European Commission

AGGREGATING FINANCING FOR RESILIENCE SOLUTION BOOKLET

Smart Cities Marketplace 2023

The Smart Cities Marketplace is managed by the European Commission Directorate-General for Energy

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WHAT IS THE SMART CITIES MARKETPLACE?

The Smart Cities Marketplace is an initiative supported by the European Commission bringing together **cities, industry, SMEs, investors, banks, research and other climate-neutral and smart city actors**. The Smart Cities Marketplace Investor Network is a growing group of investors and financial service providers who are actively looking for Climate-neutral and smart city projects.

WHAT ARE THE AIMS OF THE SMART CITIES MARKETPLACE?

The Smart Cities Marketplace has thousands of followers from all over Europe and beyond, many of which have signed up as a member. Their common aims are to **improve citizens' quality of life, increase the competitiveness of European cities and industry** as well as to **reach European energy and climate targets.**

WHAT CAN THE SMART CITIES MARKETPLACE DO FOR YOU?

Explore the possibilities, **shape** your project ideas, and close a **deal** for launching your Smart City solution! If you want to get directly in touch with us please use info@smartcitiesmarketplace.eu

© Oliver Cole on Unsplash

What & why

↑ Pollution in the city of Paris, France. Resilience has emerged as a critical concept for cities to ensure cities long-term sustainability and well-being. © Ioana Baciu on Unsplash

What and why

The hardships of financing for resilience

The challenges and risks facing small and middle-sized cities (SMC) in Europe are becoming increasingly complex and diverse.

From **natural disasters** and **pandemics** to **economic instability** and **climate change**, these cities need to become more capable of withstanding shocks and maintaining essential services for their citizens.

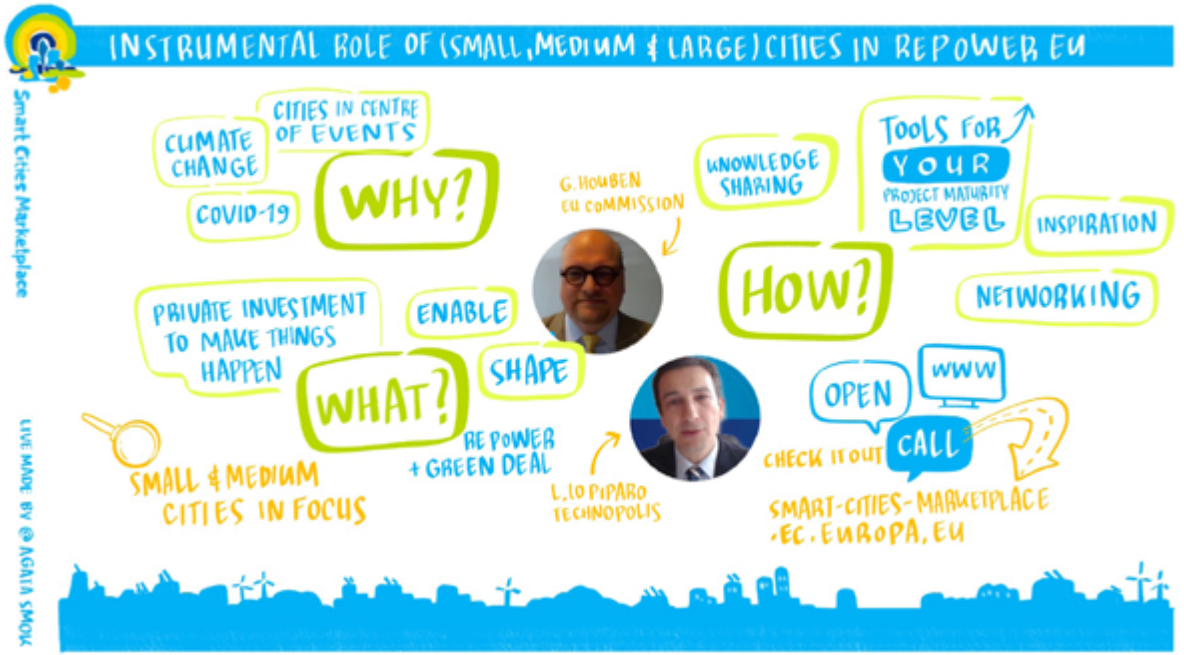
Resilience has, therefore, emerged as a critical concept for cities to ensure their long-term sustainability and well-being.

However, building resilience requires significant financial resources, which SMCs struggle to obtain due to the relatively **reduced project investment** sizes, the **lack of coordination**, **insufficient credit history** and similar hurdles.

Traditional public expectations might lead one to believe that, due to such barriers, the costs of financing for climate-related resilience and adaptation of the territory and the population should be borne either by private individuals or by publicly sponsored (either nationally or internationally) renovation activities.

This solution booklet aims to challenge this view and seeks to explore how small and middle-sized cities can develop strategies to become more resilient in the face of various challenges and risks by joining forces and collaborating among themselves to access private sector resources and coordinate projects through joint, coordinated planning.

The objective is to provide an overview of the **key challenges and opportunities** that SMCs in Europe face and emphasize the importance of building resilience. In doing so, we examine the different types of **financing mechanisms available** to fund resilience-building efforts, with particular attention paid to successful case studies.



↑ Graphic recrding made live during Smart Cities Marketplace Matchmaking event in 2023. © Agata Smok

This booklet will discuss financial aggregation using the concepts of **Energy Performance Contracts (EPC)** developed by **Energy Services Companies (ESCOs)** and **community-led finance**, with case studies ranging from **Portugal to Denmark and Sweden**.

Moreover, we explore the role of regional and national governments in supporting small-to-middle sized cities in financing their resilience efforts.

While not touching upon some policy innovations that might best support the collection of capital for resilience investments, such as carbon or general externality taxation, this booklet aims to focus on the financing solutions that are already available for cities, and especially SMC, to leverage some key solutions at their disposal when it comes to supporting resilience-related projects and activities.

The goal is to contribute to the **long-term sustainability** and **well-being** of these cities, and to equip municipal leaders and decision-makers with the key knowledge and tools on how to foster capital pooling and joint project coordination.

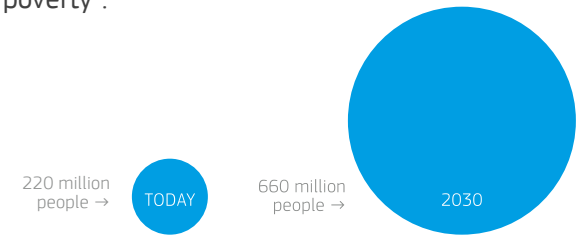
↑ An overview of technology solutions that are already available for cities can be found here (Publication office of the EU). © Clean energy for EU islands

↑ Our goal is to contribute to the long-term sustainability and well-being of European cities. © Sorasak on Unsplash

Why finance for resilience

According to the UN Habitat, natural disasters have affected more than 220 million people and caused $100 billion per year in economic damage over the last decade.

By 2030, natural disasters may cost cities worldwide three times more than today, and climate change may push millions of urban residents into poverty[1].



Financing for resilience refers to the allocation of financial resources towards the development and implementation of strategies and projects that increase a city's ability to withstand and recover from shocks and stresses.
It involves investing in

- infrastructure,
- technology,
- and social systems

that enhance a city's resilience and ability to provide essential services to its residents in the face of various challenges and risks.

↑ By 2030 climate change may push millions of urban residents into poverty. Pitrured: floods in Germany, 2021. Further reading: How does energy poverty materialize and how can vulnerable citizens be included in the energy transiton? via POWERPOOR © Dylan Leagh on Unsplash

1 EU Commission, Urban Data Platform Plus, consulted in April 2023, further reading: The resilien city (europa.eu)

The importance of financing for resilience cannot be overstated. SMCs in Europe are facing a wide range of challenges and risks, from the impacts of climate change and natural disasters to the COVID-19 pandemic and economic instability. These challenges have highlighted the need for cities to become more resilient and adaptable to withstand and recover from shocks and stresses. Without sufficient financing for resilience, cities may struggle to maintain essential services and infrastructure, putting the safety and well-being of their residents at risk.

According to the EU Commission[2], financing for resilience is essential for several reasons:

It allows cities to invest in infrastructure and systems that reduce the likelihood and impact of disasters and other shocks. This includes building and maintaining critical infrastructure such as roads, bridges, and water systems, and developing systems to monitor and respond to emergencies. By investing in these systems cities can reduce the risk of damage and loss of life, as well as the cost of recovery.

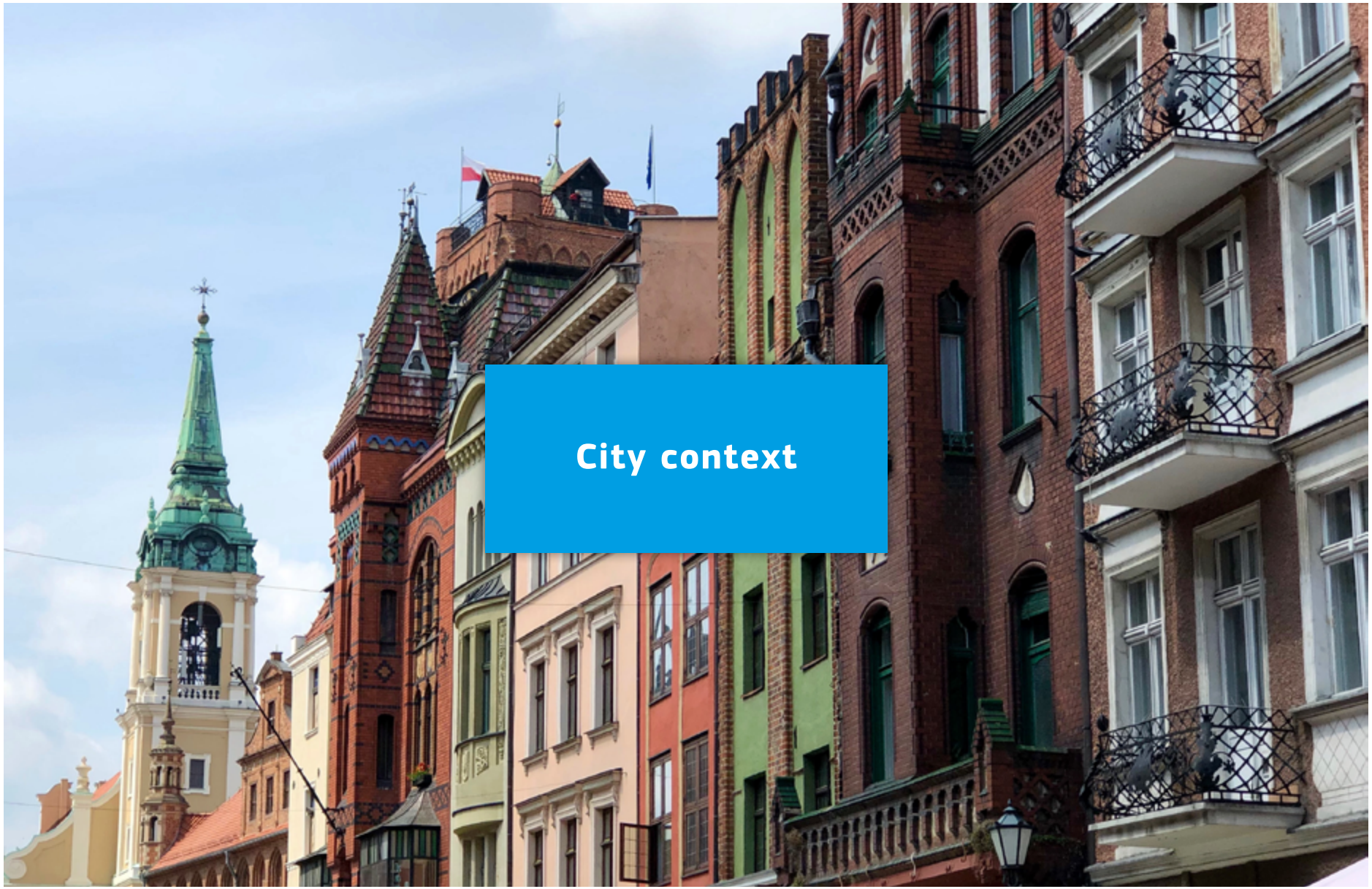
↑ Retrofitting an insulation works in Kortrijk, Belgium. © Agata Smok

