OECD Regional Development Papers

Mobilising sustainable finance for regions and cities

By Courtenay Wheeler, Charlotte Lafitte, Yugo Kimura and Isabelle Chatry

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Subnational governments play a crucial role in the climate transition, accounting for approximately two-thirds of climate-significant public expenditure across the OECD and the EU. While subnational governments are sometimes innovators in green finance, many struggle to meet their green investment needs, facing challenges in mobilising both funding and financing. Despite the growing use of green, social, and sustainable bonds, subnational issuances account for less than 10%. This report provides a broad framework to support regional and local governments to better mobilise diverse funding and financing instruments for achieving climate and environmental objectives. Applicable to subnational governments of all sizes, the framework is complemented by selected good practices.

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Executive summary

The urgent need for climate action is clear. Global average temperatures set a record in 2024, rising to around 1.6 °C above the preindustrial average. Immediate measures are required to halt the increase of greenhouse gas emissions and limit global warming. Whilst investments in climate mitigation and adaption have progressed, they remain insufficient. Current levels of investment will still result in an estimated global infrastructure investment gap of around USD 2.5-3 trillion annually.

Regional and local governments will need to scale-up climate-related investment. Subnational governments are responsible for 69% of climate-significant public investment in the OECD and EU. While they have increased climate-significant investment by 1.4% per annum between 2009 and 2019, in about a third of OECD and EU countries, investment remained stable or declined. Many governments report that they are still not able to meet their green investment needs. Climate change is also starting to have an impact on subnational government creditworthiness, with one study finding that a 1% increase in a local government's exposure to climate risk increases the cost of borrowing by 23.4 basis points.

Closing the local climate investment gap will require a diverse mix of funding and financing instruments. Borrowing—through bonds and loans—is a useful tool, although it needs to be conducted responsibly and in line with fiscal frameworks. Subnational governments can also look to identify revenue sources, such as environmental taxes, land value capture mechanisms and congestion charges that can be earmarked to fund climate projects. Some subnational governments have successfully implemented these mechanisms, such as the State of Jalisco, Mexico, which implemented an environmental protection fund using revenue derived from a polluting vehicle tax.

Regions and cities can better mobilise sustainable finance instruments to support climate action. One notable financial instrument that has potential to further support local climate action is green, social, sustainable and related (GSS+) bonds. The global market for GSS+ bonds has grown substantially in recent years, reaching approximately USD 981 billion in annual issuances in 2023. However, subnational governments only account for 6.7% of all GSS+ bond issuances and 31% of public (sovereign and municipal) issuances. Among all bonds issued by agencies and local governments, GSS+ bonds constituted only around 10% of total issuance. This suggests further scope for subnational governments to utilise these instruments.

This report provides a broad framework to support regional and local governments to better mobilise diverse funding and financing instruments for achieving climate and environmental objectives. This framework can be applied to subnational governments of all sizes and is accompanied by selected good practices. It is based on an understanding that subnational government use of borrowing is also subject to fiscal frameworks that consider debt stability and supports their effective use of resources. It includes four key priorities:

- **Identify relevant funding and financing instruments** – A broad range of conventional and sustainable financial instruments will need to be mobilised to support sustainable investments. These can harness a combination of conventional resources, such as taxes, grants and loans, alongside more innovative instruments like green bonds and sustainability-linked loans. Regions

and cities have been innovators in the adoption of these instruments, and in many cases adopted sustainable finance instruments before central governments. For example, the City of Helsingborg, Sweden, pioneered the use of Sustainability-Linked Bonds, becoming the first city globally to issue such bonds.

