Ref. Ares(2023)6615293 - 29/09/2023

NET ZERO CITIES

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

Policy Recommendations based on an assessment of the barriers and opportunities for forming and deploying capital at the city level

Deliverable D7.8

Authors: Fedra Vanhuyse (VC/KTH), Ryan McManus (BwB), Elena Patatouka (ERRIN), Alokananda Nath (FS)

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

Disclaimer

The content of this deliverable reflects only the author's view. The European Commission is not responsible for any use that may be made of the information it contains.

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

Document Information

Grant Agreement Number	101036519
Project Title	NetZeroCities
Project Acronym	NZC
Project Start Date	01 October 2021
Related Work Package	WP7
Related Task(s)	Task 7.5
Lead Organisation	Viable Cities/KTH
Submission Date	29 September 2023
Dissemination Level	Public

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

Table of contents

Introduction 6
Methodology 7
1. The fiscal policies at the country level 7
2. The systematic map of academic literature on fiscal policy 8
3. The FGD 9
Findings 10
1. Fiscal Autonomy 10
2. Borrowing Capacity 11
Discussion 16
Bibliography 19
Annexes 25
1. Results systematic map – per country 26
2. Participants listed from the FGD and poll results 37

List of Figures

Figure 1: PRISMA Flow Chart 9
Figure 2. Use of financial instruments 38
Figure 3. Barriers to financial policies 38
Figure 4. Drivers 39

List of Tables

Table 1. Coding framework for the systematic map 9
Table 2. Indicators for fiscal autonomy in certain EU Member States 10
Table 3. Lending restrictions in certain countries 11
Table 4. Programme FGD, May 2023 37
Table 5. Cities' current framework and needs 39
Table 6. Cities' barriers 41
Table 7. Cities' drivers 42

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

Abbreviations and acronyms

Acronym	Description
WP	Work Package
TIF	Tax Increment Financing
SGA1	Specific Grant Agreement 1
PPPs	Public Private Partnerships

Summary

To achieve climate neutrality at the city level, substantial funding is necessary. Private investors are estimated to fund 70% of the total (GFANZ, 2021). Yet, understanding the extent to which policies support or hinder the uptake of private capital at the municipal level is essential.

This report presents the findings on the barriers and opportunities for deploying capital at the city level and policy recommendations. Our objectives are to:

1) Understand the policies related to capital formation and deployment, i.e., the fiscal policies that govern the cities; and
2) Uncover solutions that could accelerate the uptake of finance at the city level.

The report is based on three sets of data collection: 1) a review of fiscal policies across the EU Member States and countries with cities that are in the EU Mission for Climate Neutral and Smart Cities; 2) a systematic review of the scientific literature on capital formation and deployment at the city level; and 3) a focus group discussion with a select set of cities that are taking part in the EU Mission for Climate Neutral and Smart Cities.

Our summary findings are that low fiscal autonomy and borrowing caps hinder capital deployment at the city level. Fiscal policies differ widely across the countries where the cities in the EU Mission for Climate Neutral and Smart Cities are located, requiring different approaches to mobilise the funding for climate neutrality.

Keywords

Capital formation, capital deployment, municipal finance.

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

Introduction

Climate Investment Planning is a core component of the EU Mission for Climate Neutral and Smart Cities (European Commission, 2022; Net Zero Cities, 2022). It is the **financial translation of the Climate Action Plan**. It describes how the city will achieve climate neutrality by 2030, using behavioural change, technological upgrades, shifts to renewable energy, and harmful emission solutions to meet the net zero target. It breaks down the climate actions into investments, operational expenditure, and revenue but also incorporates an assessment of the (financial) ability of the actors in the city to support the climate actions and investments.

It is estimated that 70% of the climate transition funding will need to be provided by private actors (GFANZ, 2021), with other funders including municipally owned banks, such as Kommuninvest in Sweden and BNG in the Netherlands (BNG, 2023; Kommuninvest, 2022), state-owned banks, and supranational banks such as EIB and EBRD with its Greening Cities Facility (EBRD, 2023; EIB, 2023). In 2021, sub-national governments in the OECD were responsible for 37% of the total public expenditure and 55% of total public investment (OECD, 2022c). Across the EU, a similar trend is observable (Foremny, 2014).

Accessing financing is challenging. According to Bourgeois et al. (2022), there are ten **structural barriers:** 1) a lack of capacity and skills at the municipal level, 2) cumbersome application process and a myriad of existing funds; 3) absence of national support; 4) budget prioritisation and interservice competition; 5) a lack of culture and engagement with the financial sector; 6) a lack of the "planning dimension"; 7) siloed request on finance; 8) difficulty to combine the different funding sources; 9) regulatory and legislative constraints; 10) non systematically aligning European funding programmes and cities' needs.[1] Cities' current financial instruments for climate action are based on municipal budgeting, public funding and taxes. There is a lack of understanding of combining differentiated funding sources – private, regional, national and EU.

With this report, we aim to **deepen the assessment of capital formation and deployment at the city level**, investigating the 9th barrier identified by Bourgeois et al. (2022) on the regulatory and legislative constraints, influencing barrier three on the absence of national support and barrier ten on the alignment of the funding with cities' needs. We do so as capacity-building programmes and engagement with municipal authorities and funders can tackle the other barriers. For example, we believe that through the process of Climate City Contracting, many cities will overcome the obstacles related to institutional culture and knowledge, i.e., barrier one on the lack of capacity and skills at the municipal level, barrier four on budget prioritisation, barrier five on engagement with the financial industry, barrier six on planning, and barrier seven on the siloes. Furthermore, we anticipate that, among others, the Mission

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

[1] Other studies have been done summarizing barriers and opportunities, such as by the European Committee of the Regions (European Committee of the Regions & Milieu Ltd., 2017) and on Canadian municipalities (IMFG, 2022)

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

Cities Capital Hub, foreseen under SGA1, could tackle the obstacles related to funding streams, including barrier two on the challenges with many funds and barrier eight on the combination of different funding sources. Our goal is to explore potential fiscal policy levers across the cities - examining innovative solutions and current pitfalls – and providing a toolkit of policies that Mission Cities and beyond can use to help facilitate their transition to Net Zero.

We focus on **fiscal policies**, which refer to the government's revenue and expenditure measures to influence the economy, promote economic growth, address social objectives, and manage public finances. These policies involve taxation, government spending, borrowing and debt management decisions. Green fiscal policies – environmental fiscal policies – specifically target ecological and sustainability objectives to align fiscal and budgetary policy with sustainable development priorities, supporting an inclusive green economy (Gramkow, 2020; UNEP, 2020). Using Padovani et al. (2021) who summarise financial vulnerability at the municipal level as related to 1) the external institutional design of municipal administrative structure and fiscal rules, 2) internal issues of financial condition (interpreted in terms of financial ratios and indices, and 3) the perception of the capacity to cope with a crisis, we focus on the first dimension, i.e., "the contingencies created by administrative tradition, rules and decisions set by higher levels of government" (p.390).

Our report can be **read parallel to deliverable 14.3** on financial institutions' ability to deploy capital at the city level. It is structured as follows. First, we describe the research methodology used for this report. Then, we present our findings in the following section, combining research findings across our methods. The Annexes contain an overview of the results per country with cities in the EU Mission for Climate Neutral and Smart Cities. We present recommendations in a discussion.

Methodology

We conducted **two desk review studies supplemented with a focus group discussion (FGD).** The desk studies were conducted in parallel and aimed at uncovering rules and regulations surrounding fiscal policy, identifying strengths and weaknesses of these policies, and extracting recommendations from the literature. The FGD sought to confirm some of the desk studies' findings. Below, we describe each research method.

1. The fiscal policies at the country level

The fiscal policy was retrieved for each country with cities in the EU Mission for Climate Neutral and Smart Cities. From these documents, we extracted the rules and regulations. This allowed us to assess the level of fiscal autonomy, understand spending or borrowing limits, and the level of reliance on state-level budget transfers. It also provided insight into the strengths and weaknesses of the fiscal policies in the countries.

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

2. The systematic map of academic literature on fiscal policy

Supplementing our analysis of the fiscal policies at the country level, we carried out a scoping review aimed at **systematically analysing academic literature related to capital deployment and formation at the city level**. We selected a scoping review as a research method (Munn et al., 2018) as it allows us to summarise the literature in a structured fashion yet does not aim to assess the research evidence on a specific topic quantitatively. It will enable the construction of a heat map of research literature and uncover gaps and arenas for further analysis. A scoping review comprises steps: 1) setting up the search string and methodology; 2) searching; 3) selecting articles for relevance; and 4) coding the retained articles.

A search was carried out using Web of Science as the database for the academic literature. Our search consisted of keywords related to cities and finance, with three components:

(local or urban or municipal* or sub-national or subnational)

AND

(finance* or fiscal or debt)

AND

(policy or policies or legislation or regulation)

Our **eligibility criteria** pertained to the time frame (articles published between 2005 and 2022), access (open access only), and geographic location (articles focusing on cities in the Mission, alternatively countries with cities that are in the Mission). The screening was done in three stages. First, reports were screened only at the title level. When in doubt, articles were included. Then, articles were screened at the abstract level for the retained corpus. Again, when the reviewers needed clarification on the relevance, articles were included and screened in full text. Figure 1 contains our PRISMA flow chart.