It enables cities **to better prepare for and respond to emergencies.** This includes developing emergency response plans and systems, stockpiling essential supplies, and training personnel to respond to emergencies. By investing in these preparations, cities can improve their ability to respond quickly and effectively to disasters and other emergencies, minimising their impact on residents and infrastructure.

It is essential for ensuring the **long-term sustainability and well-being of cities**. By investing in infrastructure and systems that increase resilience, cities can reduce the risk of future disasters and challenges, creating a more stable and sustainable environment for residents. Moreover, by investing in resilience, cities can attract investment and businesses, create new economic opportunities, and enhance their long-term economic sustainability.

Overall, the allocation of financial resources towards the development and implementation of strategies and projects that enhance a city's ability to withstand and recover from shocks and stresses is critical for the long-term sustainability and well-being of SMCs in Europe.

2 Ibidem



City context

↑ Torun, a Polish city with 195 690 inhabitants (2023). © Maksym Harbar on Unsplash

City context

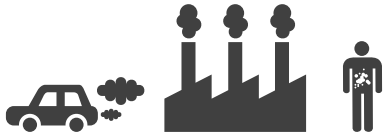
Attracting private finance to invest in resilience

Published in February 2023, a report by McKinsey titled "Seizing the momentum to build resilience for a future of sustainable inclusive growth[3]" sheds light on the lack of private finance in overall financing for resilience, not only in the EU, but worldwide.

The study identifies three key elements discouraging private investors from directing capital into resilience-related investments, which can be tackled and mitigated by public institutions to better access such resources and opportunities:

1. Lack of clear data and track records.
2. Lack of clarity on where investments are needed.
3. Low perceived returns on investments.

When it comes to potential investments in a new field such as resilience consolidation, a lack of previous experience can be particularly discouraging for private actors who may avoid weighing in and taking on risks if public authorities are not acting to de-risk.



Resilience relies on avoiding risk, such as climate change or health-related hazards, at multiple levels and returns are more easily identified by cost reduction rather than significant revenue generation. This generates lower perceived returns on investments by traditional capital providers at multiple levels.

↑ Initiatives such as the European Clean Bus Deployment Initiative are helping to promote the sale of clean buses and move towards a decarbonised transport system. © Getty images

3 McKinsey (2023), Seizing the momentum to build resilience for a future of sustainable inclusive growth, further reading here (PDF)

When it comes to small and mid-sized cities in particular, common hurdles that arise which prevent them from accessing private investments include:

→ **Limited own financial resources:** SMCs often have limited budgets and a smaller tax base, making it challenging to invest in resilience infrastructure and resilience-related programs.

→ **Lack of capacity:** SMCs generally do not have the technical expertise or staff capacity to design and implement complex resilience projects, making it difficult to secure financing and to manage large-scale investment projects.

→ **Limited access to financing:** due to this lack of capacity, SMCs have limited access to capital markets and financial institutions, which can make it difficult to secure loans or other forms of financing. Unlike larger cities, SMCs may not be as visible or attractive to private investors due to the perception of lower economic growth potential, infrastructure, and resources than larger cities.

→ **Low creditworthiness:** SMCs tend to have lower credit ratings or higher financial instability, which can make it more difficult to access financing at favourable rates. In some cases, SMCs may actually have financial stability but do not have ratings from credit rating agencies which increases transaction costs for investors.

→ **Inadequate planning and data:** SMCs may lack the data and planning frameworks needed to identify and prioritise resilience investments, making it difficult to secure funding from external sources. Additionally, the Covenant of Mayors (CoM), through its well-established commitment, monitoring, reporting and verification system, supported by the JRC, can help inform and support decision-making at the urban level. CoM, in fact, offers a Data Portal for Cities and clear reporting on current cities' progress and best practices.

To address such challenges "the private sector can help make markets more efficient, but governments need to provide the regulatory structure and institutional capacity in which markets function[4]."

↑ SMCs have limited access to capital markets and financial institutions, which can make it difficult to secure loans or other forms of financing. © Getty images

4 Hallegatte, Stéphane, Jun Rentschler, and Julie Rozenberg (2019) Lifelines: The Resilient Infrastructure Opportunity. Sustainable Infrastructure Series. Washington, DC: World Bank. doi:10.1596/978-1-4648-1430-3. License: Creative Commons Attribution CC BY 3.0 IGO. Further reading here.

Overview of financing instruments for SMC

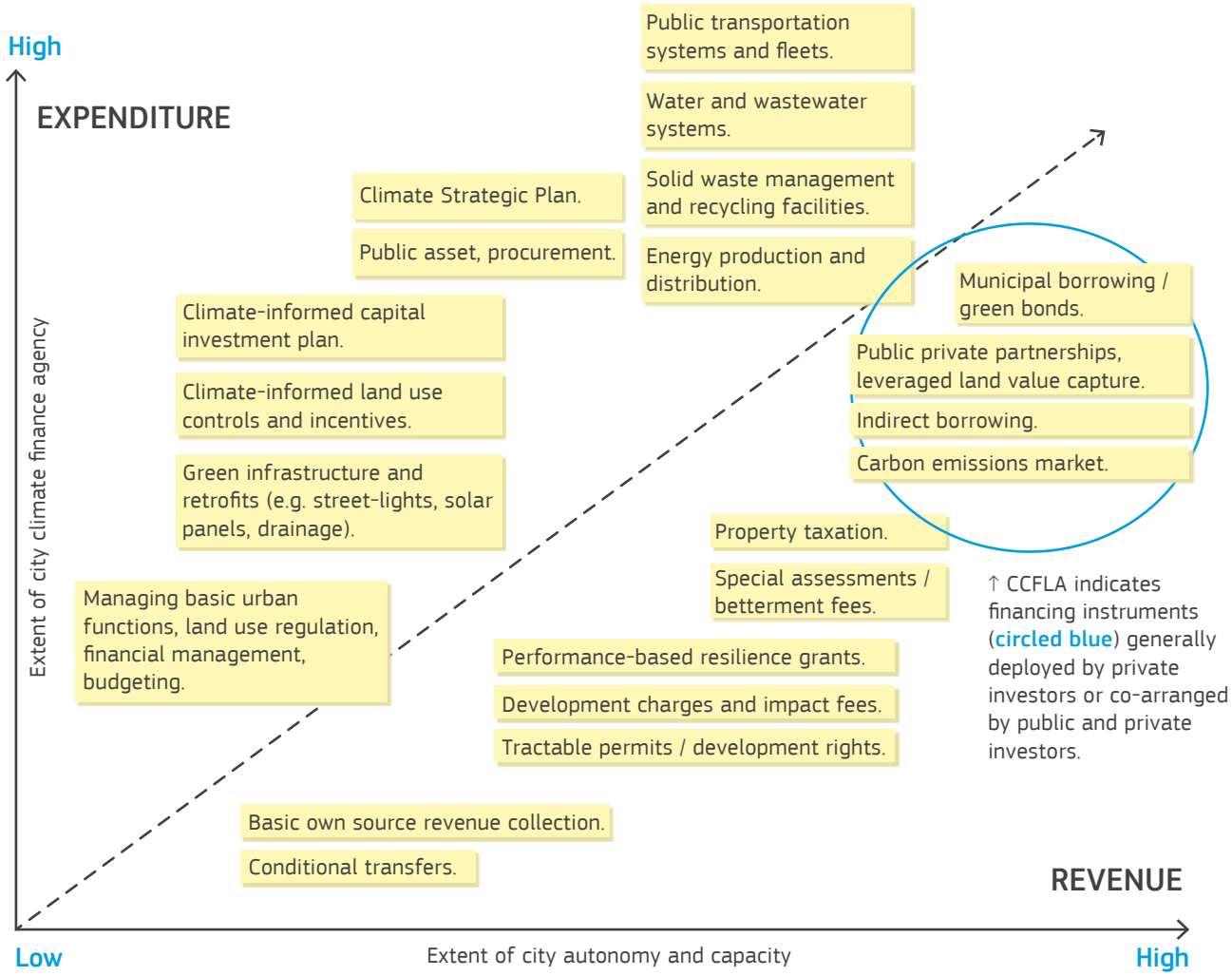
To address the challenges mentioned so far and to best develop effective approaches when raising capital for resilience, SMC can take advantage of several existing tools. A very thorough overview of available tools for cities has been provided by the Cities Climate Finance Leadership Alliance (CCFLA) which, alongside the World Bank, published the "The State of Cities Climate Finance – The Enabling Conditions for Mobilising Urban Climate Finance" (2021)[5].

The figure on the right identifies the key tools at the disposal of cities, regardless of their size, ranked based on the revenue generated and the extent of autonomy and capacity.

Among the tools at disposal of cities, taxation and betterment levies can be collected by cities without external supervision nor agreements with donors or financial actors. Some of the most used solutions include:

1. Local property taxes.
2. Local business taxes.
3. Building license fees.
4. Transit fees.
5. Road tolls.
6. Parking fees.

Yet, especially in SMCs, the fiscal space for further taxes and fees can be limited, and other scalable solutions should be contemplated to ensure effective capital deployment.