- **Set a balanced framework for subnational government access to financial instruments** – Improving access to funding and financing instruments, within the relevant constraints of fiscal frameworks, can increase subnational governments' capacity to fund critical climate adaptation and mitigation initiatives. This can involve ensuring regulatory frameworks are fit for purpose, strengthening public financial management, establishing financial intermediaries, utilising guarantees and improving access to capital markets. In Japan, for example, a municipally funded financial organisation enables financing at more favourable terms than individual municipalities, owing to factors such as its economies of scale and higher credit rating.
- **Use robust processes to allocate resources for maximising long-term impact** – Investments need to be prioritised to optimise the use of available resources for climate and environmental objectives. This can be supported by adopting a data-driven approach, where climate risks and assets are evaluated to inform investment decisions, as well as by using instruments such as strategic planning and green budgeting and inter-governmental co-ordination bodies. In Chile, for example, an institutional mapping exercise was conducted to identify and address gaps in the multi-level governance framework of climate policies.
- **Ensure efficient implementation of sustainable investments** – Once investments have been prioritised, there is a need to use allocated resources to deliver tangible progress. Among other areas, this can be supported by proactive stakeholder engagement, initiatives to build institutional capacity and exploring the use of green public procurement. For example, community engagement has been a key pillar in urban forest development in Melbourne, Australia, where the city held stakeholder meetings and used online tools to actively involve the community in the investment.

1 Current state of sustainable investment in regions and cities

An urgent need for action

An alarming global warming trend underscores the need for immediate and drastic measures to stop the increase in greenhouse gas emissions. Global average temperatures set a record in 2024, rising to around 1.6 °C above the preindustrial average (Copernicus, 2024[1]). Limiting global warming requires urgent action. It is not just about getting to net-zero by a particular date; the shape of the pathway to get there matters hugely for lowering the daily impact of climate change on citizens' well-being, environmental ecosystems and macroeconomic and fiscal sustainability. The cost of not acting now will be prohibitive and could compromise our ability to respond effectively to this systemic challenge (OECD, 2023[2]; OECD, 2024[3]).

Action is required both to reduce greenhouse gas emissions and adapt to the impacts of climate change. Rapid and deep emission cuts are required this decade, with parallel emphasis on building systemic resilience to climate impacts. Key to this will be transforming the built environment and energy systems as transport, building and water infrastructure make up more than 60% of global greenhouse gas emissions (OECD, World Bank and UNEP, 2018[4]). At the same time, there is a need to build new protections against the impacts of climate change, such as flood and coastal protections (OECD, 2023[2]; OECD, 2024[3]). Transformation of regional and local economies for a low-carbon future calls for coordinated action from all levels of government, the private sector and civil society.

Regional and local governments have an important role to play

Regional and local governments can make a significant contribution to global climate action. In many OECD countries, subnational governments are responsible for climate-related policy domains such as environmental protection, land-use planning, waste and water management, housing, transportation and energy (OECD, 2022[5]). This means that they often have the central role to facilitate reductions in greenhouse gas emissions and enhance climate resilience. They also have a key role in building climate-resilience through protective infrastructure (e.g., coastal and flood protections) and effective land use planning (OECD, 2024[3]).

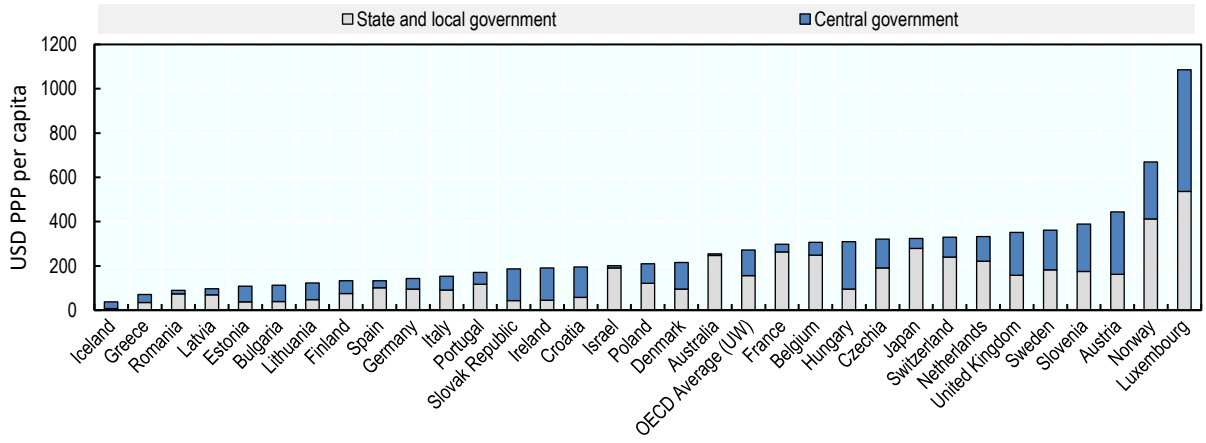
Subnational governments can take the lead in driving more sustainable investment. Given subnational governments' climate-linked responsibilities and their deep understanding of local climate impacts, they are well placed to deliver tailored investments that meet local needs and global climate priorities. Indeed, effective climate action requires adopting a place-based approach, harnessing multi-level governance and building subnational administrative and fiscal capacity (OECD, 2024[3]).