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

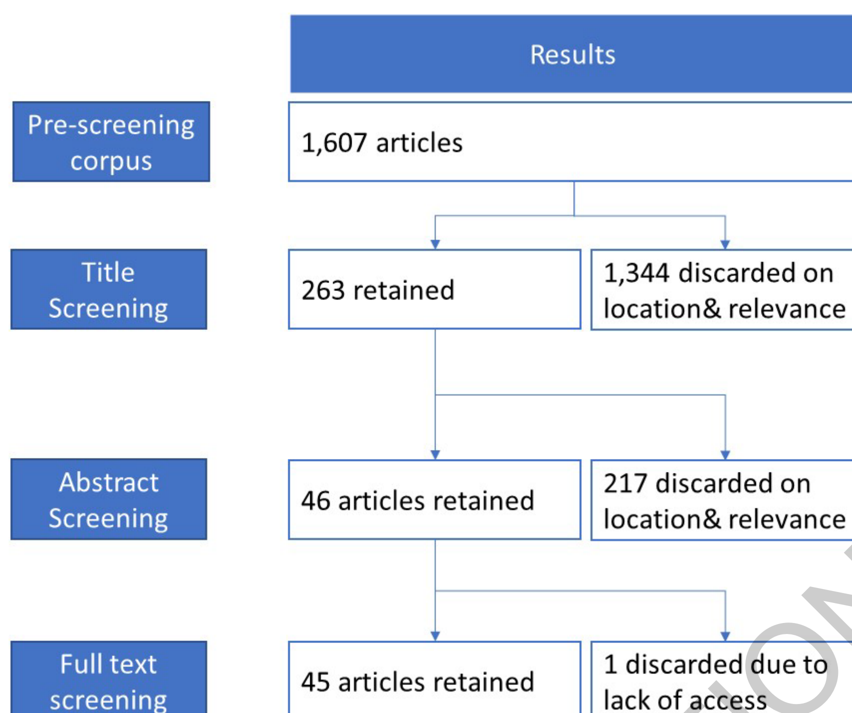


Figure 1: PRISMA Flow Chart

Source: the authors

Table 1 contains the **coding framework** applied to the retained corpus. Following the coding, an overview was presented at the country level, from which the findings were distilled. The results per country are provided in Annex 1.

Table 1. Coding framework for the systematic map

Category	Description
Geographical location	Description of the country and city(cities) the article is focused on
Research question	The focus of the paper or challenge the article is addressing
Method	Research method utilised in the paper.
Assumptions/ background description	Any relevant information about the country or city's situation
Findings	Summary of the findings in the publication related
Barriers or challenges	Barriers or challenges mentioned in the article
Recommendations or opportunities	Mentioned in the article

Source: the authors

3. The FGD

The FGD was conducted in May 2023 to confirm and supplement the findings from the desk review studies. It was structured into four main parts - an introductory part at the beginning and a concluding

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

part at the end of the meeting. Part 1 was dedicated to presenting the current financial policies that have been analysed in the context of the NetZeroCities project. It also focused on the Investment Plan and the objective of the focus group meetings. This part was followed by a short Q&A session where participants could ask questions about the presented information. Part 2 discusses the participating cities' current financial policies and lessons learnt regarding climate financial tools. Part 3 was focused on a discussion on funding and financing barriers and gaps that act as blockages for climate funding and the path towards achieving a net zero future. Last, Part 4 concentrated on recommendations and information sharing between cities to unlock private financing for the transition to net zero. Annex 2 contains a list of participants for the FGD as well as the guidance and structure of the FGD.

Findings

1. Fiscal Autonomy

Fiscal autonomy refers to governments' ability to set taxation rules. Table 2 contains some examples of the level of budgetary independence in some countries with cities that are part of the EU Mission for Climate Neutral and Smart Cities.

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

Table 2. Indicators for fiscal autonomy in certain EU Member States

Country	Local Government Capital Expenditure *(as % of national expenditure)*	Intergovernmental Transfers *(as % of city revenue)*	Autonomous Local Taxation *(as % of total taxes)*
Albania	33.1%	-	-
Austria*	26.8%	64.6%	0.8%
Belgium*	27.7%	50.4%	4.6%
Bosnia & Herzegovina	37.9%	-	-
Bulgaria	25.8%	-	-
Croatia	45.9%	-	-
Cyprus	15.4%	-	-
Czechia	46.2%	41.5%	1.2%
Denmark	48.4%	57.6%	25.1%
Estonia	33.1%	85.6%	1.0%
Finland	59.5%	31.8%	21.9%
France	55.5%	22.0%	8.4%
Germany*	36.3%	41.3%	4.6%
Greece	31.2%	63.0%	2.3%
Hungary	20.9%	47.7%	5.4%
Iceland	38.8%	8.8%	24.3%
Ireland	-	64.0%	2.5%
Israel	50.3%	45.9%	0.0%

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

Italy	55.5%	56.9%	16.4%
Latvia	41.8%	39.3%	2.8%
Lithuania	39.6%	88.0%	-
Luxembourg	34.1%	52.0%	3.1%
Malta	2.1%	-	-
Montenegro	19.6%	-	-
Netherlands	48.5%	74.7%	3.8%
Norway	39.8%	42.2%	13.7%
Poland	45.0%	57.3%	3.9%
Portugal	49.2%	31.0%	5.5%
Romania	52.7%	-	-
Slovakia	30.3%	77.8%	2.7%
Slovenia	41.5%	44.9%	1.6%
Spain*	21.8%	37.9%	8.1%
Sweden	50.2%	37.1%	35.9%
Turkey	37.2%	-	0.0%
United Kingdom	34.3%	67.9%	4.8%

* In these countries, there is also a level of federal/provincial funding that has yet to be included in the report as it does not directly apply to cities. Sources: CEMR, 2022; OECD, 2021c, 2022a

Several researchers have commented on the vertical fiscal imbalance in, among others, Greece and Hungary (see Annex 1). Yet, in literature, more considerable budgetary autonomy is beneficial. It is positively correlated with efficient use of resources and better outcomes for citizens (Alibegović et al., 2019). Still, higher equalisation payments for sub-national governments have been found to lead to increased borrowing and an increased likelihood of overspending at the local level, also known as the soft budget constraint with standard pool practices (Kornai et al., 2003). In addition, most countries have a fiscal imbalance – where responsibilities are handled locally without sufficient budget delegation. “Reducing vertical fiscal imbalance and increasing fiscal autonomy at the local level can increase the accountability of local politicians and give them greater responsibility for funding, leading to better performance” (Boetti, 2012). To achieve long-term fiscal sustainability, structural reforms and targeted investments can be more effective than budget cuts (Catrina, 2012).

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

2. Borrowing Capacity

Another critical aspect of municipal fiscal policy is the ability to borrow externally and to set this limit with some degree of independence - usually via debt limits or a policy requiring a budget surplus within a pre-defined number of years. Within the EU, the Fiscal Compact requires Member States that signed the agreement to balance their budgets and be below certain debt thresholds (ECB, 2012). Budget balancing requirements are also set for the subnational level.

Table 3. Lending restrictions in certain countries

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

Country	Debt / Deficit Restrictions
Albania	There is limited scope as the Ministry of Finance can veto any local borrowing, and national debt is high. Long-term debt can be authorised to finance capital investments in essential government functions or to refinance prior debt. Prudential requirements include a cap on annual debt servicing at most 20% of the three-year average for local government revenues.
Austria	Municipalities can borrow in the form of loans and bonds to finance investment projects. Municipalities borrow mostly from public banks and state-owned enterprises, with states usually having a control committee that approves municipal loans based on state-specific prudential requirements. At this stage, loans represent ~85% of all subnational debt.
Belgium	Municipalities can only issue bonds to fund investment projects, whilst borrowing at the regional level can cover current and capital expenditures. Regional borrowing accounts for ~75% of all subnational debt, with the remainder from local governments.
Bosnia & Herzegovina	Local governments can contract long-term debt to finance capital investment expenditures if their debt service payment does not exceed 10% of the previous year's revenues.
Bulgaria	Municipalities must have a balanced budget, and the annual debt payment must be lower than 15% of the average yearly revenues. Municipalities can issue bonds but can only borrow to finance investment projects, refinance existing debt, ensure short-term obligations can be met, and finance PPPs. Subnational governments can also borrow from the Fund for Local Authorities and Governments in Bulgaria (FLAG), which provides long-term and short-term funding.
Croatia[1]	Municipal bonds are allowed but must be individually approved by the Ministry of Finance and solely to finance capital investment. Local loans can be at most 2.3% of the revenue generated by all government units in the previous year or 20% of municipal revenues in the prior year. In 2023, Zagreb issued a €305m green bond in a national first.
Cyprus	Municipalities can borrow to fund capital expenditure and debt refinancing, but the Council must approve all instances of Ministers. Borrowing amounts can be at most 20% of municipal annual revenue.
Czechia	Municipalities can take on loans and issue bonds, but gross debt must remain below 60% of the municipality's four-year average revenue. Issuing bonds must be approved by the Ministry of Finance.
Denmark	Municipal borrowing cannot be used for capital expenditure, and all borrowing is subject to the central government's approval. Municipalities can only borrow for capital expenditure to finance certain utility services or meet short-term needs with explicit permission from the central government.
Estonia	Municipalities can issue bonds or contract long-term loans only to finance investment projects. Local governments have a debt ceiling range between 60-100% of operational revenues.
Finland[2]	Municipalities are free to contract loans and issue bonds for any purpose. However, most funding is through MuniFin – a credit organisation owned by municipalities, the