↑ Progression of city climate finance agency. Based on the figure from © Elaboration on CCFLA, World Bank (2021), The State of Cities Climate Finance..

5 CCFLA, World Bank (2021), The State of Cities Climate Finance – The Enabling Conditions for Mobilising Urban Climate Finance, Washington DC, further reading here (PDF)

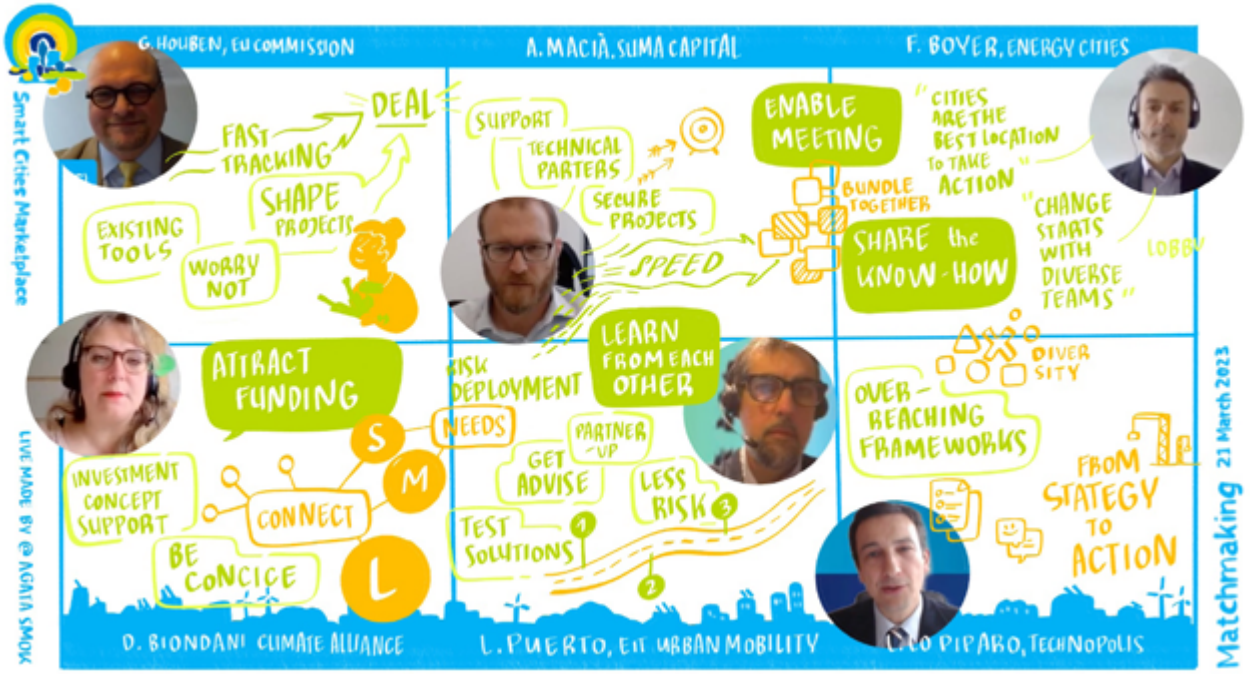
The issue with levying capital through these techniques for SMCs, however, is the fact that most of them would not be able to collect sufficient capital to generate the needed resources for investments in infrastructure and/or deep retrofitting of buildings, as would be required by effective investments in resilience. Moving to the upper-right side of the figure from previous site, CCFLA indicates financing instruments (**circled blue**) generally deployed by private investors or co-arranged by public and private investors. To this, the authors have added Energy Performance Contracting (EPC) and community-led financing, which will be explored further within the scope of this publication:

Instrument	Definition
Municipal Borrowing	The process whereby a local government entity obtains funds from lenders to finance public projects such as infrastructure improvements or community development initiatives. Municipal borrowing can take the form of issuing bonds, notes, or other debt securities.
Green Bonds	Debt securities specifically issued to fund environmentally friendly projects, such as renewable energy, sustainable infrastructure, or energy efficiency improvements. The proceeds from these bonds are earmarked for these green projects, making it easier for investors to support environmentally conscious initiatives while still earning a financial return.
Public Private Partnerships (PPPs)	A contractual agreement between a public entity and a private sector company to jointly undertake a project or service that benefits the public. PPPs are typically used to leverage the skills and resources of both the public and private sectors to create more efficient and cost-effective solutions for public goods and services.
Indirect Borrowing	An arrangement whereby a local government entity borrows funds through an intermediary, such as a state government or a financial institution, rather than directly from investors. This type of borrowing may be used to access lower interest rates or to spread out the costs of issuing debt over a longer period.
Voluntary Carbon Emissions Markets	A mechanism designed to limit the release of greenhouse gases by placing a price on carbon emissions. Cities can participate in these markets by either reducing their own carbon emissions or by purchasing carbon credits from other entities that have exceeded their emissions reduction targets, allowing cities to offset their own emissions but also to collect revenues.
Energy Performance Contracts (EPCs)	Energy Performance Contracts (EPCs) are agreements between a city or other entity and an energy service company (ESCO) that provides services such as energy efficiency upgrades or renewable energy installations, with the aim of reducing energy consumption and costs. Under these contracts, the private sector company typically finances, designs, installs, and maintains the energy systems or upgrades, and is paid from the energy cost savings achieved by the city.
Community-led financing	Initiatives that are designed, developed, and managed by local communities to address their own economic needs and priorities. This approach emphasizes the importance of community ownership and control over financial resources, decision-making, and governance.

↑ Key private sector financing instruments for cities. © Bankers without Boundaries

Today, a high number of publications covering the functioning and usage of green bonds, PPPs, or carbon emission markets for cities demonstrate that those are usually adopted by large-sized cities, which have sufficiently large projects to justify the high fees of a bond, or the complex negotiations and bargaining power required for a PPP[6].

In order to produce effective recommendations for SMCs when it comes to financing resilience, and given the existing track record offered by different cities in the EU, the next chapters will be centred on **the role of capital aggregation across municipalities and regions with the purpose of unlocking capital and pushing borrowing costs down** (when compared to cities applying for financing for standalone projects in single cities).



↑ Graphic recording made live during Smart Cities Marketplace Matchmaking event in 2023. © Agata Smok

6 Some of such readings might include:
– Green Bonds for Cities, by Climate KIC;
– Public Private Partnerships in the EU, by the European Court of Auditors;
– How cities can put a price on carbon, by C40 knowledge.

Societal and user aspects

↑ Matera old town in Italy © Kaspars Upmanis on Unsplash

Societal and user aspects

The role of capital aggregation mechanisms in unlocking finance

When referring to capital aggregation in cities, two main mechanisms can be identified:

The first refers to the process of **pooling investment capital from multiple sources** to **finance large-scale projects, mostly aimed at promoting economic growth, social development, and environmental sustainability within urban areas**. One example of such an initiative is the European Investment Bank's Urban Agenda[7], which provides funding and technical assistance to cities throughout the EU to support sustainable urban development. The Urban Agenda focuses on six key priority areas: **jobs and skills; poverty and inequality; housing; air quality and climate change; transport, and urban-rural linkages**.

The Urban Agenda is now being taken over by the European Urban Initiative, which is now focusing on Greening Cities, Sustainable Tourism, Migrants and Refugees Inclusion, Culture and Cultural Heritage, and Public Procurement.

The objective is to provide finance opportunities for urban projects and initiatives. The Urban Agenda works closely with cities and other stakeholders to identify investment needs and develop sustainable and innovative solutions to address urban challenges.

The second refers to **bundling projects across different cities** to lower credit risk and obtain better lending rates by financiers. In this latter scenario, while the possibility of bringing in public and private actors is not discarded, the key proposition is to facilitate cooperation among SMCs and offer centralized coordination, thereby reducing the cost of capital and helping cities to access financing they would otherwise struggle to unlock.

While both solutions have been witnessed and used at the European and international levels, this booklet will focus on **project bundling across SMC**, fostering the fundamental role of cross-city partnerships, particularly useful when it comes to infrastructural investments of the size which will be required by adaptation and resilience strategic planning.

Capital aggregation in cities in the EU can play a critical role in promoting sustainable urban development, fostering economic growth, and enhancing the quality of life for citizens.

By financing large-scale projects, cities can leverage resources and expertise to tackle some of the most pressing challenges facing urban areas today and fund urban development projects, such as **transportation infrastructure, renewable energy, affordable housing, and sustainable tourism**.

7 EIB, The EU Urban Agenda Toolbox, further reading here.

Key benefits of cross-city project bundling

Financing cost reduction

In terms of project financing, collaboration among cities to expand the scope and the size of the project can be beneficial since it creates cost savings: set-up costs can be leveraged via more market participants and larger financing volumes[8].

As a standard rule for lending entities, all things being equal, a lender will consider it less risky to provide capital to a set of cities developing a similar project rather than to a single one. This is not just down to the higher return profile of a larger investment base, but also due to the lower overall risk of the operation.

Once the financial viability of the project has been assessed, it is likely that each individual city will be able to pay a lower interest rate on their project portion compared to what they would have paid if they had applied for financing individually.

This consideration is even more relevant when it comes to financing for resilience, where the lack of track records and clear identification of revenue streams at this early stage of the sector's development, might hold back a city's individual progress.

↑ Solar Settlement in Freiburg, Germany.
© Rolf Disch, Solar Architecture

8 OECD (2020), DAC BLENDED FINANCE PRINCIPLE 4 GUIDANCE, further reading here (PDF)

Procurement cost savings

Additionally, procurement costs can be reduced via aggregation for project financing purposes, especially for SMCs, mostly for the following reasons:

Economies of scale

By pooling resources and combining procurement needs, cities can take advantage of economies of scale, which can lower the unit costs of goods and services. This is especially true for large-scale projects that require significant investment, such as infrastructure projects.

Increased competition

Joint projects can attract a greater number of bidders, which increases competition and can lead to lower prices. This is because vendors are more likely to bid on larger projects that involve multiple cities, which increases the potential for revenue.

Reduced administrative costs

When cities collaborate on joint projects, they can reduce administrative costs associated with procurement. Instead of each city managing their own procurement process, a single process can be used for all the participating cities, which reduces the need for duplicate administrative tasks.

Better negotiating power

Joint projects give cities more negotiating power when dealing with vendors. By combining their procurement needs, cities can leverage their collective buying power to negotiate better terms and prices with vendors.

↑ By combining their procurement needs, cities can leverage their collective buying power to negotiate better terms and prices with vendors. © Getty images

Default risk attenuation

As a by-product of the aggregation process, the default risk on issued or borrowed debt can be mitigated significantly and can be brought down even further if cities are willing to pool their resources for the duration of the project.