Regional and local governments undertake the majority of climate-significant expenditure and investment in the OECD.[1] In 2019, total climate-significant public investment represents around USD PPP 274 per capita per annum, of which USD PPP 158 was by subnational governments (Figure 1.1). On average, subnational governments in the OECD and the EU accounted for 63% of climate-significant public

expenditure and 69% of climate-significant public investment, which corresponds to 1.1% and 0.4% of GDP respectively (Figure 1.2) (OECD, 2022[6]). Subnational governments have an even larger role in federal and more decentralised countries. In Australia, for example, subnational governments are responsible 97% of climate-significant investment.

Figure 1.1. Total climate-significant public investment is around USD PPP 260 per capita per annum

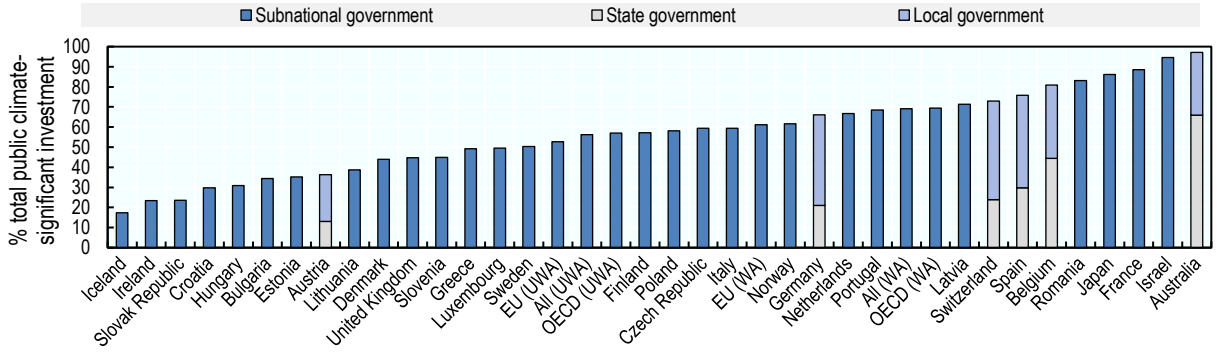
Climate-significant investment per capita in OECD and EU countries (2019), nominal



Note: UW = Unweighted Average
Source: OECD Subnational Government Climate Finance Database

Figure 1.2. Subnational governments are responsible for a majority of climate-significant investment

Subnational climate-significant investment as a percentage of total public climate-significant investment in OECD and EU countries (2019)



Note: WA = Weighted average (by GDP), UWA = Unweighted average (by GDP).
Source: OECD Subnational Government Climate Finance Database

Regional and local governments face important challenges in undertaking green investment. Many of these governments report that they are not able to meet their green investment needs and face challenges when seeking to mobilise funding and financing for investment. In the EU, for example, most municipalities (60%) viewed their infrastructure investments in climate mitigation and adaptation infrastructure between 2020

and 2023 as insufficient (EIB, 2023[7]). Although municipalities in more economically developed regions plan to increase their investment in upcoming years, municipalities from less developed regions are less certain that they will increase their climate investment (EIB, 2023[7]).

