
  - Procuring Climate-Smart PPPs
  - Climate-Smart PPP Contracts
  - Climate Change Risk & Insurance
3. [Sector-Specific Content](#)
  - Energy
    - » [Renewable Energy \(RE\)](#)
    - » [Energy-Efficient Street Lighting PPPs](#)
    - » [Carbon Capture and Storage](#)
  - Water
    - » [Example of Climate-Smart Water Desalination Plant](#)
  - Transport
    - » [Urban Passenger Transport](#)
    - » [Railways](#)
4. [Further Reading and Resources](#)

**PPIAF** | Enabling Infrastructure Investment

[Climate Toolkits for Infrastructure PPPs \(2023\)](#) – The new toolkits provide a set of practical tools to integrate climate mitigation and adaptation into PPP advisory work and project structuring.

It includes an umbrella toolkit for multi-sector use and 5 sector-specific toolkits:

- Climate Toolkits for Infrastructure PPPs
- Climate Toolkits for Infrastructure PPPs: Water Production and Treatment Sector
- Climate Toolkits for Infrastructure PPPs:
  - » ICT Sector
  - » Hydropower Sector
  - » Renewables Sector
  - » Road Sector

### SOURCES:

**Akomea-Frimpong 2023** | I. Akomea-Frimpong, A.K. Agyekum, A.B. Amoakwa, et al. [Toward the attainment of climate-smart PPP infrastructure projects: a critical review and recommendations](#). Environ Dev Sustain (2023)

**CRIO Handbook 2021** | [Climate-Resilient Infrastructure Officer Handbook: Knowledge Module on Public-Private Partnerships for Climate-Resilient Infrastructure](#). Global Center on Adaptation. “The goal of this Handbook is to promote climate-resilient infrastructure to PPP practitioners, ensuring that new and existing projects account for physical climate risks, are able to adapt to future climate, socio-economic and technological change scenarios, and harness the potential of Nature-based Solutions (NbS) across the infrastructure lifecycle. This Handbook is composed of five modules:

Module 1 – Introduction

Module 2 – Overview of resilient infrastructure

Module 3 – Key tools and capacities to integrate climate resilience into PPPs

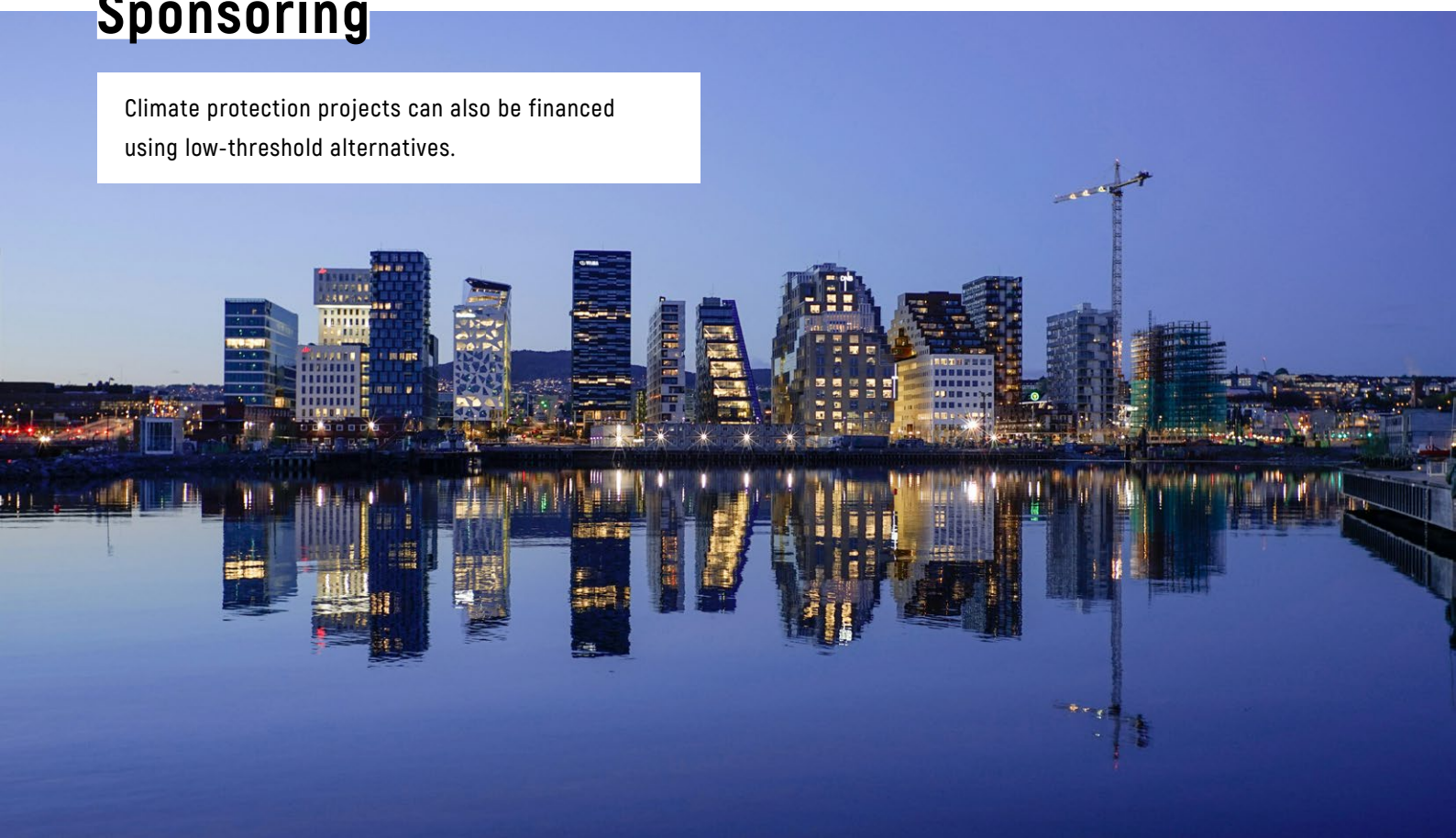
Module 4 – Furthering the enabling environment for climate-resilient PPPs