By pooling their resources, SMCs can access more funding options and reduce the risk of overexposure to any single financing source.

Additionally, joint projects can diversify their investments by spreading the costs and risks across multiple jurisdictions, which can help to mitigate any potential financial losses.

↑ By pooling their resources, SMCs can access more funding options and reduce the risk of overexposure to any single financing source. © Los Muertos crew on Pexels

Potential drawbacks

High negotiation complexity

One should not think that financing aggregation can be a "silver bullet" for SMCs. Despite its clear benefits from an interest rate and procurement standpoint, it is logical to think that the higher the number of stakeholders involved in the transaction, the harder negotiation of the project will be.

Capital aggregation often involves long negotiation periods – potentially years depending on the political environment, project characteristics and complexities, the different financial resources of each city, and a host of other variables.

Projects still do get carried out to term, but it is fair to assume that their average preparation time will be much longer than for single-city standalone projects.

↑ Citizen engagement remains one essential aspect in promoting and up-scaling many smart city solutions. One dedicated Solution Booklet is published specifically to focus on this topic.

Political and coordination hurdles

When it comes to political coordination, disagreements can span across multiple layers and activities, especially in the field of infrastructure building for resilience:

Disagreements over funding and financing

Resilient infrastructure projects are often expensive, and funding sources can come from multiple government agencies and private entities.

Disputes over project design and implementation

Such projects often involve complex engineering designs and disagreements can arise over project details such as the type of materials to be used, the placement of the infrastructure, and the construction time-line.

Delays in project approval

The approval process for infrastructure projects can be lengthy and complex, involving multiple levels of government and private entities. A lack of political coordination can lead to delays in project approval as each party tries to ensure that their interests are protected.

Limited community engagement

Resilient infrastructure projects can have significant impacts on the surrounding community; therefore, it is essential to involve community organisations in the planning process to ensure that their needs are addressed. A lack of political coordination can result in limited community engagement, leading to misunderstandings, resistance, and even legal challenges.

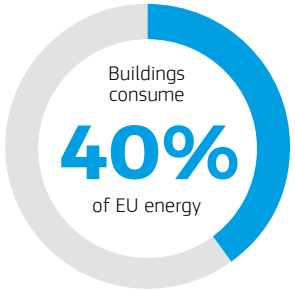
Priority misalignment

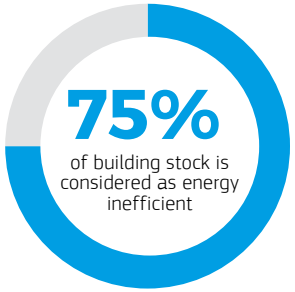
Finally, priority misalignment can **hamper project implementation**, as an extension of political and coordination hurdles.

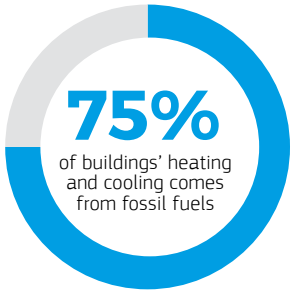
Due to the different social, geographic, and economic configurations of each city that takes part in a consortium for the deployment of projects for resilience, the **priority misalignment challenges** might include the following:

- Share of the overall retrofitting to be implemented across cities.
- Type of infrastructure (natural or artificial) to be prioritized.
- Preliminary preferences of the municipality and citizens.

Experience has shown that all these hurdles can be prevented or overcome at different stages through thorough negotiation techniques, effective communication between project leaders and managers, as well as a shared understanding of the benefits that pooled financing for resilience can offer to all the parties involved.







↑ Further reading Smart Solutions for CO_2 Reduction – City Practitioner's Summary Guide. Each short section of this booklet provides advice, real city examples, and links to more in-depth resources to get you started or speed you up on your journey.

↑ © Rawpixel

Technical aspects

Financial aggregation in action

Once the benefits and limitations of financial aggregation have been understood, it is worthwhile exploring some of the most promising case studies where financing instruments or capital deployment techniques have been used in a pooled or aggregated fashion.

This section presents three methods that city officers, civil servants or representatives for SMCs might consider applying to attract capital and start negotiating for new opportunities or resilience-related projects.

Energy Performance Contracting (EPC)

The **Energy Performance Contract** model, or EPCs, are agreements between a city or other entity, a private sector company, and an **Energy Service Company** (ESCO) that provides energy services such as energy efficiency upgrades or renewable energy installations, to reduce energy consumption and costs. Under these contracts, the private sector company typically **finances, designs, installs, and maintains** the energy systems or **upgrades**, and is paid from the energy cost savings achieved by the city.

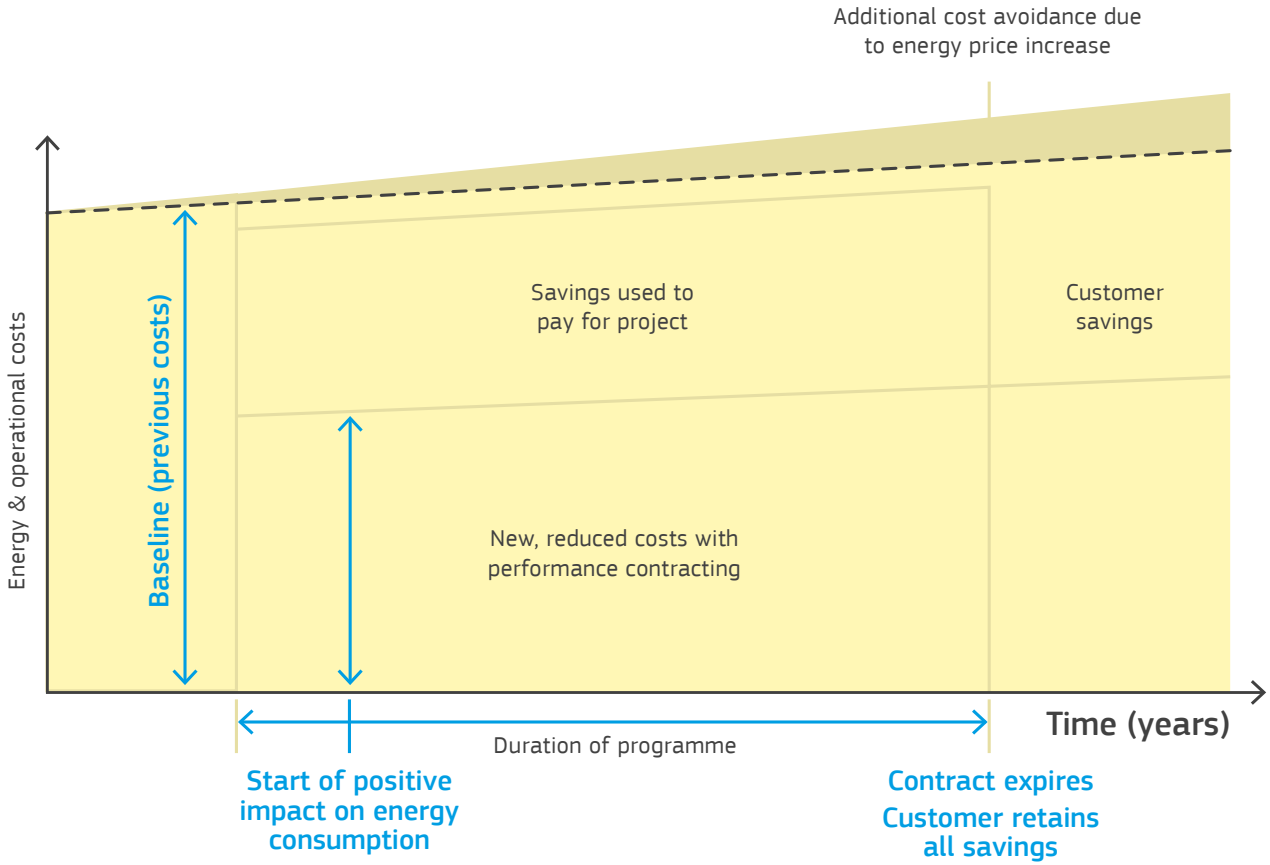
EPCs can be negotiated with individual cities, where the current trailblazers in the EU are larger cities, particularly in countries such as Germany, Austria, Spain, Hungary or France which have a long history of working with this type of contract.[9]

↑ Urban planning co-creation with citizens. © Smart Cities Information System (currently Smart Cities Marketplace)

9 Records from 2010 already pointed at the direction of these larger EU countries as the ones ahead of the curve in this space.

Yet, in the case of SMCs, especially for smaller ones, it might be overly **expensive** and **time-consuming** for a small city to negotiate EPCs, especially if the size of potential deals is limited. The opportunity of bundling and collaborating across several SMCs negotiating a joint contract with a single energy company can be beneficial for two main reasons: it can increase the bargaining power that cities can offer and bring down the contracting and negotiation costs of the overall operations, if split across multiple cities and delegated to a consortium representative, for instance.

The figure on the right visualizes the financial structuring of EPCs. The graph clearly illustrates the purpose of initiating this kind of contracts, relying on substantial energy savings, which in turn reduce costs. The savings from this lower energy bill are then absorbed by the ESCO, which takes a variable amount of risk depending on the EPC arrangement (as clarified below in the cases provided by the International Energy Agency).



↑ Business Model of an Energy Performance Contract. © Nicolas Peraudeau

The European Commission points out that the key reasons leading cities to enter EPC arrangements can be summarized as follows:

- Energy performance contracts offer solutions where energy efficiency improvement investments are financed directly from **saved costs**.
- Contractual payments from the EPC client to the EPC provider are usually based on **predefined outcomes/ results** (e.g. % of guaranteed energy savings achieved) rather than actual costs.
- The EPC provider (the ESCO) takes over the **energy performance risks**.
- Savings (energy and/or financial savings) are guaranteed by the EPC provider and determined by predefined and transparent **monitoring and verification** protocol.
- The EPC provider supports the **long-term** use of energy management and actively supports its client in the implementation of an **energy management system**.

The EPC provider supports its client in finding the most suitable financing solution.[10]

As pointed out by the International Energy Agency (IEA)[11], under the EPC framework, the Energy Services Company commits to installing the necessary equipment, provides a performance guarantee, and establishes the terms of any upfront or ongoing payments, which are intended to be less than the financial savings realised by the project.

Under this framework, the EPC (Energy Performance Contract) provides the customer with a guaranteed level of energy savings and the ESCO with a reliable source of revenue. EPCs typically last from two to twenty years, depending on the measures implemented.

Depending on the customer's preference and access to capital, the customer, the ESCO, or a combination of the two can be responsible for securing the finance for the project. A direct loan agreement with a third-party lender is an option for both parties[12].