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

	public sector pension provider and the Republic of Finland. MuniFin already issues green and social bonds.
France[3]	Long-term borrowing is restricted to use for investment. The Agence France Locale (AFL) is an entity owned by the subnational governments which was set up to provide lending for local governments. The Ile de France region pioneered subnational green bonds, issuing its first bond in 2012.
Germany[4]	Municipal borrowing takes the form of loans, as bond issuance is not prominent now. Local governments are required to balance their budgets. Most lending in Germany is undertaken at the regional level rather than within municipalities.
Greece	Local authorities may contract debt for investments or debt refinancing. Still, the annual cost of debt servicing can be at most 20% of annual revenues, and total outstanding debt can be less than 60% of yearly revenues. There is nothing prohibiting municipalities from issuing bonds, though this has yet to occur to date.
Hungary[5]	Loans can be taken out for investment purposes and should be at most 50% of municipal revenues in any contract year. The Central Bank of Hungary (MNB) introduced a preferential capital requirement programme for green municipal financing in 2021.
Iceland[6]	Municipalities must balance revenue and expenditure over three years but can contract loans and issue bonds. Total debt for municipalities can be at most 150% of annual revenue. The vast majority of municipal financial debt is for loans at this point. Municipality Credit Iceland is a fund owned by local authorities that provides ~25% of municipal financing needs – the fund is looking to issue sustainability-linked bonds. The city of Reykjavik issued its first green bond in 2018.
Ireland	Local government debt is limited and always subject to approval from the central government. Local authorities may borrow for capital expenditure needs, but there is a national cap of €200m new annual borrowing, and all requests must be approved centrally. Any borrowing is constricted to loans, though no explicit legislation rules out bond issuance.
Israel[7]	Local governments are permitted to issue debt to fund capital projects after the approval of the Minister of the Interior and Minister of Finance. However, this represents a small portion of capital expenditure at this time.
Italy	Municipalities may issue bonds – subject to specific prudential rules such as interest expenditure not exceeding 10% of operating revenues for the local government - but the significant majority of sub-national funding for projects is in the form of loans. Borrowing is limited to the financing of investment expenditure.
Latvia	Municipalities can contract long-term loans to finance investment projects, but this is limited due to the requirement for loans to be employed with the State Treasury or within specific funding programs. Borrowing can be at most 20% of local government revenues annually.
Lithuania[8]	Municipalities cannot issue bonds, as the Ministry of Finance is the only governmental entity authorised to issue bonds in Lithuania. Local authorities can borrow via loans to finance investment, though lending limits are set based on municipal budget revenues.

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

Luxembourg	Borrowing is only allowed if there is no other financing option, and the Ministry of the Interior must approve any loans over €50,000. Loans are only permitted to finance capital expenditure.
Malta	Municipalities have no borrowing capacity, and any extraordinary loan must first be authorised by the Minister for Local Governments before the Minister of Finance signs the loan contract.
Montenegro	Municipalities are legally allowed to issue debt and take out long-term loans for financing infrastructure projects or purchasing capital assets, but total payments of interest and principal, as well as repayments of obligations, must not exceed 10% of the current income of the municipality.
Netherlands[9]	Municipalities may borrow externally but only to finance capital expenditure. Although local governments can issue bonds, most borrowing is for financial loans. Both the Municipal Bank of the Netherlands (BNG) and the Waterschapsbank (NWB) specialise in lending for local governments, with the latter issuing green 'water' bonds in recent years in cooperation with municipalities.
Norway[10]	Municipalities may have budget deficits, but these must be rectified within two years. Kommunalbanken (KBN) is the largest provider of low-cost debt financing to municipalities, accounting for ~50% of all municipal lending. KBN began issuing green bonds in 2013, offering proceeds as green loans for climate projects in cities.
Poland	Local governments can borrow, but the annual debt servicing should be, at most, a three-year average of operating surpluses and proceeds from the sale of private assets. Municipalities are allowed to issue bonds, but most local government debt is in the form of financial loans.
Portugal	Municipal borrowing is capped at 150% of the three-year average municipal total revenue. Municipalities can issue bonds as well as contract long-term loans.
Romania	Municipalities can issue bonds and take out loans, though each borrowing arrangement is subject to approval by a committee appointed by the national government.
Slovakia	Municipalities can issue bonds and take out loans, though the payment of interest and principal on municipal debt should be at most 25% of prior year municipal revenues. While local governments can issue bonds, loans make up almost all sub-national debt.
Slovenia	Municipalities can borrow to finance specific investment projects (housing, water networks, sewerage). However, debt levels must be at most 8% of revenue generated by the municipality in the prior year. A recent legislative change allowed municipalities to borrow for other investment projects, though the Ministry of Finance must approve each case.
Spain	Whilst municipalities can borrow, the majority of sub-national debt is held by the 17 autonomous communities rather than at the municipal level. Municipalities can issue green bonds up to a 2.5% debt ceiling.
Sweden[11]	Municipalities are free to issue bonds or take on loans. Still, the costs of servicing these debts must meet the Swedish subnational government's balanced budget requirements, where any deficit must be turned into a surplus within three years. Kommuninvest – a lender wholly owned by regions and municipalities – is the largest

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

	municipality lender, though the municipalities also issue their bonds. The city of Gothenburg was the first city in the world to issue green bonds in 2013.
Turkey	Municipalities can borrow to finance investment projects. However, domestic borrowing is capped at 10% of prior year revenues, and the total outstanding debt stock can be at most 150% of the annual budget for metropolitan municipalities. While municipalities can issue bonds, loans make up most of all subnational debt at this stage.
United Kingdom	Local governments can borrow to issue long-term debt for capital investments only. All local authorities also have access to the Public Works Loan Board (PWLB), operated by the U.K. Debt Management Office, which provides local loans to fund capital projects. Although local authorities can issue municipal bonds, the vast majority of subnational debt takes the form of loans.

Sources: ECR, 2019; OECD/UCLG, 2022 **1)** Todorović, 2023 **2)** Munifin, 2023 **3)** Climate Bonds Initiative, 2018 **4)** KfW, 2021 **5)** MNB, 2021 **6)** (City of Reykjavik, 2021) **7)** OECD, 2021a **8)** OECD, 2021b **9)** NWB Bank, 2022 **10)** KBN, 2022 **11)** UNFCCC, 2023

Results across the EU differ. In Poland, for example, many rural municipalities experience high debt levels (Karnowski & Rzońca, 2021; Klepacki et al., 2021; Kozera et al., 2020). This has been negatively correlated with accessing EU funding. In Sweden, regulations have been put in place requiring a surplus (Bergman, 2011). As noted by Baskaran (2010) in their study on the link between fiscal decentralisation and public debt in OECD countries, “expenditure decentralisation significantly reduces public indebtedness, whereas tax decentralisation and vertical fiscal imbalances are insignificant” (p.351).

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

Discussion

Our research shows that a lack of fiscal autonomy and lending caps hinder capital deployment at the municipal level. There are, however, multiple solutions, including 1) green fiscal policies, 2) relaxing lending caps, 3) using off-sheet balancing, 4) creating business cases for climate finance, and 5) strengthening the regulatory framework on green investments. Innovative financial instruments could be explored for on-balance sheet and off-balance sheet financing. From the FGD, we note that a range of advanced market-based finance tools, such as equity finance, pooled finance arrangements, municipal bonds and public-private-people partnerships, must be better understood and detailed to the cities. Strategies such as fiscal optimisation, public-private-people partnerships, and participatory budgeting were, among others, recommended by the FGD participants.

First, **green fiscal policies** could provide additional incentives, with instruments including Property Tax Incentives or Tax Increment Financing (TIF). Property tax is noted to be one of the most effective taxations at the local level. Several scholars call for a reform in particular property tax (see, for example, Binet, 2008; Zimmermann, 2019 for France and Germany respectively).[2] Municipalities can offer tax breaks or reduced property tax rates to incentivise the adoption of energy-efficient technologies and renewable energy systems. By reducing the financial burden on property owners, these incentives make climate investments more attractive and economically viable. TIF allows the increased property tax revenues generated from the infrastructure improvements to repay the financing. TIF can fund projects such as public transit systems, bike lanes, renewable energy installations, or energy-efficient buildings. By leveraging future tax revenues, TIF enables municipalities to invest in climate projects that may have otherwise been financially unfeasible. The City of Gothenburg, for example, noted it issued green bonds to finance various environmental projects in diverse areas such as public transport, renewable energy, energy efficiency, water treatment, city planning and waste management. This has enabled the city to borrow money for green investments. A percentage of 75% of proceeds from green bonds issued between 2013 and 2015 are used to fund climate change projects. The City of Gothenburg acknowledges the significance of the EU Taxonomy as a classification system that establishes a list of environmentally sustainable economic activities. The City of Barcelona, in turn, according to the ''Climate Plan 2018-2030,'' will implement a taxation scheme that will foster climate neutrality. The city aims to provide tax incentives for implementing energy efficiency measures. It has been discussed in the focus group that a tax relief for productive roofs will be generated. In addition, a climate toll to access the city will be designed to finance climate actions. Indirect taxation measures were also discussed as best recommended practices. Aarhus municipality, for example, has imposed an internal climate tax on selected food categories, such as meat products, in connection with a new food procurement agreement

[2] Fiscal systems differ across the countries and cities, with some countries experiencing high labour taxation compared to other types of taxation (see, for example, Slovakia, as explained in Liptáková & Rigová, 2021).