Module 5 – Embedding resilience in the framework of a PPP” (p9)

## FUNDING INSTRUMENT 8

# Sponsoring

Climate protection projects can also be financed using low-threshold alternatives.



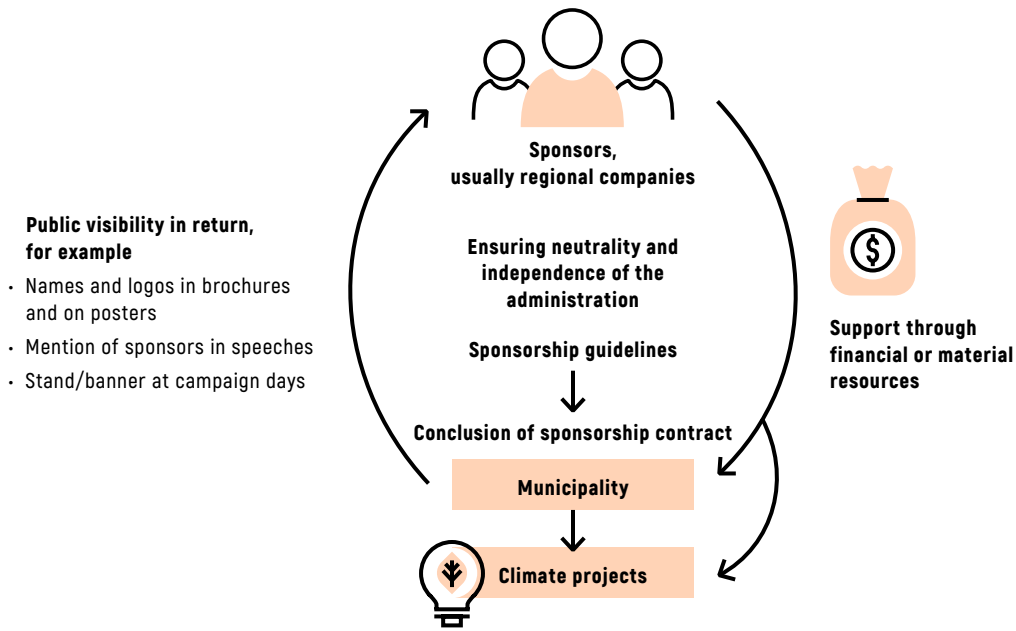
Sponsorship-based initiatives to foster climate resilience, funded by the private sector, can help urban areas better withstand and adapt to the impacts of climate change. Sponsoring climate resilience involves providing **financial, technical, and logistical support** to initiatives aimed at enhancing this adaptive capacity. These initiatives often involve partnerships between businesses, local governments, and community organizations to finance and implement projects that enhance the resilience of urban infrastructure and communities.