Current state of subnational sustainable finance and investment

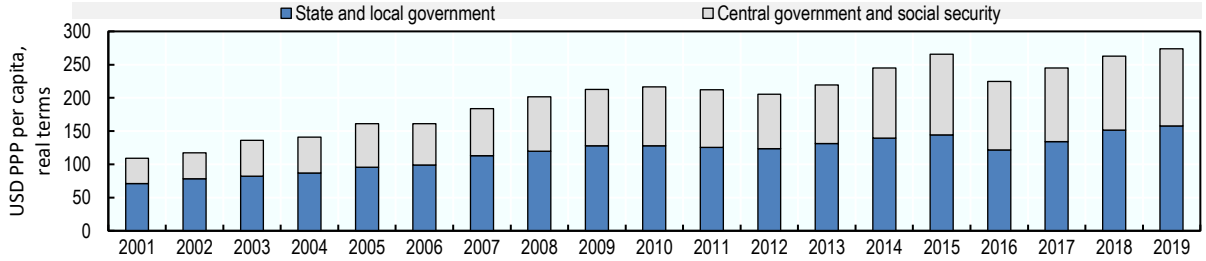
Globally, sustainable investment will need to be scaled-up.[2] To move closer to the 1.5˚C pathway, and address vulnerabilities to climate shocks, cumulative investment of approximately USD 47 trillion will be needed by 2050, with investment in energy transition representing 80% of that amount (IRENA, 2023[8]). Current levels of investment are insufficient, resulting in an estimated global infrastructure investment gap of around USD 2.5-3 trillion annually (OECD, World Bank and UNEP, 2018[4]).

Climate-significant public investment has increased

Subnational climate-significant investment increased in two-thirds of countries with data available. In real terms, subnational climate-significant investment increased by approximately 85% between 2001 and 2019 (Figure 1.3).[3] Between 2009 and 2019, six countries registered an annual average increase of over 5% (Denmark, Hungary, Romania, Croatia, Norway and Slovakia). This likely indicates prioritisation of climate-significant investments in the country but can also be related to the devolution of responsibilities (e.g., granting environmental responsibilities related to soil pollution and the mapping and planning of raw materials extraction to regions in Denmark). In contrast, in about a third of countries, subnational climate-significant investment remained stable or declined. There was an annual average decline of 15% in Ireland, 10% in Lithuania and 8% in Spain (Figure 1.4). Downward trends can be partly explained by austerity measures that were put in place in response to the 2008 financial crisis, but also by the centralisation of some responsibilities (e.g., functions related to water services and waste management in Ireland, see Figure 1.5).

Figure 1.3. Climate-significant public investment has increased in recent decades

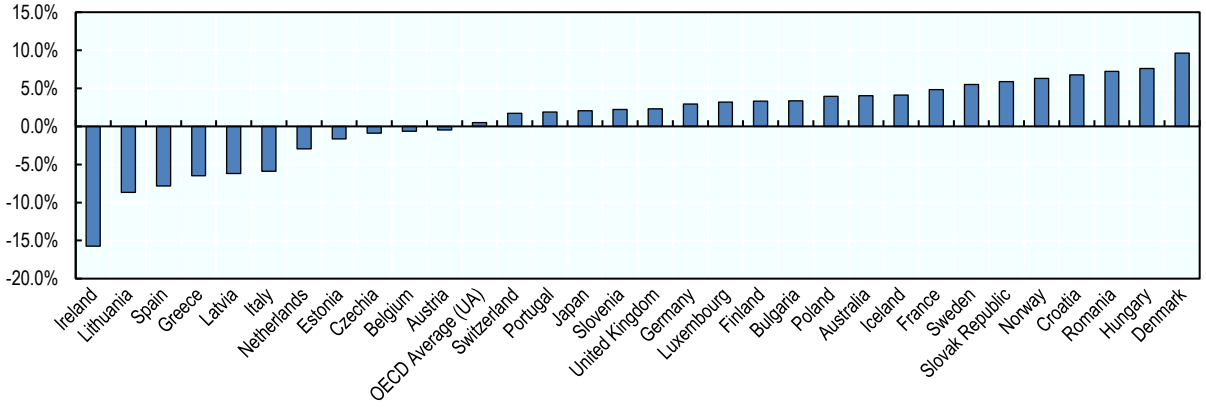
Climate-significant investment in USD PPP per capita (2015 dollars), OECD average



Notes: Unweighted Average
Source: OECD Subnational Government Climate Finance Database, Link

Figure 1.4. Subnational climate-significant investment has increased in two-thirds of countries