10 ERDF (2020), European Structural and Investment Funds (ESIF) and Energy Performance Contracting (EPC) – Stimulating investments in energy efficiency, further reading here (PDF).
11 International Energy Agency, ESCO contracts, further reading here:, consulted in April 2023.
12 Ibid.

↑ © Jason Goodman on Unsplash

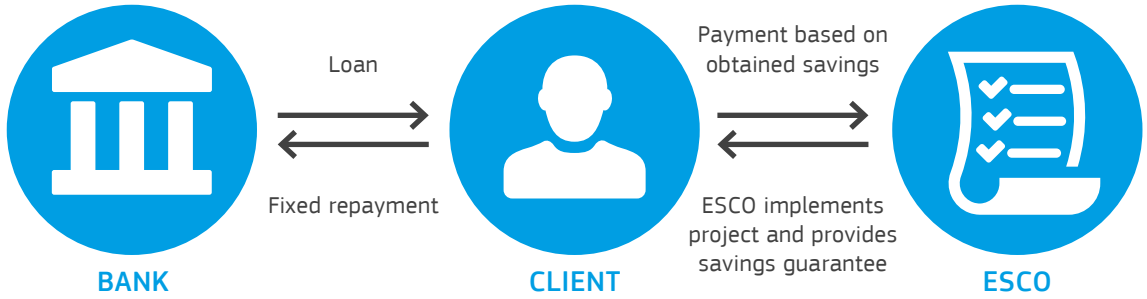
EPC categories

Below is a list of the most widespread EPC categories, as identified by the IEA[13], with the role cities can have clarified for each one. In this model, an energy service provider provides financing for energy efficiency measures, which the **customer** pays back through their energy bill. This can be a good option for small cities with limited budgets.

Guaranteed Savings Model.

The EPC guarantees a certain saving on the client's energy bill. The **ESCO** takes on the technical risk. The client obtains a **bank** loan, or uses their own equity, to pay contractually determined fees to the ESCO and the bank and keeps the difference.

In this scenario, the city can either be a direct client for the resilience building of municipally owned buildings, or it can operate as an intermediator who helps negotiate discounted contracts between the energy company and citizens residing in its territory.



↑ Guaranteed Savings Model structure © IEA (2018), Energy Service Companies (ESCOs), IEA, Paris, License: CC BY 4.0

13 Ibid.

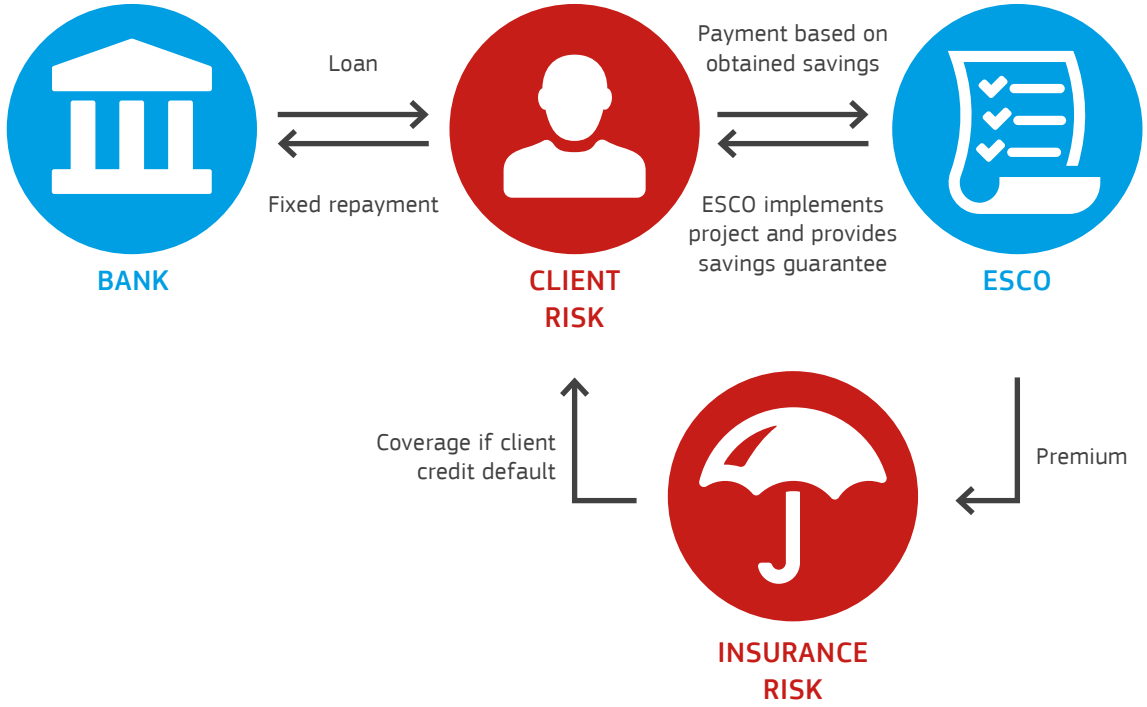
Energy Savings Insurance and Credit risk guarantee.

The uncertainty associated with the performance of efficiency measures inhibits third-party energy efficiency financing globally.

In response, energy savings **insurance** (ESI) has emerged as a solution offered by a small number of financial institutions, private companies, and insurance companies, to reduce the risk of an energy efficiency project.

ESI is particularly useful for **ESCOs** or smaller enterprises with poor credit or who lack the means to secure third-party financing.

Traditionally, an individual SMC might have to resort to this type of EPC, but aggregation with other entities could contribute to an overall better credit for financing solutions and thereby avoid the need for an insurance and credit guarantee.



↑ Energy savings insurance and credit risk guarantee structure. © IEA (2018), Energy Service Companies (ESCOs), IEA, Paris, License: CC BY 4.0

EPCs through Super ESCOs.

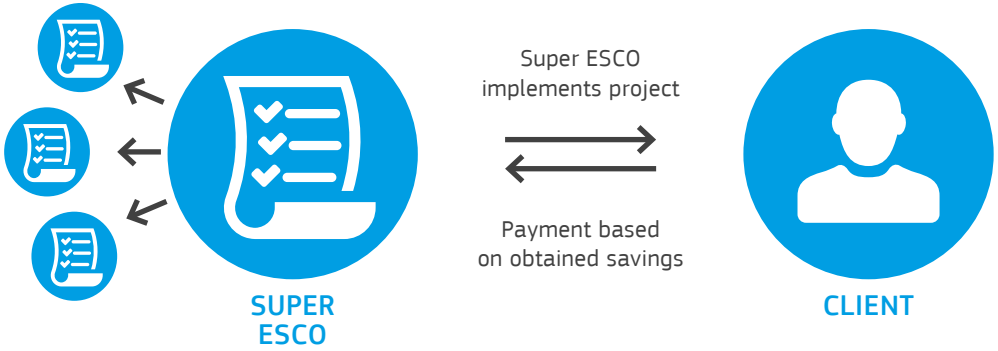
This third option is primarily crafted to serve the public sector and allows a city to bypass the bank and operate directly with the energy company.

They are governmental entities that develop the capacity of private ESCOs and facilitate project financing. EPCs through **Super ESCOs** are useful because existing programs designed to engage clients with ESCOs – such as energy audit programmes, rebates, direct install programs, demand side management bidding, or standard offer approach – rarely provide the full amount of funding required to cover implementation costs like engineering, procurement and installation costs.

Clients may have the means to finance energy efficiency (EE) projects, but experience has shown that energy efficiency projects are not an imperative investment priority for many businesses. Easing access to external financing increases EE project implementation rates.

Super ESCOs address multiple factors that increase the appeal of EPC projects for external financiers. EPC projects must be sufficiently large whilst minimising transaction and development costs. Super ESCOs help aggregate projects and drive down transaction costs through standardisation.

Project managers must be knowledgeable about the state of the industry, aware of financing options and capable of measurement and verification of energy savings. Super ESCOs provide training to project managers on the matters they should be most knowledgeable about to carry out the contract objectives. A risk profile of the specific (national, sub-national) ESCO industry must be developed.



↑ EPC through Super ESCO structure. © IEA (2018), Energy Service Companies (ESCOs), IEA, Paris, License: CC BY 4.0

Here is where the aggregation of projects to attract finance across SMC can be the most effective. Due to several reasons, the **credit risk profile of SMC** is usually higher than for large cities, in particular, due to the:

Limited revenue base: due to fewer and less affluent citizens on average, thereby bringing in a smaller taxable amount and revenue base.

Higher debt burden: SMC may have a higher debt burden relative to their revenue base, which can increase their credit risk. This is particularly true if a small city has taken on debt to fund large capital projects or infrastructure improvements (especially when it comes to resilience-related investments).

Limited diversification: they have a limited range of economic activities, which can make them more vulnerable to economic shocks or changes in market conditions, which affects the potential to generate revenues.

Harder access to capital: SMC tend not to have access to capital markets and may be seen as a higher credit risk by lenders. This can make it more difficult for small cities to borrow money or secure financing at favourable rates.

By combining and improving the overall credit risk profile of the joint group of cities, and working on energy savings for investing in resilience, SMC can improve their access to finance and develop a larger number of projects, especially when it comes to resilience-related investments.

↑ Cinque terre in Italy. © Getty images

How to best leverage EPCs for city finance

Discussions on the development of energy efficiency financing through EPCs have been ongoing for over 15 years and remain valid to this day due to the potential opportunities in this space. Studies sponsored by the EU Commission have stressed the necessity for a rigorous growth approach that would help cities and Member States alike to join forces and foster the development of the sector[14].

The key recommendations to promote further activities in this regard, especially in the case of EPC contracts through Super ESCOs, and ultimately increase energy efficiency investments are:

1. EU Member States should closely collaborate with cities to leverage national and supranational recovery and resilience plans to earmark funds or financing opportunities for qualified EPCs. Due to the COVID pandemic, significant amounts of capital have been mobilised and gathered in resilience-related activities, which will be fundamental to deployment. Regarding supranational funds, cities should understand their eligibility for European Structural and Investment Funds (ESI), which allocated €128 billion for a "greener Europe" for the period 2021-2027[15].

2. Cities, especially SMCs, are strongly advised to coordinate among themselves to gain sufficient attention from national governments with large enough projects. Member States could utilise, if encouraged to do so, InvestEU funds to provide guarantees for EPCs, in line with InvestEU program objectives of de-risking projects by providing guarantees to help leverage private finance, thus boosting building renovations.

3. The wave of renovation that has started in recent years to transition buildings to more resilient and energy-efficient scenarios must emphasize the importance of EPCs as a key tool to contribute to the necessary renovations, starting with the need to implement provisions across existing legislation[16].