For project-related climate protection measures, the alternative of corporate sponsorship is especially suitable. In this way, the municipality can tap into new sources of funding, involve citizens in climate protection activities and thus secure long-term support and acceptance for local climate protection.

When sponsoring, e.g. companies provide financial or material resources for the implementation of climate projects. In return, they can advertise their commitment to climate protection as part of their public relations work. Regional companies such as energy suppliers, banks or even clubs and associations usually act as sponsors. In order not to endanger the neutrality and independence of administrative action, the sponsorship must always be recognizable as such. In addition, individual companies must not be given preferential treatment and no influence on the administration may be exerted. It is therefore important to carefully select the sponsors, draw up the contract (service/consideration, term, payment terms) and document the sponsorship activities.

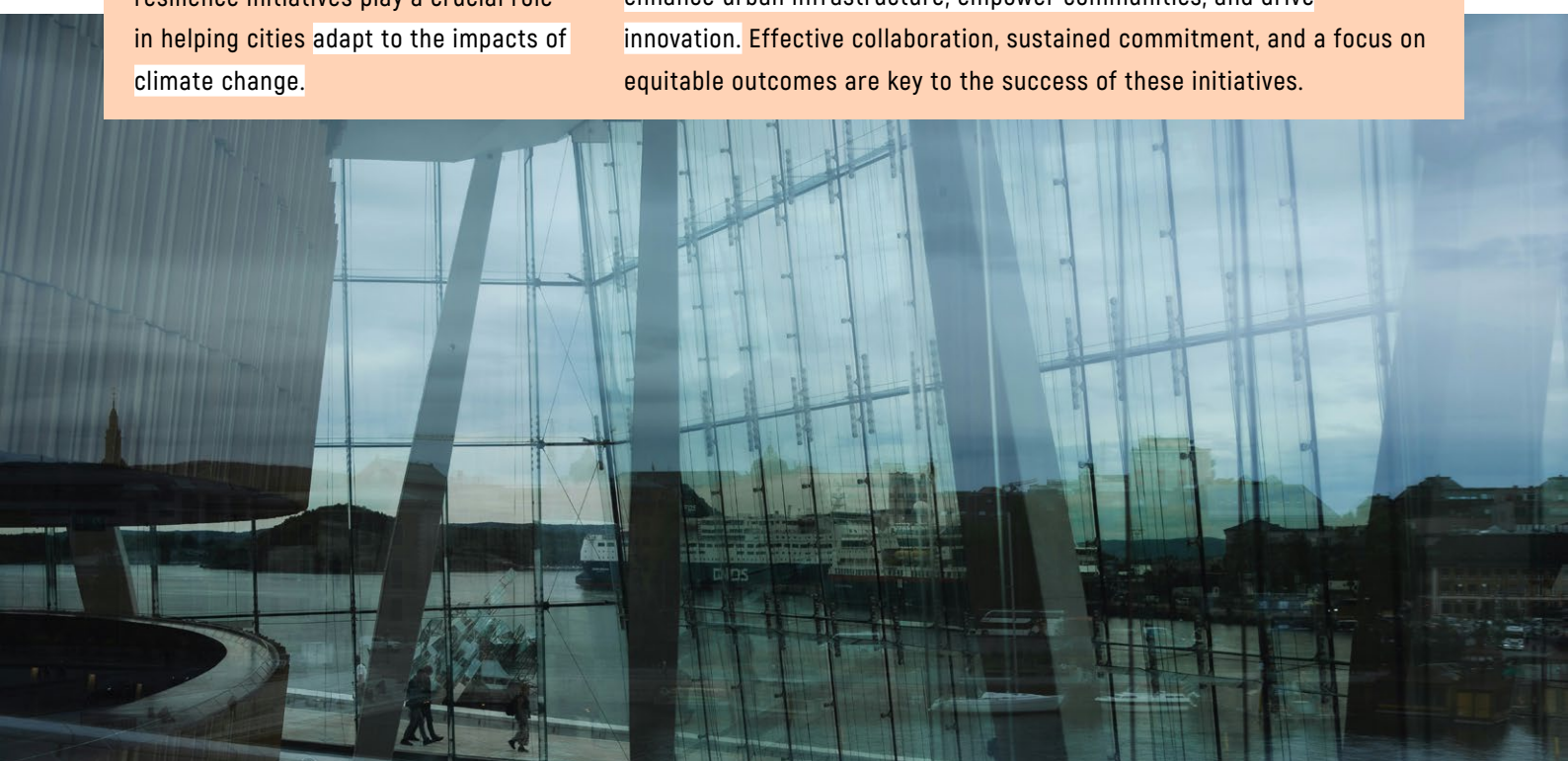
The administrative effort and the usually low consideration from the municipality are seen as an advantage; in addition, relatively large amounts of money can be acquired. If municipalities have little experience with sponsorship (e.g. in finding sponsors, drawing up model contracts, documentation), the required use of resources is initially even higher.