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

being implemented later in 2022. This has been a powerful tool to promote a healthier and more sustainable food system and emphasises the importance of local government policies to reduce food waste and climate impact.

Second, to stimulate capital deployment, some countries could **relax borrowing caps and reserve targets**, such as Sweden, which strives for a surplus target (Bergman, 2011). In Norway, the 2001 reform lifted this requirement, and researchers found that raising the budget and borrowing control only sometimes leads to reduced fiscal responsibility. It may have the opposite effect if the rules are lifted only for local government that comply with the Balanced Budget Requirement" (Borge & Hopland, 2020). They also noted that administrative sanctions worked better than financial ones, as did Ben-Bassat et al. (2016) for Israel.

Third, **off-balance-sheet financing** (see, for example, Vanhuyse et al., 2022) could provide a solution around lending caps. Public Private Partnerships (PPPs), for example, allow municipalities to form partnerships with private entities to finance and implement climate projects jointly. Under this model, investment and risk are shared, and through this collaboration, municipalities could attract additional funding and accelerate the implementation of climate investments. Yet, not all PPPs have been successful (Gurgun et al., 2017; Lam & Yang, 2020; Requena Carrion et al., 2021; Storbjörk et al., 2019), so a thorough assessment of this type of collaboration is necessary to ensure a good return for all participants.

Fourth, municipalities should create economically driven narratives for private investors to attract investments. Sustainability criteria should be combined with economic parameters (Albrecht et al., 2021). In the FGD, participants noted that the financial side should be combined with a detailed identification of the local ecosystem, usage of technologies and replicability of projects. The cultural aspects should also be considered in framing financial mechanisms to achieve climate neutrality. The city of Frankfurt, for example, aims to explore cultural factors that can boost the usage and scale-up of energy funding mechanisms. Frankfurt has launched a campaign with citizens to raise awareness of climate protection goals and CO2 reduction targets. The city has also developed a collective instrument to involve citizens and employees with a photovoltaic device, designed but yet to be implemented.

Finally, **regulatory and procedural policy instruments** should supplement the economic instruments (subsidies, rebates, and investments). Exploring the different roles under the "government as a system toolbox" could provide additional food for thought (UK Policy Lab, 2020). This could entail advocating for additional funding and support, capacity-building programs, building partnerships, and reviewing or revising regulations and policies. Incorporating stringent rules in procurement could provide a strong incentive for the private sector to support the climate neutrality agenda. Ample guidelines on Green Public Procurement (GPP) have been developed (European Commission, 2023; OECD, 2022b; Rainville, 2017), and national-level public procurement agencies (see, for example, Upphandlingsmyndigheten, 2016) could build capacity on this at the local level. Polzin (2017)

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

summarises effective measures for low energy innovation to be “public-private RD&D partnerships, advocacy coalitions with financiers, mission-driven public investments, demand stimulus and a (RD&D) tax-system reform (Polzin, 2017, p. 531).

Importantly, as noted by Balaguer-Coll et al. (2016), “economic policy recommendations should not be homogeneous across local governments” (p. 513) as socio-economic and political factors influence the level of indebtedness within each city. Therefore, place-based policymaking should be at the centre of the Mission, even regarding financial policy (Bachtler, 2010; Barca, 2009).

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

Bibliography

Albrecht, M., Grundel, I., & Morales, D. (2021). Regional bioeconomies: Public finance and sustainable policy narratives. *Geografiska Annaler: Series B, Human Geography*, *103*(2), 116–132. https://doi.org/10.1080/04353684.2021.1921603

Alibegović, D. J., Hodžić, S., & Bečić, E. (2019). The Level of Fiscal Autonomy: Evidence from Croatia, Serbia, Bosnia, and Herzegovina. *NISPAcee Journal of Public Administration and Policy*, *12*(1), 91–112. https://doi.org/10.2478/nispa-2019-0004

Allers, M. A. (2015). The Dutch Local Government Bailout Puzzle. *Public Administration*, *93*(2), 451–470. https://doi.org/10.1111/padm.12123

Andersson Järnberg, L., & Värja, E. (2023). The composition of local government expenditure and income growth: The case of Sweden. *Regional Studies*, *57*(9), 1784–1797. https://doi.org/10.1080/00343404.2022.2131755

Bachtler, J. (2010). Place-based policy and regional development in Europe. *Horizons*, *10*(44), Article 44. https://strathprints.strath.ac.uk/15693/

Balaguer-Coll, M. T., Prior, D., & Tortosa-Ausina, E. (2016). On the Determinants of Local Government Debt: Does One Size Fit All? *International Public Management Journal*, *19*(4), 513–542. https://doi.org/10.1080/10967494.2015.1104403

Banaszewska, M. (2018). The determinants of local public investments in Poland. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, *13*(1), Article 1. https://doi.org/10.24136/eq.2018.006

Barca, F. (2009). *An Agenda for a Reformed Cohesion Policy. A place-based approach to meeting European Union challenges and expectations*. https://www.europarl.europa.eu/meetdocs/2009_2014/documents/regi/dv/barca_report_/barca_report_en.pdf

Baskaran, T. (2010). On the link between fiscal decentralisation and public debt in OECD countries. *Public Choice*, *145*(3), 351–378. https://doi.org/10.1007/s11127-009-9570-4

Ben-Bassat, A., Dahan, M., & Klor, E. F. (2016). Is centralization a solution to the soft budget constraint problem? *European Journal of Political Economy*, *45*, 57–75. https://doi.org/10.1016/j.ejpoleco.2016.09.005

Bergman, M. (2011). Best in class: Public finances in Sweden during the financial crisis. *Panoeconomicus*, *58*(4), 431–453. https://doiserbia.nb.rs/Article.aspx?ID=1452-595X1104431B

Bethlendi, A., & Lentner, C. (2018). Subnational Fiscal Consolidation: The Hungarian Path from Crisis to Fiscal Sustainability in Light of International Experiences. *Sustainability*, *10*(9), Article 9. https://doi.org/10.3390/su10092978

Binet, M.-E. (2008). Optimal local taxation and French municipal tax distortions. *Applied Economics*, *40*(3), 327–332. https://doi.org/10.1080/00036840500427874

BNG. (2023). *About the BNG Bank*. https://www.bngbank.com/

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

Boetti, L. (2012). Decentralization and Local Governments' Performance: How Does Fiscal Autonomy Affect Spending Efficiency? *FinanzArchiv (FA)*, *68*(3), 269–302. https://doi.org/10.1628/001522112X653840

Bonfatti, A., & Forni, L. (2019). Fiscal rules to tame the political budget cycle: Evidence from Italian municipalities. *European Journal of Political Economy*, *60*, 101800. https://doi.org/10.1016/j.ejpoleco.2019.06.001

Borge, L.-E., & Hopland, A. O. (2020). Less fiscal oversight, more adjustment. *European Journal of Political Economy*, *63*, 101893. https://doi.org/10.1016/j.ejpoleco.2020.101893

Bourgeois, M., Scalabrino, M., Charliyski, A., Solé, A., Castañeda, M., Diaz, A., Mendle, R., O'Rourke-Potocki, H., Altman, N., Schneider, S., & Ingle, R. (2022). *City climate finance landscape, barriers and best practices in city climate finance*. European Commission.

Bouton, L., Gassner, M., & Verardi, V. (2008). Redistributing income under fiscal vertical imbalance. *European Journal of Political Economy*, *24*(2), 317–328. https://doi.org/10.1016/j.ejpoleco.2008.01.003

Catrina, I. L. (2012). The Failure of Fiscal Consolidation Through "Budget Cuts." *Procedia Economics and Finance*, *3*, 367–374. https://doi.org/10.1016/S2212-5671(12)00166-9

CEMR. (2022). *Budget expenditures and investment patterns—CCRE Local Finances and the Green Transition*. Budget Expenditures and Investment Patterns - CCRE Local Finances and the Green Transition. https://cemr.eu

Chodkowska-Miszczuk, J. (2019). Institutional Support for Biogas Enterprises – The Local Perspective. *Quaestiones Geographicae*, *38*(2), 137–147. https://doi.org/10.2478/quageo-2019-0018

City of Reykjavik. (2021). *2021 Annual Green Bond Impact Report*. https://reykjavik.is/sites/default/files/2022-06/FAS%2022040002%20%C3%81ritun%20Green%20Bond%202021%20sameina%C3%B0.pdf

Climate Bonds Initiative. (2018, April). *France Country Briefing*. https://www.climatebonds.net/files/reports/france_report_final_20.04.18_0.pdf

EBRD. (2023). *EBRD Green Cities*. https://www.ebrdgreencities.com/

ECB. (2012). *Main elements of the fiscal compact*.