14 ERDF (2020), European Structural and Investment Funds (ESIF) and Energy Performance Contracting (EPC) – Stimulating investments in energy efficiency, further reading here (PDF)

15 2021-2027 Cohesion Policy overview, consulted in May 2023, further reading here:

16 Glicker, Roscini (2020), Energy Services and the Renovation Wave, Opportunities for a green economic recovery in Europe, Buildings Performance Institute Europe (BPIE), further reading here (PDF)

It should be noted, however, that some projects will not be able to fit into the EPC model, given the maximum duration of such contracts is typically between 15 and 20 years. In particular, long-term financing of Energy Efficiency investments is typically reimbursed in periods of 30 years or more and therefore does not fit the standard requirements.

↑ Street light in Lisbon, Portugal. © Bart Ter Haar

Case study: Streetlight OesteLED IP, Portugal

CASE STUDY

Financing size: €12 million + cut costs through energy savings

Number of municipalities involved: 12

Location: Portugal

Project description: The OesteLED streetlighting EPC project was implemented in 12 municipalities that constitute an Inter-municipal Community, the NUTS III region[17] in Portugal, with a population of approximately 365.000 inhabitants.

The main goal of the project was to improve efficiency in public lighting. It was one of the largest LED projects in the world, and the biggest in Portugal as well as a pioneer in the inter-municipal financing model – reducing electricity bills by more than €3 million/year.

Supported by a financing model based on an Energy Performance Contract (EPC), the project is a result of approximately €12.5 million investment over a 12-year contract.

The contract enables an annual €3.4 million. in energy savings where 58,85 % is kept for the beneficiaries. The investment benefited from large critical mass due to the large extent of the project that ensured highly efficient requirements.

From a technical perspective, the technological risk was minimized by the compliance of streetlighting standards, with other national references as well as those recognised by the current streetlight management and maintenance municipal concession.

Recommendations by project managers:

1. Project leaders ought to know perfectly the specifications of each project. They must visit the locations multiple times and identify the best specifications for each product, and anticipate very accurately the anticipated savings.

2. The targeted idea for this project was following an adaptation of the Pareto Rule to this situation: aiming to have 80% of bills produce savings for at least 20% of their value.

3. Try and identify a simple way to model the energy savings in order to best negotiate the EPCs with the ESCO.

Structuring the EPC correctly will lead to optimum operations through financing synergies, with all consortium members benefiting.

17 NUTS stands for Nomenclature of Territorial Units for Statistics. The NUTS III cooresponds to the Lisbon Metropolitan Region.

Community-led finance for SMC

Community-led finance refers to financial systems and initiatives that are designed, developed, and managed by local communities to address their own economic needs and priorities. This approach emphasizes the importance of community ownership and control over financial resources, decision-making, and governance. Community-led finance can take many forms including community development finance institutions, community investment funds, community-led savings and credit groups, and peer-to-peer lending platforms, among others.

The goal of community-led finance is to create more inclusive and equitable financial systems that support the economic development and well-being of communities that have been historically excluded or marginalized from mainstream financial services.

In the absence of energy services companies who are willing to support and develop ESCO mechanisms, or for the development of infrastructure contributing to resilience but not displaying clear-cut energy savings mechanisms, the concept of community-led finance can be appealing to SMC.

The mechanism fosters innovation and citizen engagement, and it can be developed even without the support of large financing institutions.

Additionally, in line with what has been advocated so far in this publication, community-led finance might develop both at the individual city level and at a larger multi-city scale, for larger pieces of infrastructure for instance. The following paragraphs show the detail of how this concept would work.

Functioning and processes of community-led finance

Active mostly in Northern Europe, and in particular in Denmark, community-led finance has been legally framed in multiple options that allow for citizen engagement and collaborative ownership of projects and infrastructure, especially renewable infrastructure, known as renewable energy sources (RES).

↑ Further reading about Danish community-led finance here: "From vision to action: how to tackle transition on EU islands?" © Clean energy for EU islands

↑ © This is engineering on Unsplash

Here are the most common legal structures as presented by the IEA Energy Technology Network report of 2016[18]:

General partnership. In Denmark, energy cooperatives are typically organised in the legal form of general partnerships. General partnerships are used for all sizes of projects, from single turbines to large projects. They have a democratic organisation, with each partner having one vote, regardless of the number of shares owned. Unlike other countries (e.g., Germany or the UK), shares are connected to a specific amount of electricity generation, e.g., 1.000 kWh per year. Thus, installed capacity and the projected electricity generation determine the number of shares for each project.
All partners are held jointly liable for any debts incurred by the partnership, extending the level of individual investment and including a certain risk. Required debt is secured by the members, not by the partnership.

Municipal ownership. A municipality can participate in limited liability companies if activities involve the production, transport, trade, or supply of electricity. Often, utilities establish separate enterprises, organized as a private or public joint stock company or a public or private Limited Liability Company. This is the case of Samsø which will be further explored below.

Community foundation. A community foundation is usually established by local associations and businesses. In the community foundation model, the profits from electricity production are legally intended to support local purposes (e.g., employment, culture and infrastructure) – very much akin to the concept of community dividends in countries such as the UK. Forming a community foundation requires at least €40.000. The foundation is its own legal person and the entities establishing the foundation do not hold ownership rights, rather, they establish the objectives and conditions for how profits are used for community purposes.

Shared co-ownership. The legal obligation of the Promotion of Renewable Energy Act requires developers to offer at least 20% of the shares of a wind turbine to local residents. However, in practice, most investors develop several wind turbines or projects at once and then sell one (or a number) of their turbines to a community organisation after commissioning – aiming to realise one 100% community ownership installation.
While not applicable for the entirety of Europe, the concept of community-led finance, particularly in the categories of municipal ownership and community foundation, might be of interest to city administrators due to the role they can play in emancipating SMCs from large financing institutions, re-engaging with citizens and diversifying the sources of finance for resilience investments. The following Case study will show how this happened in the city of Samsø, Denmark.

18 IEA-RETD (2016), Cost and financing aspects of community renewable energy projects. Volume II: Danish Case study. Ricardo Energy & Environment and Ecologic Institute, IEA-RETD Operating Agent, IEA Implementing Agreement for Renewable Energy Technology Deployment (IEA-RETD), Utrecht, 2016.

Case study: Samsø's renewable energy island, Denmark[19]

CASE STUDY

Financing size: €80 million over 15 years

Project description: In 1997, Samsø island Municipality took the political decision to become Denmark's renewable energy island within a ten-year period. After winning a competition sponsored by the Danish Ministry of Environment and Energy, Samsø started the transition that foresaw the installation of on-shore and off-shore wind turbines, the substitution of heating oil with biomass and electricity, the construction of new district heating plants and solar panels, and investments in energy efficiency in households and electric vehicles.

In 2000, 11 onshore wind turbines were put in place, followed by 10 offshore wind turbines in 2003. At this day the island is still fully connected to the electricity grid, and so are the wind turbines. While such changes allowed the local electricity production to shift to close to 100% renewable, the connection of the island to Denmark's national grid technically means that the energy mix is still the same as in the rest of Denmark.

To deliver such transition, Samsø had access to significant investments and subsidies, with the goal of fostering the participation of citizens and stakeholders, and local ownership of the renewable energy investments at its core. The available incentives were the following:

- Home-owners were entitled to a 30% investment subsidy (national funding) when converting to solar thermal, biomass or a heat pump
- The Danish Energy Agency (DEA) further provided up to €3.247,00 subsidy to cover up to 50% of the cost for energy efficiency refurbishment to home-owners.
- Reduced connection cost (€10 instead of €6.000) for upfront agreement to connect to planned district heating plants.

On top of that, three different subsides were put in place for wind turbines. Despite having changed in the later phase, in the operational and deployment phase the subsides were as follows:

- Decommissioning certificates for wind turbines valuing 0,023 €/kWh for the first 5 years
- Fixed price addition of 0,0134€/kWh for the first 22.000 peak load hours for electricity generated through wind turbines.
- A compensation for a too low spot market price to guarantee value of least 0,044 €/kWh.

19 Financing size source: Key facts on the project by UNFCCC

Key Takeaways: Despite being presented as a success story by most, the uniqueness of Samsø's project should not be overlooked. The Danish Energy Agency (DEA) heavily supported and subsidised the energy transition of the island and provided incentives to homeowners who were willing and capable of supporting their home's renovation, which led to disparity in final outcomes and deployment.

The role of community engagement and support, however, was always central in Samsø's strategy and transition development and was reflected in the effort to expand local jobs, attract businesses and residents and improve the island's liveability through cleaner energy production.

↑ 1919s sailing ship Fridtjof Nansen in front of an offshore wind park close to Danish port of Gedser. © Mark König on Unsplash

Creation of joint entities for cross-city collaboration

In addition to the joint collaboration for EPCs and the reliance on community-led finance, an additional method for supporting SMCs with unlocking financing sources is to establish entities such as cross-city collaboration units, project-focused initiatives or simply government-sponsored groups of interest for cities sharing magnitude and objectives.

Whether the initiative is put forward and promoted by regional or national governments, or by the willingness of the involved cities, the purpose is to align and create a support mechanism for the administrations of similar-sized urban areas as interest bearers and promoters of financing mechanisms.

Such structures will be in the position to not only jointly negotiate initiatives such as the aforementioned EPCs, but they will also be able to apply for coordinated financing opportunities, and exploit synergies for infrastructural or retrofitting financing across the territory, as well as other similar activities.

Additionally, given that projects put forward by several cities will involve a multitude of investors with diverging priorities and agendas, a sophisticated management and understanding of such projects will have to be developed, thereby making an overarching entity coordinating joint city activities in the resilience field quite relevant.

↑ In 1997, Samsø decided to stop importing fossil fuels, like oil. This was an opportunity for local farmers to provide straw and organic matter from their fields that remains after harvesting to the central boiler. © Photo Søren Hermansen, Samsø

How to support project development through cross-city entities

In Europe, several structures currently exist to favour coordinated exchanges and effective project implementation. Some examples include:

Inter-municipal cooperation:

Inter-municipal cooperation is a form of collaboration between municipalities that involves the pooling of resources and the sharing of services. This can take the form of joint ventures, partnerships, or shared service agreements. Depending on the state, they can be a free initiative of cities – like in Portugal – or led and promoted by the national government[20].

20 Allers, M. A., & De Greef, J. A. (2018). Intermunicipal cooperation, public spending and service levels. Local Government Studies, 44(1), 127-150

City networks:

City networks are associations of municipalities that work together to exchange knowledge, experiences, and best practices. City networks can focus on a range of issues, such as sustainability, innovation, and social inclusion. The Council of Europe, for instance, promotes the Intercultural City Networks, distributed across Europe and the entire world to promote multiculturalism and inclusion.