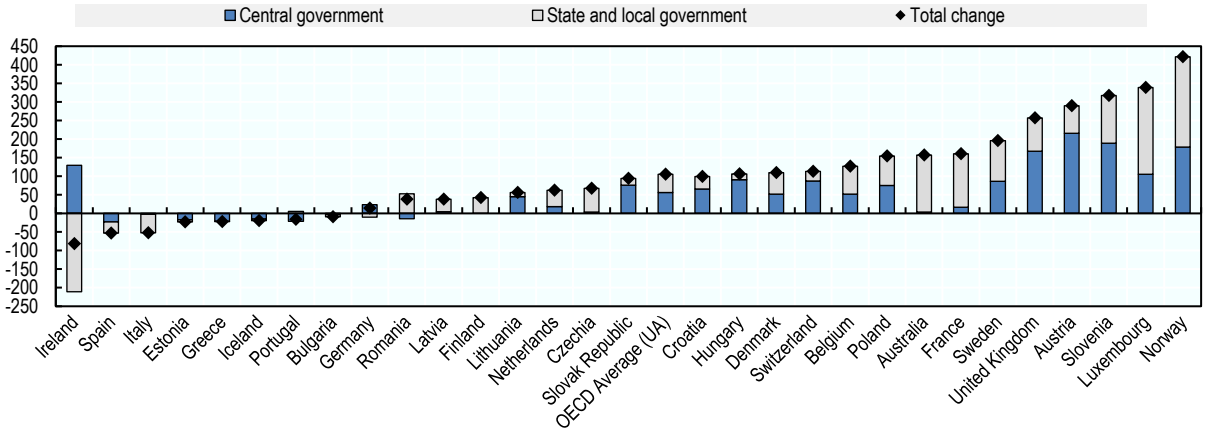
Average annual change in climate-significant investment between 2009 and 2019, percentage (USD PPP per capita)



Notes: UA = Unweighted Average
Source: OECD Subnational Government Climate Finance Database

Figure 1.5. Growth in climate-significant investment varies across levels of government

Total change in central and subnational government climate-significant investment between 2009 and 2019, USD PPP per capita (2015 dollars)



Notes: UA= Unweighted Average
Source: OECD Subnational Government Climate Finance Database

Growth in sustainable finance creates opportunities for subnational governments

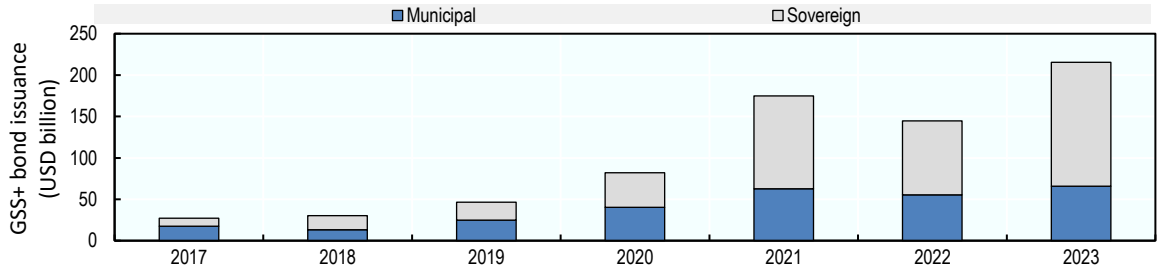
The global sustainable finance market has grown significantly in recent years, which provides a new source of finance to support sustainable investment.[4] Sustainable finance represents a potential source of diversification for financial investors, who can be guided by environmental reporting regulatory obligations and are actively seeking sustainable finance products (OECD, 2022[5]). In response to this demand, the market for green, social, sustainable and related (GSS+) bonds reached approximately USD 981 billion in annual issuances in 2023 (Environmental Finance, 2024[9]).[5] GSS+ bond issuances now represent approximately 5% of all global bond issuances (CBI, 2023[10]). Sustainable finance also plays an

increasingly important role in developing countries. In 2022, climate finance – particularly loans – mobilised by developed countries for developing countries reached USD 115.9 billion, a 44% increase from 2019 (OECD, 2024[11]).