FIGURE 16 Corporate sponsorship (translated from German) (SK:KK 2020, p10)



**In brief**

- Private sector-sponsored climate resilience initiatives play a crucial role in helping cities adapt to the impacts of climate change.
- By leveraging private funding and expertise, these initiatives can enhance urban infrastructure, empower communities, and drive innovation. Effective collaboration, sustained commitment, and a focus on equitable outcomes are key to the success of these initiatives.



**SOURCES:**

**Difu (2020)** | Altenburg, Corinna; Reiß, Philipp; Scheller, Henrik; Heinbach, Katharina; Rupp, Johannes; Hirschl, Bernd (2020): Klimaschutz in finanzschwachen Kommunen: Mehrwert für Haushalt und Umwelt | Deutsches Institut für Urbanistik (difu.de). Eine Handreichung für Kommunen. Hrsg.: Deutsches Institut für Urbanistik (Difu); Berlin.

**SK:KK (2022)** | Sommer, Britta (2022): Klimaschutzfonds, Crowdfunding und Sponsoring. Hrsg.: Service- und Kompetenzzentrum: Kommunaler Klimaschutz (SK:KK) am Deutschen Institut für Urbanistik gGmbH (Difu).

SKKK Fokus Klimaschutzfonds

## FUNDING INSTRUMENT 9

# Governmental Sources – Climate Funding Opportunities in Europe

The [European Climate Initiative – EUKI](#) is one of many funding instruments for climate action in Europe. On its website EUKI provides an overview of climate funding opportunities in Europe:



## [European Climate Initiative – EUKI](#)

The German Federal Ministry for Economic Affairs and Climate Action (BMWK) launched the [European Climate Initiative – EUKI](#) in 2017 in order to improve cooperation on climate action in Europe. EUKI supports the realisation of ideas to accelerate climate action in Europe, finances projects, provides training and brings the European climate action community together. EUKI supports organisations in EU member states and candidate countries in the Western Balkans.

Under the tab [Projects](#) **210** climate projects are presented. These can be filtered by topics and country.



## [Visegrad Fund](#)

The International Visegrad Fund was established in 2000 by the governments of the four Visegrad countries Czech Republic, Hungary, Poland and Slovakia to support the regional cooperation of civil society organisations. The Visegrad Grants cover seven different objectives, one of them focussing on regional development, sustainable infrastructure, tourism and climate change mitigation. Each project must be implemented by organisations from at least three of the four Visegrad countries and run a maximum of 18 months. A collection of [Inspirational Projects](#) is provided.



## [European City Facility – EUCF](#)

EUCF aim is to establish sustainable energy investment projects across municipalities all over Europe. It supports local authorities, municipalities and local public entities in European Member States as well as Iceland and Ukraine to invest in activities according to their climate and/or energy action plans.

Since its start under the Horizon 2020 Framework Programme, EUCF has supported **216** local authorities. Under the tab on [inspirational cases](#) more information can be found about the Investment Concept submitted and the progress of the sustainable energy projects.



## [ICLEI Action Fund 1.0 AND 2.0](#)

The ICLEI Action Fund is a granting scheme conducted by ICLEI Local Governments for Sustainability with support from Google.org to foster data-driven environmental and climate action at the local level. The topics include sustainable mobility; sustainable and energy efficient buildings; solar energy development; climate adaptation and resilience; air quality management or projects that fall into the category environmental and climate action.