ECR. (2019). *Division of Powers*. https://portal.cor.europa.eu/divisionpowers/Pages/default.aspx

EIB. (2023). *About the EIB*. https://www.eib.org/en/index

Eltrudis, D., & Monfardini, P. (2020). Are Central Government Rules Okay? Assessing the Hidden Costs of Centralised Discipline for Municipal Borrowing. *Sustainability*, *12*(23), Article 23. https://doi.org/10.3390/su12239932

European Commission. (2022). *100 Climate-Neutral and Smart Cities by 2030*. https://ec.europa.eu/info/news/commission-invites-cities-express-their-interest-become-part-european-mission-100-climate-neutral-and-smart-cities-2030-2021-nov-25_en

European Commission. (2023). *Green Public Procurement*. https://green-business.ec.europa.eu/green-public-procurement_en

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

European Committee of the Regions & Milieu Ltd. (2017). *Financing climate action: Opportunities and challenges for local and regional authorities.* Publications Office. https://data.europa.eu/doi/10.2863/329600

Foremny, D. (2014). Sub-national deficits in European countries: The impact of fiscal rules and tax autonomy. *European Journal of Political Economy*, *34*, 86–110. https://doi.org/10.1016/j.ejpoleco.2014.01.003

George, M., & Nikos, P. (2015). Structures and Financing Means of Local Government's Social Policy in Greece. A Case Study of Thessaloniki's Municipalities. *Procedia Economics and Finance*, *33*, 287–302. https://doi.org/10.1016/S2212-5671(15)01713-X

GFANZ. (2021, November). *Financing Roadmaps*. https://www.gfanzero.com/netzerofinancing

Göndör, M., & Nistor, P. (2012). How does FDI React to Fiscal Policy? The Case of Romania. *Procedia Economics and Finance*, *3*, 629–634. https://doi.org/10.1016/S2212-5671(12)00206-7

Gramkow, C. (2020). *Green fiscal policies: An armoury of instruments to recover growth sustainably* (5; (LC/TS.2020/24), p. 56). ECLAC.

Gurgun, A. P., Polat, G., & Bayhan, H. G. (2017). USE OF PPP IN DIFFERENT COUNTRIES AND REGIONS. *Proceedings of International Structural Engineering and Construction*, *4*(1). https://doi.org/10.14455/ISEC.res.2017.115

IMFG. (2022). *The Municipal Role in Climate Policy*. https://imfg.munkschool.utoronto.ca/report/climate-policy/

Janeba, E., & Todtenhaupt, M. (2018). Fiscal competition and public debt. *Journal of Public Economics*, *168*, 47–61. https://doi.org/10.1016/j.jpubeco.2018.10.001

Karnowski, J., & Rzońca, A. (2021). Financing framework for local governments: Diagnosis and change proposals. *Ekonomia i Prawo. Economics and Law*, *20*(4), Article 4. https://doi.org/10.12775/EiP.2021.047

KBN. (2022). *Green Bonds*. Www.Kbn.Com. https://www.kbn.com/en/investor/green-bonds/

KfW. (2021). *Sustainable finance in German municipalities: Can green municipal loans break the ice?* (339).

Klepacki, B., Kusto, B., Bórawski, P., Bełdycka-Bórawska, A., Michalski, K., Perkowska, A., & Rokicki, T. (2021). Investments in Renewable Energy Sources in Basic Units of Local Government in Rural Areas. *Energies*, *14*(11), Article 11. https://doi.org/10.3390/en14113170

Kommuninvest. (2022). *Kommuninvest Investor Presentation*. https://kommuninvest.se/

Köppl–Turyna, M., & Pitlik, H. (2018). Do equalization payments affect subnational borrowing? Evidence from regression discontinuity. *European Journal of Political Economy*, *53*, 84–108. https://doi.org/10.1016/j.ejpoleco.2017.07.002

Kornai, J., Maskin, E., & Roland, G. (2003). Understanding the Soft Budget Constraint. *Journal of Economic Literature*, *41*(4), 1095–1136. https://www.jstor.org/stable/3217457

Kozera, A., Standar, A., & Satoła, Ł. (2020). Managing Rural Areas in the Context of the Growing Debt of Polish Local Government Units. *Agriculture*, *10*(9), Article 9. https://doi.org/10.3390/agriculture10090376

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

Krišto, J., Stojanović, A., & Cesarec, A. (2018). Comparison of economic development and banking loan activities on a case of Croatian counties. *Proceedings of the 10th Economics & Finance Conference, Rome*, 243–253. https://iises.net/proceedings/10th-economics-finance-conference-rome/table-of-content/detail?article=comparison-of-economic-development-and-banking-loan-activities-on-a-case-of-croatian-counties

Lam, P. T. I., & Yang, W. (2020). Factors influencing the consideration of Public-Private Partnerships (PPP) for smart city projects: Evidence from Hong Kong. *Cities*, *99*, 102606. https://doi.org/10.1016/j.cities.2020.102606

Liptáková, K., & Rigová, Z. (2021). Financial assumptions of Slovak municipalities for their active participation in regional development. *Entrepreneurship and Sustainability Issues*, *8*(4), 312–330. https://doi.org/10.9770/jesi.2021.8.4(18)

Mertens, A., Trampusch, C., Fastenrath, F., & Wangemann, R. (2021). The political economy of local government financialization and the role of policy diffusion. *Regulation & Governance*, *15*(2), 370–387. https://doi.org/10.1111/rego.12285

MNB. (2021). *Preferential capital requirements for green corporate and municipal financing summary*. https://www.mnb.hu/letoltes/preferential-capital-requirements-for-green-corporate-and-municipal-financing-summary.pdf

Munifin. (2023). Green and social bonds. *MuniFin*. https://www.munifin.fi/sustainable-bonds/

Munn, Z., Peters, M. D. J., Stern, C., Tufanaru, C., McArthur, A., & Aromataris, E. (2018). Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. *BMC Medical Research Methodology*, *18*(1), 143. https://doi.org/10.1186/s12874-018-0611-x

Munteanu, A., & Göndör, M. (2012). Fiscal Policy and Performance of Banking Systems Interactions: The case of Romania. *Procedia Economics and Finance*, *3*, 597–603. https://doi.org/10.1016/S2212-5671(12)00201-8

Net Zero Cities. (2022). *Towards climate neutral European Cities by 2030*. NetZeroCities. https://netzerocities.eu/

NWB Bank. (2022). *Water Bond Report 2022*. https://nwbbank.com/en/investor-relations/water-bonds

OECD. (2021a). *A Review of Local Government Finance in Israel: Reforming the Arnona System*. Organisation for Economic Co-operation and Development. https://www.oecd-ilibrary.org/urban-rural-and-regional-development/a-review-of-local-government-finance-in-israel_a5bc4d25-en

OECD. (2021b). *Raising Local Public Investment in Lithuania*. https://issuu.com/oecd.publishing/docs/raising-local-public-investment-in-lithuania-repor

OECD. (2021c). *OECD Fiscal Decentralisation Database*. https://www.oecd.org/tax/federalism/fiscal-decentralisation-database/

OECD. (2022a). *Fiscal Federalism 2022: Making Decentralisation Work*. https://www.oecd-ilibrary.org/sites/599c856a-en/index.html?itemId=/content/component/599c856a-en

OECD. (2022b). *Green Public Procurement*. https://www.oecd.org/gov/public-procurement/green/

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

OECD. (2022c). *Regional & Local Finance*. https://www.oecd.org/regional/multi-level-governance/mlgsngpublicfinance.htm

OECD/UCLG. (2022). *Country Profiles of the World Observatory on Subnational Government Finance and Investment.* https://www.sng-wofi.org/country-profiles/

Padovani, E., Iacuzzi, S., Jorge, S., & Pimentel, L. (2021). Municipal financial vulnerability in pandemic crises: A framework for analysis. *Journal of Public Budgeting, Accounting & Financial Management*, *33*(4), 387–408. https://doi.org/10.1108/JPBAFM-07-2020-0129

Pina, V., Bachiller, P., & Ripoll, L. (2022). Analysis of the effectiveness of regulation on financial health of Spanish local governments. *Spanish Journal of Finance and Accounting / Revista Española de Financiación y Contabilidad*, *51*(3), 350–370. https://doi.org/10.1080/02102412.2021.1956092

Polzin, F. (2017). Mobilizing private finance for low-carbon innovation – A systematic review of barriers and solutions. *Renewable and Sustainable Energy Reviews*, *77*, 525–535. https://doi.org/10.1016/j.rser.2017.04.007

Rainville, A. (2017). Standards in green public procurement – A framework to enhance innovation. *Journal of Cleaner Production*, *167*, 1029–1037. https://doi.org/10.1016/j.jclepro.2016.10.088

Reiss, L. (2022). Fiscal risk sharing and redistribution between Austrian states. *Empirica*, *49*(1), 1–20. https://doi.org/10.1007/s10663-021-09525-6