European Groupings of Territorial Cooperation (EGTCs):

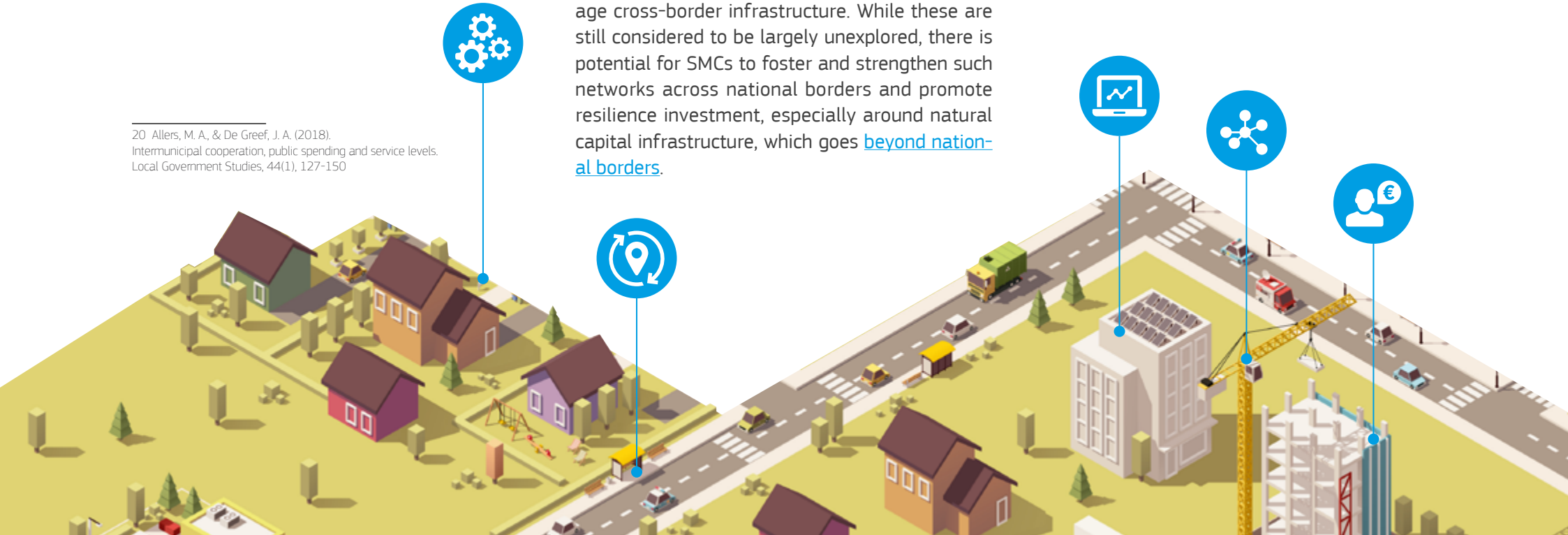
EGTCs are legal entities that facilitate cross-border cooperation between regions and cities within the European Union. EGTCs can be established to carry out joint projects, provide services, or manage cross-border infrastructure. While these are still considered to be largely unexplored, there is potential for SMCs to foster and strengthen such networks across national borders and promote resilience investment, especially around natural capital infrastructure, which goes beyond national borders.

Smart Specialisation Strategies (S3):

S3 is a framework that promotes regional innovation by identifying and building on the strengths of each region. S3 encourages collaboration between regions and cities to develop joint strategies for innovation and economic development. It offers a dedicated advanced platform to sponsor this type of activity and to ensure the smooth transfer of information, knowledge, and cooperation initiative.

Other government-sponsored initiatives:

All the other initiatives joining together cities with similar clear-cut short-term objectives – such as the one that will be covered in the following Case study – with a wide array of scopes and durations.



Case study: Viable Cities, Sweden

CASE STUDY

Location: Sweden

Stakeholders: about 130 member organisations, with 23 Swedish cities of all sizes, representing 40% of the Swedish population. The programme is part of the Climate Neutral Cities 2030 initiative.

Project description: Viable Cities is a 12-year Strategic Innovation Programme running from 2017 to 2030 funded in a joint effort by three government agencies: The Swedish Energy Agency, Vinnova and Formas. Pioneering a mission-based approach to research and innovation, the goal of the program is to help cities achieve climate neutrality by 2030, ensuring a good life within planetary boundaries. The program gathers some 130 member organisations from industry, academia, public sector and civil society organisations.

A key effort in Viable Cities Program is the initiative Climate Neutral Cities 2030, where 23 Swedish cities (whether large or small) and their partners are spearheading efforts to accelerate the transition to climate neutral and sustainable cities. Its approach entails a climate city contract, consisting of a political city commitment to climate neutrality 2030; a climate action plan detailing how cities will achieve that goal; and a climate investment plan, showcasing how capital will be gathered to fund the climate action plan. This commitment from cities is matched by the support of national government agencies. The initiative provides capacity building, networking and even the possibility of accessing funding for innovation projects. Tools developed within Viable Cities are designed to benefit a wide range of cities.

Furthermore, another essential tool is the Transition Lab Forum, which are quarterly gatherings, consisting of:

- **Open sessions** related to specific topics such as circularity in the built environment and sustainable mobility
- **Closed workshops** focusing on specific challenges, such as stakeholder engagement, climate investment planning and smart policy development

Key take-aways:

What the Viable Cities insist on is the significant number of co-benefits to climate transition and the *bird view* perspective that such approach provides to cities at large. Most notably, their approach covers the triple bottom line: environmental sustainability that is economically viable and socially just. Their collaboration with cities allows to understand how behavioural change and innovation can produce systemic change, moving beyond project-based funding and working structurally on a portfolio approach, including redirecting funding.

While the initiative is neutral in terms of financing instruments that should be deployed and it does not specifically push for cities to adopt measures, it provides significant support in the overall planning towards climate neutrality by 2030, and experimenting and testing innovative solutions.

Viable Cities is currently working in a global setting, among others through its Climate Smart City Challenge, and can represent a model for other European cities on how to achieve climate neutral cities that work for all actors in the city, including citizens, industry and the financial world.

Governance and regulation

↑ © Tingey Injury on Unsplash

Governance and regulation

Existing financial regulatory frameworks in the EU

When it comes to regulation in the financial field at the EU level, the core tenets are the EU Taxonomy and the SFDR (the Sustainable Finance Directive Regulation).

The **EU Taxonomy**, also known as the EU Sustainable Finance Taxonomy, is a shared categorization framework that classifies sustainable economic activities. Its purpose is to compile a register of eco-friendly economic activities, and it provides companies, investors, and policymakers with accurate definitions of which activities can be considered environmentally sustainable.

The taxonomy offers numerous advantages, including the promotion of investor confidence, safeguarding private investors from false claims, encouraging companies to adopt environmentally-friendly practices, reducing market fragmentation, and redirecting investments to where they are most required.

The **EU Sustainable Finance Disclosure Regulation (SFDR)** aims to prevent greenwashing and enhance transparency in the market for sustainable investment products. It provides a common framework for financial market participants to disclose the ESG characteristics of their investments. By imposing disclosure requirements, it encourages sustainable investments and deters false environmental and social claims. This bolsters investor confidence and contributes to a more sustainable economy.

Among the two, the most relevant for the purpose of this publication is the EU taxonomy since it focuses on project assessment and pertinence when it relates to the six objectives it identifies. The SFDR, conversely, applies mostly to traded securities and whether they have direct or indirect reference to environmental sustainability and support. They are therefore unlikely to affect the activities and financing for resilience supported by SMC.

↑ Factsheet: Sustainable finance: Investing in a sustainable future. ©2023

EU taxonomy

The Taxonomy regulation establishes the basis for the EU Taxonomy and the overarching conditions that an economic activity has to meet in order to qualify as environmentally sustainable. The Taxonomy regulation establishes six environmental objectives and includes thirteen sectors with more than one hundred business activities (set to expand)

The six **environmental objectives** include:

1. Climate change mitigation.
2. Climate change adaptation.
3. The sustainable use and protection of water and marine resources.
4. The transition to a circular economy.
5. Pollution prevention and control.
6. The protection and restoration of biodiversity and ecosystems.

In terms of financing for resilience, the concerned environmental objectives are mostly *'climate change adaptation'*; *'water and marine resource usage'* since it relates to consistency in resource protection and in territorial integrity and protection; *'transition to a circular economy'* for supply chain and resource supply resilience; and *'protection of biodiversity and ecosystems'* that supports a natural contribution to the overall integrity of the territory.

Overall, this goes to show how the objectives of the Taxonomy are strictly aligned with the need for financing for resilience at the EU level.

The **EU Taxonomy regulation** considers different circumstances and obligations for different economic actors, and is divided into the following three groups:

Companies with over 500 employees that fall under the non-financial reporting directive (NFRD).

Financial market participants, including occupational pension providers, that offer and distribute financial products in the EU (including extra EU).

EU and its member states when setting public measures, standards, or labels for green financial products of (corporate) bonds.

In the context of this publication, it is useful to consider the increasing interest that financial market participants, as well as member states, will bear over the next years in connection with resilience-related investments. This should encourage not only large cities, but also SMCs, to consider this type of investment in relation to the gradual deployment of the Taxonomy.

Application of the taxonomy to the post-pandemic economic recovery instruments

The proposed Next Generation EU, which would be funded by the European Commission borrowing €750 billion, could be aligned with the EU Taxonomy for the issuance of EU Green Bond Standard-aligned debt.

To this end, the InvestEU and Strategic Investment Facility – both part of the Next Generation framework – have adopted two Taxonomy baselines. First, the Multiannual Financial Framework and Next Generation EU should comply with the DNSH and minimum safeguards requirements of the EU Taxonomy to avoid any harm.

Second, priority should be given to spending and investments that make a substantial contribution in line with the Taxonomy criteria and framework. The EU Taxonomy can be used to track progress on climate and circular financing commitments.

The figure on the right describes funding and financing instruments that the Taxonomy can be applied to under the Next Generation EU.

Pillar 1 – Supporting Member States to recover

Recovery and Resilience Facility

State Aid

REACT-EU (cohesion funding)

Rural development (agriculture is a well-developed Taxonomy area)

Just Transition Fund (which should be considered part of the overall support in cases where economic impacts of the environmental transition are accelerated by the COVID recovery)

REPowerEU

Pillar 2 – Kick-starting the economy and helping private investments

Solvency Support Instrument

InvestEU

Strategic Investment Facility (implemented as an additional policy window within InvestEU)

Pillar 3 – Learning the lessons from the crisis

Health Programme

RescEU

Horizon Europe (research and innovation)

Neighbourhood, Development and International Cooperation

Humanitarian Aid

↑ The application of the EU Taxonomy to post-pandemic recovery instruments.
© Investment Package manual for European cities and regions – VOLUME I

The EU Taxonomy can serve various purposes, such as identifying companies that have a high potential for a green transition, demonstrating compliance with high-level social and environmental safeguards, and forming the basis of green transition plans that ensure all future capital and operational expenditures are directed towards Taxonomy alignment.