International Climate Initiative – IKI

IKI is an important part of the German government’s international climate finance commitment. Since 2022 the IKI is implemented by the Federal Ministry for Economic Affairs and Climate Action (BMWK) in close cooperation with other ministries. IKI supports approaches in developing and emerging countries to implement and ambitiously develop the Nationally Determined Contributions (NDCs) anchored in the Paris Agreement. This includes measures to adapt to the impacts of climate change and to conserve and rebuild natural carbon sinks, taking into account environmental, economic and social concerns.

IKI has approved more than 950 climate and biodiversity projects in over 150 countries worldwide (2008-2022).



The eeef – European Energy Efficiency Fund is a PPP established by the European Commission, the European Investment Bank (EIB), and other financial institutions to promote energy efficiency, renewable energy, and clean urban transport projects across the European Union.

The final beneficiaries of eeef are municipal, local and regional authorities as well as public and private entities acting on behalf of those authorities such as utilities, public transportation providers, social housing associations, energy service companies etc. Investments can be made in Euro, or local currencies, however the latter is restricted to a certain percentage.



LIFE Programme is the EU’s funding instrument for climate action and the environment.

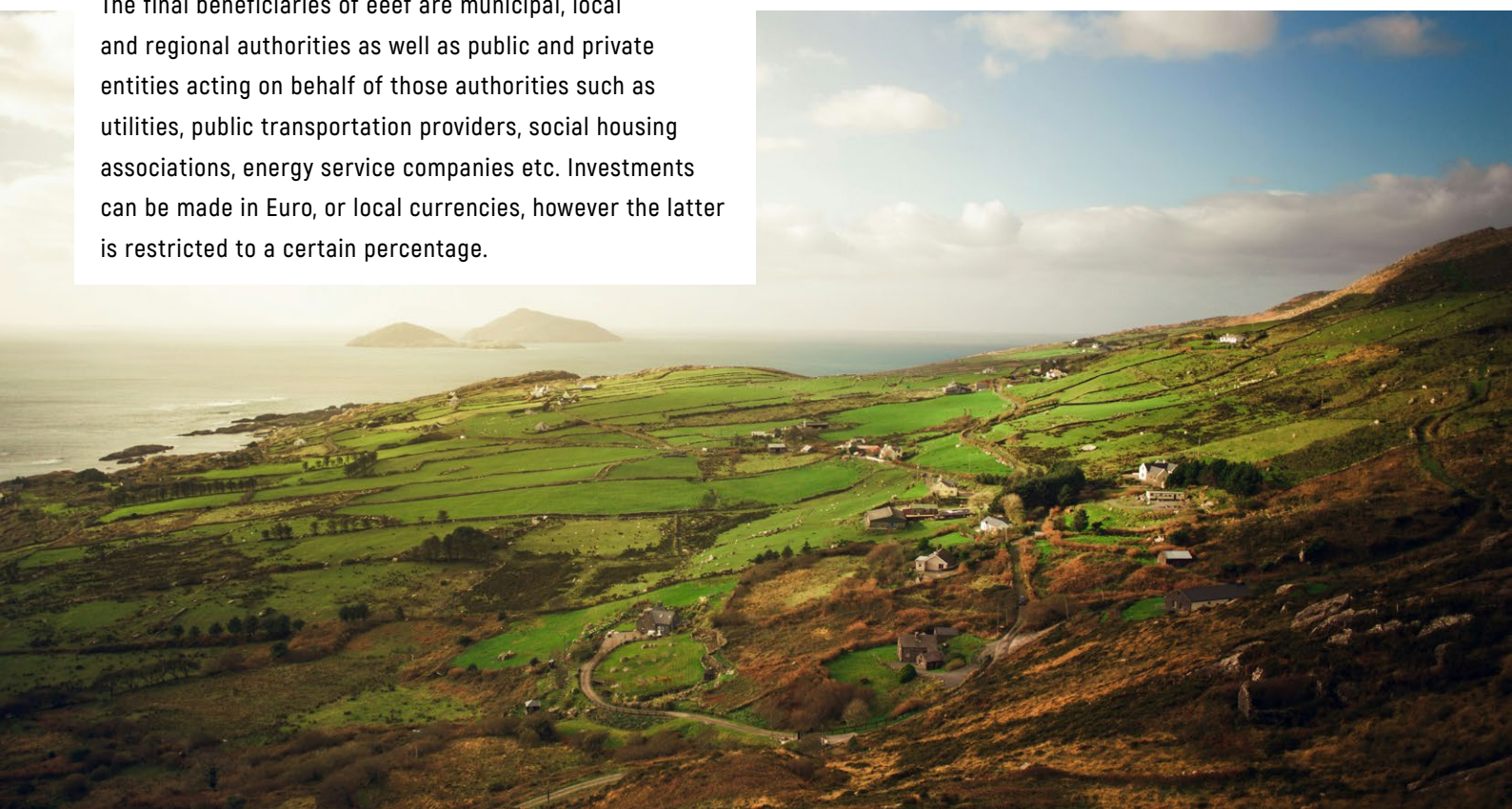
Horizon Europe targets climate change as well as other global challenges. In one of its clusters, Horizon Europe focusses on climate, energy and mobilisation.