Requena Carrion, A., Vanhuyse, F., Agerström, M., Nilsson, A., & Arra, V. (2021). *Public Private Partnerships (Factsheet)*. Cleantech Scandinavia and Stockholm Environment Institute. https://cdn.sei.org/wp-content/uploads/2021/06/210618a-mckay-requena-public-private-partnerships-2106e.pdf

Šagát, V., Plaček, M., & Kolman, P. (2019). The Impact of Fiscal Rules on the Financial Management of Higher Self-Governing Units in the Slovak Republic. *NISPAcee Journal of Public Administration and Policy*, *12*(1), 135–159. https://doi.org/10.2478/nispa-2019-0006

Săndică, A.-M. (2012). Characterizing Monetary Regime Switches in Romania. *Procedia Economics and Finance*, *3*, 24–29. https://doi.org/10.1016/S2212-5671(12)00116-5

Scutariu, A. L., & Scutariu, P. (2015). The Link between Financial Autonomy and Local Development. The Case of Romania. *Procedia Economics and Finance*, *32*, 542–549. https://doi.org/10.1016/S2212-5671(15)01430-6

Storbjörk, S., Hjerpe, M., & Glaas, E. (2019). Using Public–Private Interplay to Climate-Proof Urban Planning? Critical Lessons from Developing a new Housing District in Karlstad, Sweden. *Journal of Environmental Planning and Management*, *62*(4), 568–585. https://doi.org/10.1080/09640568.2018.1434490

Todorović, I. (2023, July 19). *Zagreb Holding sells green bonds worth EUR 305 million*. Balkan Green Energy News. https://balkangreenenergynews.com/zagreb-holding-sells-green-bonds-worth-eur-305-million/

UK Policy Lab. (2020, March 6). *Introducing a "Government as a System" toolkit*. https://openpolicy.blog.gov.uk/2020/03/06/introducing-a-government-as-a-system-toolkit/

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

UNEP. (2020, June). *Building Back Better: The Role of Green Fiscal Policies*. https://wedocs.unep.org/bitstream/handle/20.500.11822/32923/BBB.pdf?sequence=1&isAllowed=y

UNFCCC. (2023). *Gothenburg Green Bonds*. https://unfccc.int/climate-action/momentum-for-change/financing-for-climate-friendly/gothenburg-green-bonds

Upphandlingsmyndigheten. (2016). *Möjligheter i regelverken*. http://www.upphandlingsmyndigheten.se/omraden/lcc/mojligheter-i-regelverket/

Vanhuyse, F., Piseddu, T., & Arra, V. (2022). *Financial instruments for investing in sustainable cities* (p. 4) [Factsheet]. Stockholm Environment Institute. https://www.sei.org/wp-content/uploads/2022/02/factsheet-financial-instruments-for-sustainable-cities.pdf

Zimmermann, H. (2019). History of local taxation in Germany. *Journal of Tax Reform*, *5*(1), 57–69. https://doi.org/10.15826/jtr.2019.5.1.060

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

Annexes

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

1. Results systematic map – per country

With excerpts from the retained corpus

Country	Relevant publications	Capital deployment (e.g., borrowing levels)	Capital formation (e.g., fiscal autonomy, taxation system)
Austria	(Köppl–Turyna & Pitlik, 2018; Reiss, 2022)	• Subnational governments that receive higher levels of equalisation payments tend to have higher levels of borrowing compared to those that receive lower levels of payments	
Bosnia and Herzegovina (BiH)	(Alibegović et al., 2019)		• BiH has a relatively low level of fiscal autonomy compared to Croatia • The centralised fiscal policy hampers the development of local communities and regional economies
Croatia	(Alibegović et al., 2019; Krišto et al., 2018)		• Croatia has a relatively high level of fiscal autonomy compared to BiH and Serbia
France	(Binet, 2008)		• Municipal taxes in France need a reform to reflect better the value of the property rather than the number of occupants
Germany	(Janeba & Todtenhaupt, 2018; Zimmermann, 2019)	• Constrained borrowing reduced public investments and taxes	• The local taxation system in Germany is quite efficient, although there is room for improvement. The combination of business and income taxes allows local authorities to balance the interests of local households and businesses.

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

			• Many small local taxes are “nuisance taxes”, yielding an insignificant revenue while being at the same time burdensome for taxpayers and authorities. • Property tax is less than 20% of the local tax revenue (low compared with other countries) and could be higher. • Regionalization would be disastrous for the local business tax because an enterprise with subsidiaries in several states would be forced to adjust its method of calculating profit for each state.
Greece	(George & Nikos, 2015)		• Vertical imbalance: responsibilities have been transferred from central to local governments without funding. Reduced resources are replaced through the EU programmes without seeking future alternative sources.
Hungary	(Bethlendi & Lentner, 2018)		• Hungarian cities have experienced a permanent operational deficit since the 2000s due to vertical imbalance. • Many municipalities took on foreign currency bonds to invest in infrastructure and were subject to exchange rate volatility • Limited oversight: up to 2011, the State Audit Office could legally not audit local government companies.
Israel	(Ben-Bassat et al., 2016)		• Subordination reduces incentives related to soft-budget constraints and brings a decrease in expenditures and an increase in tax collection.

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

			• The fiscal impact is due to the appointment of an accountant who reports directly to the central government, a relatively mild form of administrative subordination. • Stronger forms of imposition do not substantially improve municipalities' fiscal situation
Italy	(Boetti, 2012; Bonfatti & Forni, 2019; Eltrudis & Monfardini, 2020; Padovani et al., 2021)	• Have a Centralised Discipline and Control Model (Domestic Stability Pact, introduced in 1999), which enhanced political control and a re-centralization process. Fiscal constraints could have restricted the use of bonds besides controlling municipal borrowing decisions. • The local borrowing system is unfavourable to municipal bond issuing and private banks. • There is a speciality municipal bank that finances almost all investments in municipalities.	• Municipalities with lower levels of fiscal autonomy (i.e., higher vertical fiscal imbalance) tend to have higher spending. • The central government can control spending efficiency through fiscal rules like the Domestic Stability Pact (DSP). • The opportunistic behaviour of incumbent politicians significantly influences spending performance. • Mayors closer to new elections tend to increase spending inefficiently. This effect is strongly conditioned by fiscal restraints imposed on local governments (i.e., the DSP) and the degree of accountability deriving from their budgetary autonomy. • Devolution of taxing power to lower government tiers reduces VFI and increases local politicians' accountability to improve the efficiency and effectiveness of public services.
Netherlands	(Allers, 2015)	• Two legal restrictions exist for subnational government borrowing, applying both "to the term structure of government debt, not	• Revenue for municipalities originates mainly from transfers from the central government, with limited ability to set taxes.

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

		to total debt levels. There are no spending ceilings." • The Municipality Law states that the council must balance a municipality's budget. An exception may be made if the local funding is expected to balance in one of the subsequent years. • Bailouts exist for municipalities in need	
Norway	(Borge & Hopland, 2020)	• In Norway, a reform in 2001 lifted budget and borrowing approval for local governments that comply with the balanced budget requirement (BBR). It was a concern that less fiscal oversight would lead to less budgetary discipline. • Operational budget balance is the primary concern: current revenues must cover operating expenditures and debt servicing costs. • Borrowing is for investment purposes: there is no explicit limit on borrowing or debt level. But, as debt servicing costs are included in the BBR, it is implicitly included.	

		• Local governments that have violated the BBR need budget and borrowing approval by a regional commissioner until the accrued deficit is covered. • Fiscal adjustment is more substantial after the reform, particularly for local governments with past deficits that risk being listed in Robek. The same finding applies to local governments, not to Robek, indicating that the fear of being listed due to a list of shame effects and reduced autonomy is sufficient to cover past deficits. ◦ "Lifting of budget and borrowing control does not necessarily lead to reduced fiscal responsibility. It may rather have the opposite effect if the controls are lifted only for local government that complies with the BBR." ◦ Administrative sanctions work better than financial ones, as financial ones are hard to fulfil when the budget is already in deficit.	

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

		• Transparent information on the fiscal health of local governments creates political pressure to be more responsible with their resources.	
Poland	(Banaszewska, 2018; Chodkowska-Miszczuk, 2019; Karnowski & Rzońca, 2021; Klepacki et al., 2021; Kozera et al., 2020)	Investments are correlated with economies of scale, local communities' preferences, infrastructure, and fiscal autonomy. In 2015-2017, over one-third of all rural municipalities were at a high or extremely high level of debt. • Rural communes of the agricultural type with a developing residential function and communes of the extensive agrarian class had a very high level of debt. • The amount of EU funds accessed: negative impact on debt levels. • The operating surplus: positive impact on debt levels. Recommendations to improve finance: • innovative financing models • simplifying regulatory procedures • increasing financial support for renewable energy investments.	The current financing framework for local governments requires more financial stability and autonomy for local authorities. Transfers from the central government to local levels are essential. Recommendations include: • Increasing the share of local taxes in total revenue, e.g., property taxes, local income taxes, and local fees. • Simplifying the system of equalisation transfers • Increasing the autonomy of local governments • Strengthening fiscal discipline, including greater oversight and monitoring of local government finances

Portugal	(Padovani et al., 2021)	•	• Portuguese municipalities are responsible for only about 13% of the total public expenditure and 14% of the total general revenue
Romania	(Göndör & Nistor, 2012; Munteanu & Göndör, 2012; Săndică, 2012; Scutariu & Scutariu, 2015)	• Local governments in Romania face significant challenges in accessing financial resources and promoting local development. These challenges include a lack of technical expertise, corruption, and bureaucratic obstacles.	• positive correlation between financial autonomy and local development. Local governments that have greater control over their financial resources are more likely to invest in infrastructure, social services, and other development projects that can promote economic growth. • financial autonomy is a critical factor in promoting local development in Romania and other developing countries, and policymakers should focus on empowering local governments to access and allocate financial resources more effectively. Recommendations: • "Transfer decision-making power to local communities for public affairs where local decision would be more effective. • Increase the degree of local financial autonomy available to local public administration authorities. • Work towards meeting the needs of local communities and improving local living conditions. • Emphasize the importance of local financial autonomy for ensuring the efficiency of the local administration process. • Encourage decentralising decision-making power to local communities to decrease development disparities."