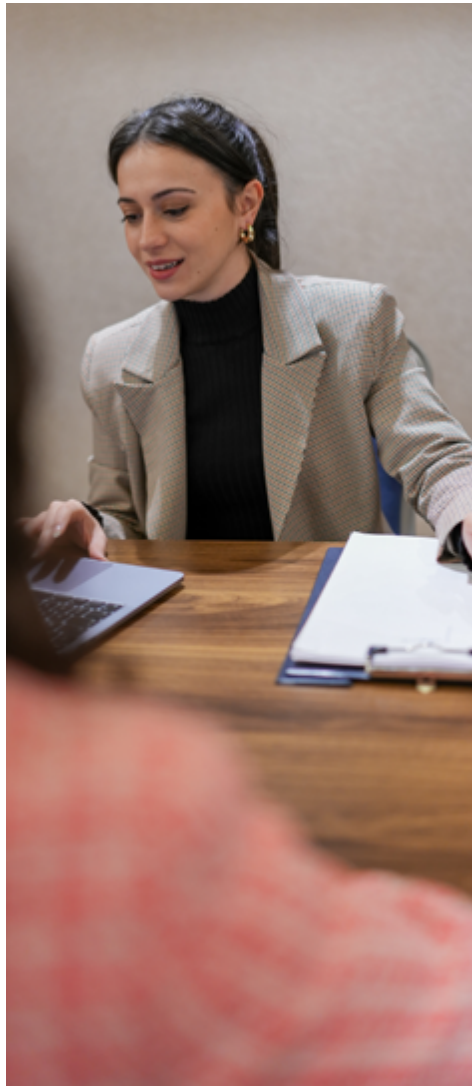
Existing activities should be screened for their potential to cause significant harm with reference to the Taxonomy screening criteria. In addition, the Taxonomy can be used to track progress on climate and circular financing and political commitments.

In the context of SMC, the EU Taxonomy can constitute a supporting instrument in selecting which projects to put forward and which ones might receive the most political and economic support. In particular:

The taxonomy can help to **increase the availability** of financing for resilience projects in these cities. By providing a **clear definition** of what constitutes environmentally sustainable economic activities, the EU Taxonomy can help to **attract more investors** who are interested in financing resilience projects. We are likely to see this happen more frequently as the Taxonomy gets implemented and starts affecting financing activities.

The EU Taxonomy can help to reduce the cost of financing for resilience projects.
By providing a clear framework for sustainable finance, the EU Taxonomy can help **to reduce the perceived risk** of investing in resilience projects, which can lead to lower interest rates and other financing costs.

Third, the EU Taxonomy can help SMC to better **identify and prioritise** resilience projects that meet the criteria for sustainable finance. By using the taxonomy to evaluate and categorize different resilience projects, these cities can more easily identify which projects are most likely to attract sustainable finance and can focus their resources accordingly.



↑ The EU Taxonomy can help to reduce the perceived risk of investing in resilience projects. ©Ahmet Kurt on Unsplash

↑ "Goedkopewoning" project in in Kortrijk, Belgium. From the central heating room, the district heating provides warmth for 114 individual passive homes as well as for the 4 apartment blocks with 82 passive units.
The district heating system consists of a dug-in pre-insulated piping system that branches out to the homes, which have been connected in different stages. © Agata Smok

Lessons learned

The case studies offered in this booklet lead to the following key messages for city officials:

1. In financing for resilience, joining forces is key. Many SMCs in the EU have understood, or have been forced to understand, that the investment required for climate resilience surpasses what an individual city administration is able to secure.

2. Project aggregation for financial purposes leads to lower costs and risks to all the parties involved. Project aggregation is a cheaper and more practical option for SMC when planning for long-term resilience investments and adaptation. This is due to the fact that capital providers will evaluate the investments to have a lower credit risk, welcome higher capital volume and strive for lower administrative burden.

3. Citizen engagement has been an underused resource so far. Only a few countries, particularly in Northern Europe, have started leveraging community-led financing and crowdsourcing to a large extent. Promoting more initiatives of this kind will not only increase potential avenues for long-term financing and ownership of activities but will also foster citizen engagement and understanding of the risks and responsibilities at stake when preparing for resilience.

4. The more complex the project, the more sophisticated the preparation. SMCs mostly do not have the technical nor the human resource capability to oversee the structuring of long and articulated financial models. Having an overarching entity is key to overseeing the entirety of activities whilst maintaining a certain level of control and sophistication.

Financing for resilience, whether through the consolidation of current infrastructure, reduction of physical risk in cities and urban areas, improvement of supply chain management, approaches to loss and damage, and **deep retrofitting**, entails disproportionately large investments for small and middle-sized cities to be covered by existing budgets and existing governmental support.

↑ Further reading "**Solution Booklet Building Envelope Retrofit**"

This booklet focuses specifically on envelope retrofit and considers it from a technical, financial, social and governance perspective. Implementation barriers, as well as the upscaling potential, will be discussed and illustrated by experiences from different European projects.

Given the importance of energy retrofit, the EU has supported many consortia to experiment with new techniques and operational procedures, financing schemes, end-user engagement strategies and governance process setups. From the analysis of a set of nearly 50 building retrofit demonstrators, it appears that half of the retrofit projects realise savings of 50-75% of the total final energy demand.

Private finance is not only recommended but fundamental for filling the existing financing gap when planning for resilience. Despite this need, SMCs could be penalised by traditional lenders in terms of financing costs for their lack of credit history and higher potential default considering the large sums involved.

This booklet offers examples explaining how small and middle-sized cities can and should consider accessing private financing sources through the coordination of forces and the aggregation of project finance applications to ensure lower costs of capital and cheaper procurement.

The establishment collaboration mechanisms, centralisation of project preparation finance, sharing of knowledge, and potential synergies in project selection – especially when it comes to planning and financing for resilience – will encourage SMCs to establish inter-municipal networks or initiatives that can support such activities.

List of abbreviations

Acronym	Extended Version
CCFLA	Cities Climate Finance Leadership Alliance
ESI	European Structural and Investment Funds
EPC	Energy Performance Contract
ESCO	Energy Service Company
IEA	International Energy Agency
NFRD	Non-Financial Reporting Directive
NUTS	Nomenclature of Territorial Units for Statistics
PPP	Public Private Partnership
RES	Renewable Energy Sources
SCM	Smart Cities Marketplace
SFDR	Sustainable Finance Disclosure Regulation
SMC	Small-to-Middle sized Cities

Useful documents and links

Further recommendations on the development of EPCs and ESCO markets at large:

- Energy Service Market in the EU.
- Energy Service Companies in the EU: Status review and recommendations for further market development with a focus on Energy Performance Contracting.
- ESCO Contracts: the ESCO Contracts Library provides a list of ESCO standard contracts and supporting documents provided by a variety of countries and organisations.
- Green Bonds for Cities, by Climate KIC.
- Public Private Partnerships in the EU, by the European Court of Auditors.
- How cities can put a price on carbon, by C40 knowledge.
- Empowering Citizens for Energy Communities, Policy Brief by Interreg Europe Policy Learning Platform.
- Integrated low-carbon strategies, Policy Brief by Interreg Europe Policy Learning Platform.
- Identifying and understanding the role of the European Structural and Investment Funds, ESI.

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Further reading

→ Allers, M. A., & De Greef, J. A. (2018). Intermunicipal cooperation, public spending and service levels. Local Government Studies, 44(1), 127-150

→ CCFLA, World Bank (2021), The State of Cities Climate Finance – The Enabling Conditions for Mobilising Urban Climate Finance, Washington DC, further reading here (PDF)

→ Council of Europe, Intercultural Cities Networks, further reading here.

→ EIB, The EU Urban Agenda Toolbox, further reading here.

→ ERDF (2020), European Structural and Investment Funds (ESIF) and Energy Performance Contracting (EPC) – Stimulating investments in energy efficiency, further reading here (PDF).

→ EU Commission, Urban Data Platform Plus, consulted in April 2023, further reading here.

→ European Commission, Smart Specialisation Platform (S3), further reading here.

→ European Groupings of Territorial Cooperation (EGTCs), further reading here.

→ Glicker, Roscini (2020), Energy Services and the Renovation Wave, Opportunities for a green economic recovery in Europe, Buildings Performance Institute Europe (BPIE), further reading here (PDF)

→ Hallegatte, Stéphane, Jun Rentschler, and Julie Rozenberg (2019) Lifelines: The Resilient Infrastructure Opportunity. Sustainable Infrastructure Series. Washington, DC: World Bank. doi:10.1596/978-1-4648-1430-3. License: Creative Commons Attribution CC BY 3.0 IGO. Further reading here.

→ IEA-RETD (2016), Cost and financing aspects of community renewable energy projects. Volume II: Danish Case study. Ricardo Energy & Environment and Ecologic Institute, IEA-RETD Operating Agent, IEA Implementing Agreement for Renewable Energy Technology Deployment (IEA-RETD), Utrecht, 2016.

→ International Energy Agency, ESCO contracts, further reading here (PDF), consulted in April 2023.

→ McKinsey (2023), Seizing the momentum to build resilience for a future of sustainable inclusive growth, further reading here (PDF).

→ UNFCCC, Samsø: An Island Community Pointing to the Future | Denmark.

→ Financing opportunities funding guide, Covenant of Mayors.

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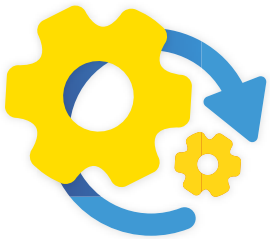
Smart Cities Marketplace

The Smart Cities Marketplace is a major market-changing initiative supported by the European Commission bringing together cities, industries, SMEs, investors, researchers and other smart city actors. The Marketplace offers insight into European smart city good practice, allowing you to explore which approach might fit your smart city project. Discover our digital brochure here.



Matchmaking

The Smart Cities Marketplace offers services and events for both cities and investors on creating and finding bankable smart city proposals by using our Investor Network and publishing calls for projects.

Investor network

Call for Applications – Matchmaking Services

Project finance masterclass

Focus and Discussion groups

Focus groups are collaborations actively working on a commonly identified challenge related to the transition to smart cities. Discussion groups are fora where the participants can exchange experience, cooperate, support, and discuss a specific theme.

Focus and Discussion groups

Community

Scalable Cities

A city-led initiative providing a large-scale, long-term support for the cities and projects involved in the Horizon 2020 Smart Cities and Communities projects.

Scalable Cities

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AGGREGATING FINANCING FOR RESILIENCE SOLUTION BOOKLET

Smart Cities Marketplace 2023

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