DEAR – Development, Education and Awareness Raising is an EU programme that supports the development of an inclusive European society that is sensitised for the interconnectedness of local and global challenges.

European ENvironment Initiative – EURENI with a focus on environmental protection supports non-governmental organisations, universities and research institutes, along with non-profit entities based in EU or European Free Trade Association (EFTA) member states, to foster closer cooperation across European borders.



INTERREG is one of the key instruments of the EU supporting cooperation across borders through project funding. It aims to jointly tackle common challenges and find shared solutions in fields such as health, environment, research, education, transport, sustainable energy and more.



# MISSION CE CLIMATE Project



## Climate Resilient Communities of Central Europe

Central Europe faces many climate change challenges like the rest of the world. The main aim of the MISSION CE CLIMATE project is to overcome the disjointed sectoral responses to climate change by introducing a coordinated, cross-sectoral approach that puts local/regional authorities at the centre of the governance and management of the climate resilience process. The overall objective is to support communities in Central Europe to become resilient to climate change and to enable them to respond in a coordinated way to the impacts caused by climate change. The project will build sustainable systems (community climate missions) and community capacities (integrated strategy, local action plans, and solutions).

### THE PROJECT'S INTENDED OUTCOMES ARE:

1. Establishment of climate resilience systems in partner communities (Community Climate Missions) supported by a joint 2030 Climate Resilience Strategy (definition of actions, business models, financing instruments) and locally tailored action plans (project portfolio approach);
2. Enhancing community capacity to adapt to climate change with new skills and tools;
3. Activated citizens contributing to community climate resilience through increased awareness and capacity (tools, etc.);
4. Solutions developed through pilot projects that respond to community adaptation challenges.

For more information on climate adaptation and good practices, consult our websites:

[www.interreg-central.eu/projects/mission-ce-climate/](http://www.interreg-central.eu/projects/mission-ce-climate/)

[www.climatehub.si](http://www.climatehub.si)

This document has been produced within the project **MISSION CE CLIMATE – Climate Resilient Communities of Central Europe**. This project is supported by the Interreg CENTRAL EUROPE Programme with co-financing from the European Regional Development Fund. Views and opinions expressed are, however, those of the authors only and do not necessarily reflect those of the European Union or the Interreg CENTRAL EUROPE Programme authorities. Neither the European Union nor the Interreg CENTRAL EUROPE Programme authorities can be held responsible for them.

The partnership includes the following organisations:



City of Lignano Sabbiadoro  
[www.lignano.org](http://www.lignano.org)



City of Košice  
[www.kosice.sk](http://www.kosice.sk)

**DORNBI RN**

City of Dornbirn  
[www.dornbirn.at](http://www.dornbirn.at)



Split-Dalmatia County  
[www.dalmacija.hr](http://www.dalmacija.hr)



**Mestna občina Maribor**  
Univerzitetno mesto

Municipality of Maribor  
[www.maribor.si](http://www.maribor.si)

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Energy Management Agency  
of Friuli Venezia Giulia  
[www.ape.fvg.it](http://www.ape.fvg.it)



Technical University  
of Košice  
[www.tuke.sk](http://www.tuke.sk)



University of Applied  
Sciences Vorarlberg  
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Energy Institute  
Hrvoje Požar  
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Regional  
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# FUNDING INSTRUMENTS

## on the MUNICIPAL LEVEL