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

Serbia	(Alibegović et al., 2019)		• has a relatively low level of fiscal autonomy compared to Croatia
Slovakia	(Liptáková & Rigová, 2021; Šagát et al., 2019)	• The self-governing regions of western Slovakia have the largest share of foreign investment, resulting in better financial capability.	• The financial capacity of Slovak municipalities is limited (with limited ability to raise taxes – even though labour tax is high), and there is a high degree of territorial fragmentation. • Low active participation in regional development is due to a lack of financial resources. • Municipalities with business activities generate higher local taxes, leading to a higher level of development for the whole region. • Merging small municipalities to create economically more significant and capable units would be necessary to complete the fiscal decentralisation process successfully. • shortcomings that prevent the full use of fiscal rules are due to "incomplete and formal implementation, the interests of local elites, and a lack of coordination of activities with the central government" (Šagát et al., 2019, p. 135)
Spain	(Balaguer-Coll et al., 2016; Pina et al., 2022)	• the 2012 Spanish legislation regarding fiscal stability and budgetary balance and Ministry of Finance Order 1781/2013 regulates budgetary balance	• Municipalities can raise local taxes and charge tariffs for the services they provide

		• Disclosing financial indicators for benchmarking is beneficial as it heightens responsibility and accountability.	
Sweden	(Andersson Järnberg & Värja, 2023; Bergman, 2011)	• Sweden's public finances during the financial crisis were strong due to its fiscal framework of a surplus target in combination with the expenditure ceiling. Support during the crisis included: • Increased government spending to boost the economy and support those affected by the crisis. • Expansionary monetary policy: lowered interest rates and liquidity to the financial system. • Support for businesses, e.g., reduced taxes, temporary layoff subsidies, and loan guarantees. • Targeted measures for specific industries, such as the automobile industry, which received subsidies for research and development. • Supand port for households, including increased unemployment benefits and housing allowances.	

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

		Recommendations include: • "The term "surplus target" should be replaced with "target for total government net lending" since a surplus target may not always be appropriate, and what's important is that there exists a target for total government net lending. • An explicit target for total government net lending could minimise the deficit bias and have direct economic effects through lower risk premiums through increased credibility if a target can be upheld without high costs. • It is preferable to formulate the target for total government net lending in terms of well-defined indicators that are easily measured."	
United Kingdom (England)	(Mertens et al., 2021)	• Until the end of the 1990s, English municipalities possessed little autonomy in their financial policies as local government investments required central government approval and borrowing limits were set. This changed in the early 2000s, with the push by New Labour to modernise local government finance.	

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

		• Since 1998, almost 50 per cent of English local governments borrowed through so-called “lender option borrower option” (Lobo) loans with embedded derivatives, essentially betting on rising long-term interest rates.	
EU	(Foremny, 2014)	•	
OECD countries	(Bouton et al., 2008)	•	• The financial dependence of sub-national entities on national grants is somehow inherent to multi-level governments. • Decentralisation of fiscal policies can lead to reduced spending in the local welfare programmes.

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

2. Participants listed from the FGD and poll results

The focus group meeting was organised online on Microsoft Teams with 21 participants representing seven cities, two facilitators from ERRIN's side and eight experts from the NZC partners. The participating cities were Groningen, Aarhus, Dijon Metropole, Frankfurt, Liepaja, La Louviere, and Wroclaw. They represent medium-sized cities in differentiated socio-political environments covering northern, southern, eastern, and western Europe. The cities were chosen as they have been advanced in their work on financial tools towards achieving climate neutrality. The only exceptions in terms of population are the municipalities of Liepaja in Latvia and La Louviere in Belgium, which have smaller people. On the other hand, Barcelona was the city with the largest population.

The 21 participants comprised representatives working in the regional offices based in Brussels, city employees working on financing/climate financing in the cities and city employees working on climate-related topics. The participants had a good level of knowledge of the issues discussed in the focus group and were able to contribute with valuable input and feedback.

PowerPoint was used to present the information visualised through slides. The online tool Miro captured notes and key messages during the discussions. In addition, a poll was used through the Slido mechanism that collected responses from the city representatives in an interactive way to keep the audience engaged.

The programme of the event is displayed in Table 4 below.

Table 4. Programme FGD, May 2023

Duration	Topic
10 min	Welcome and introductions
20 min	Part 1: Presentation and discussion on the NetZeroCities Financial Policies, followed by a short Q&A session from the cities
15 min	Part 2: Cities' financial policies, current situation, and needs towards a net zero future
15 min	Part 3: Funding and financing barriers
45 min	Part 4: Recommendations for improving financial ecosystems
10 min	Conclusions and next steps

The poll results are displayed in Figures 2-4 below, with a more detailed description in Table 5-7.

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

Figure 2. Use of financial instruments

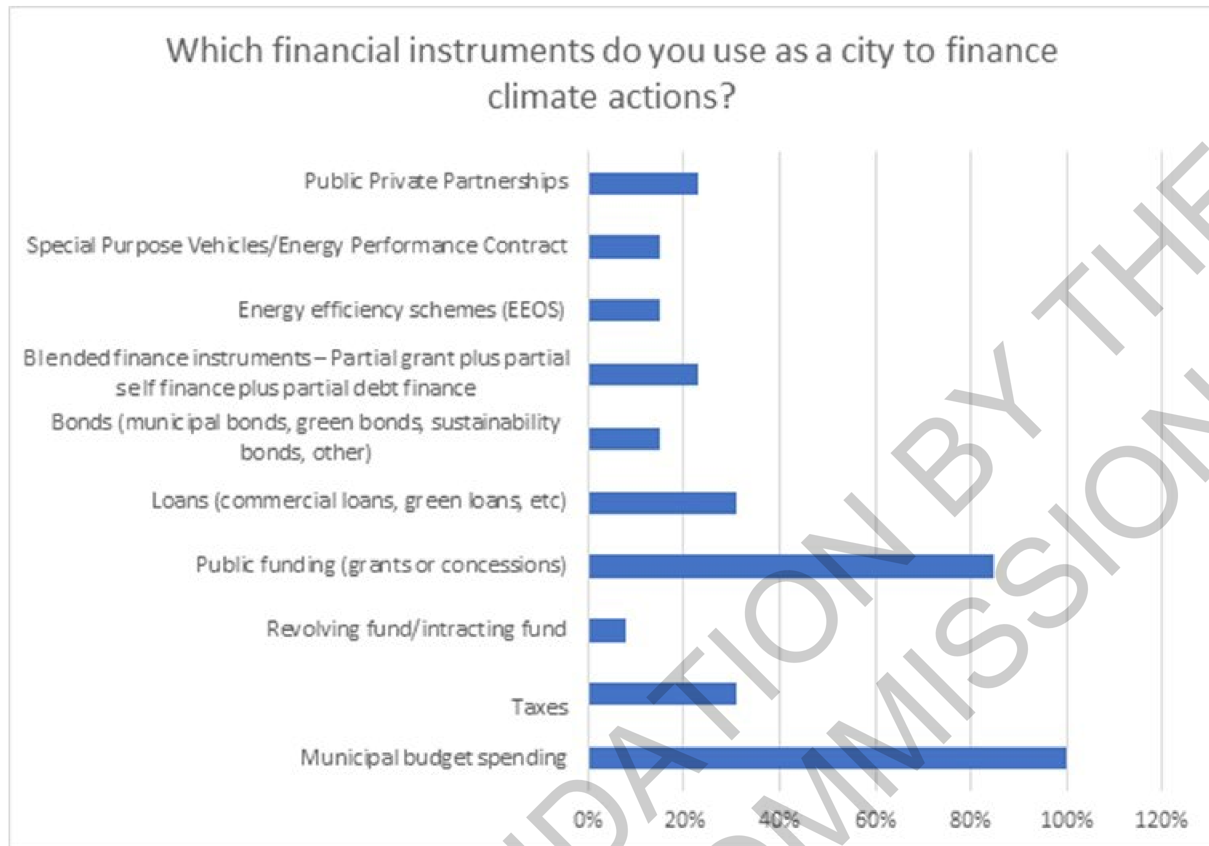
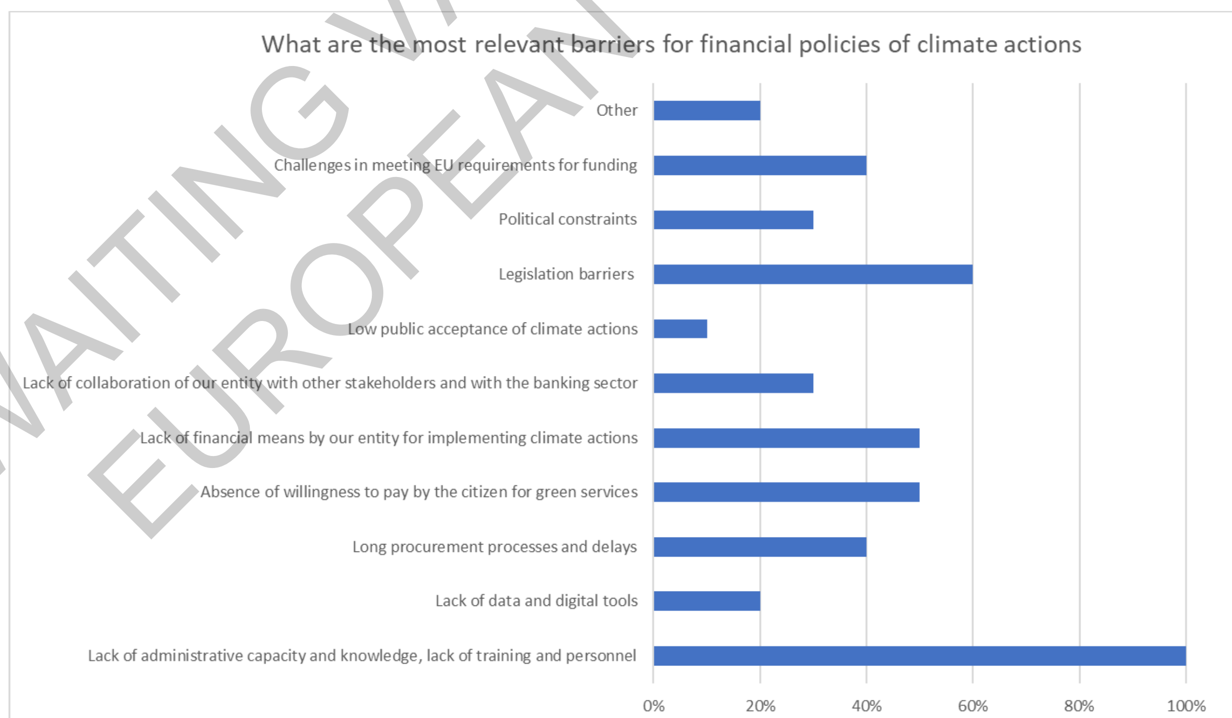


Figure 3. Barriers to financial policies



AWAITING VALIDATION BY THE EUROPEAN COMMISSION

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

Figure 4. Drivers

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

Table 5. Cities' current framework and needs

Cities' current framework and needs	
Identification of existing financing instruments: municipal budgeting public funding as the most widely-used funding channels.	Cities' current financial instruments for climate actions are based on municipal budgeting, public funding, and taxes. This stands at the rate of 100% for municipal budgeting, 85%for public funding. There is a lack of understanding of combining differentiated funding sources – from the private, regional, national and EU funding channels. Examples include: • ''Municipal budget spending in the Netherlands is dominant. In addition, the National Government gives money to pay for several aspects of the energy transition as part of the action climate plan. Large investments are funded at a national level.'' (City of Groningen) • ''In the City of Frankfurt, and generally in Germany, traditional financial instruments are used. The city has funding and subsidies from the Federal Government and the EU. It distributes them to citizens to implement measures in the field of energy efficiency, climate adaptation and sustainability.'' (City of Frankfurt)

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

	• ''In the city of Barcelona, the municipality budget but also public funding (EU and national level) is used.'' (City of Barcelona)
Move from traditional financial instruments to more advanced tools based on project portfolios.	There is a need to understand advanced and innovative funding options for cities' climate plans. Cities aim to co-finance energy projects not supported by conventional commercial financing. Due to higher risk or low return on sustainable urban development projects, there is a need to identify suitable loans, guarantees and equity investments. Many cities have shown interest in the examples mentioned, such as green bonds or public-private partnerships. • ''Municipality budget is used, but also green bonds as well as public-private partnerships to fund climate actions.'' (City of Gothenburg)
Importance of pilot demonstrations on new financial tools	Cities are interested in implementing new financial instruments with a sectoral focus and an initial limited fund size. • ''These and the next years, we are trying to test a new type of climate toll to access the city and use this tax to finance climate actions. Maybe actions to be funded are related to public transport in the city. Also another element is shared photovoltaic infrastructure to be developed, and citizens pay taxes to link to this network and use electricity. This is an example of the circular economy. Both are under implementation.'' (City of Barcelona)
Need for scale-up and replication of portfolio of solutions.	Replicability and scale-up of best practices focused on projects are significant. Even though project financing needs, risk and profitability levels and typologies of climate actions are heterogeneous, pilot demonstrations could add value to the current framework.

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

Taxation as a circular financial tool	Taxation is a tool to be explored for some of the cities. Revenues from taxes could support the transition to a climate-neutral economy by 2030. Taxation can act in two ways: stir away from harmful actions and create indirect funding for climate actions. The taxation schemes can result in funding schemes in which the revenue from taxation is transformed into reinvesting schemes in renovating or regridding a neighbourhood. Other examples could be second home taxes, renovation taxes, deprived housing taxes, and vacant building plot taxes that can create revenue in real estate and building energy efficiency markets. • ''There is a financial tool that we implemented, taxing the price of meat that increased sustainability in public kitchens and restaurants. Another example of the law in the building is the EPC score that needs to be met to allow building in the future.'' (City of Aarhus)

Table 6. Cities' barriers

Cities' barriers	
Lack of administrative capacity and knowledge, training, and personnel	The critical barriers for 85% of the interviewees to deploying climate actions are the need for more administrative capacity, learning, training, and personnel. The lack of expertise and know-how and expertise on climate financing and investment creates a significant challenge to cities.
Challenges in meeting EU requirements for funding	Cities need an understanding of how to use EU funding schemes. The applicable rules for such kind of funding take time to understand and implement. -'' The municipalities and the citizens would like to implement green projects. Still, at the other end, there are the financial institutions and EU funding whose legislative documents and processes are hard to understand.'' (City of Liepaja).
Regulatory barriers	Several cities confront regulatory and governance barriers related to climate investments. These barriers stand at the national level, making it difficult for cities to implement investments and projects. • ''The requirement for emissions reduction in building renovations is mainly created for Northern countries. However, with the mild climate in Barcelona, it is hard to comply with the current reduction regulations. A better alignment between financial and action plans for southern countries and cities is required. The most important barrier is the national and EU-level legislation that must be integrated into the local level. There are fiscal issues.'' (City of Barcelona)
Long procurement processes and delays	Public procurement is used to finance climate projects in cities, but procurement processes should be shorter for short-term green targets.

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

Cultural factors that act as blockages to the decarbonisation process	Cultural factors act as blockages in implementing actions towards climate neutrality. Climate projects are falling through the cracks of the different silos of city government. The fragmentation of responsibilities, delays, and tools depend on cultural aspects that must be shifted. • ''The problem sometimes is more cultural than legislative or economical. There are several funding schemes, but it takes a lot of time and effort to establish energy support programs.'' (City of Frankfurt)
Absence of willingness to pay by citizens for green investments	The citizens' attitudes and willingness to pay for urban green infrastructure can be an essential barrier to implementing a climate-neutral agenda. • ''In transportation, there are numerous projects for the reduction of emissions, but some of them are unpopular among people, and therefore, it is decided not to continue at a very early stage.'' (City of Aarhus)
Lack of financial means	The lack of financial means for climate financing and investment poses an essential challenge to cities. • ''Projects, for example, on nature-based solutions require land. On the one hand, some private investors would like to invest in new house construction, which results in upgoing prices. On the other hand, the land is getting more and more expensive so that the municipalities cannot buy and implement their plans.'' (City of Aarhus)

Table 7. Cities' drivers

Cities' drivers	
Engage and build relationships with private investors and industry	The achievement of climate neutrality can be reached through new business opportunities that will be provided by the engagement of local industrial actors with the cities. The market should shift to a city-led model involving essential collaboration between cities and industry partners. • ''New approaches to city laws should create bridges between industry and the cities. For example, anyone who wants to renovate a facade or a roof must green it.'' (City of Frankfurt)
Engage and build relationships with the academic sector and research	Cities can partner with the educational sector to find innovative solutions to their pressing issues. Engaging and adopting new tools and technological services can combat climate change and support climate neutrality.
Re-think the long-term financial planning policy-making tools	Implementing climate actions needs the adaptation of green investments to facilitate long-term financial planning.

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

Develop new governance models that enable the pull of financial resources from private-public-people partnerships.	A practice that the cities would be interested to explore is how to leverage public, private and civil society partnerships for implementing climate-neutral projects. • "There is the source of municipal budgeting, but it is also essential that our city uses green bonds as well as public-private partnerships for funding climate actions" (City of Gothenburg)

AWAITING VALIDATION BY THE EUROPEAN COMMISSION

This project has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.