Sustainable bond issuance by subnational governments grew five-fold between 2018 and 2023. In 2023, USD 65.7 billion of GSS+ bonds were issued by subnational governments (classified as 'municipal'), which increased from USD 13.3 billion in 2018 (Figure 1.6). Over the same period, the issuance of sovereign GSS+ bonds also increased by a multiple of five. Subnational governments in the United States are by far the most active issuers, followed by countries such as Japan, Sweden, Canada, Spain, Germany, and France (Brochado and Dougherty, 2024[12]).

Figure 1.6. Public sector issuance of sustainable bonds has increased rapidly

Annual sovereign and subnational GSS+ bond issuance (USD billion, nominal)

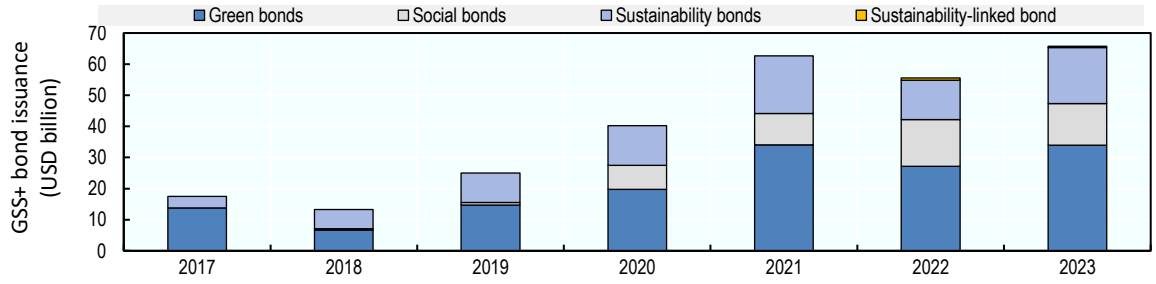


Source: Environmental Finance, Sustainable Bonds Insights from 2024, 2023, 2022, 2021, 2020 and 2019

Green bonds are the most common type of sustainable bond issued by subnational governments. In 2023, 52% of total GSS+ bonds issued in the municipal sector were green bonds, 20% were social bonds and 27% were sustainability bonds (Figure 1.7). Subnational governments also commenced issuing sustainability-linked bonds in 2022, although only 1% of GSS+ bonds issued in the municipal sector were of this category in 2023.

Figure 1.7. Almost half of GSS+ bonds were classified as green bonds

Annual municipal GSS+ bond issuance by bond classification (USD billion, nominal)



Source: Environmental Finance, Sustainable Bonds Insights from 2024, 2023, 2022, 2021, 2020 and 2019

Despite the rapid growth of the market, regional and local government sustainable bonds only account for a small share of the global sustainable bond market. While subnational governments are increasingly active in the sustainable bond market, there is room for further growth, subject to fiscal frameworks and debt stability. These governments currently account for 31% of public (sovereign and municipal) GSS+

bond issuances (6.7% of all GSS+ bond issuances); however, they undertake 69% of total climate-significant public investment (OECD, 2022[6]). Among all bond issuances by agencies and local governments, sustainable bonds constituted only around 10% (OECD, 2024[13]). Even in countries where subnational governments are allowed to issue bonds, the practice is not necessarily widespread, with the exception of countries including France, Japan, Canada, Australia, Sweden and the US.

Lack of adaptation to climate risks can increase subnational borrowing costs

Climate risk is becoming an important component in assessments of subnational governments' creditworthiness. Regions and cities are confronted with more severe and frequent climate hazards that represent higher financial risks for investors. Places that are the most vulnerable to climate risks can face greater issuance costs for long term bond issuance due to a lower credit rating. A study on US counties shows that a 1% increase in climate risk results in a 23.4 basis point increase in annual issuance costs for long-term bonds, translating to a USD 1.7 million extra cost for an average county (Painter, 2019[14]).

Specialised environmental, social and governance (ESG) ratings and credit ratings that consider climate risks are emerging. Rating initiatives, such as S&P Climate Credit Analytics, or Bloomberg ESG Financial Materiality Scores, help assess the vulnerability and adaptation of investors' portfolio to climate risks by considering governance mechanisms and policies for the management of nature-related risks. This supports investors in aligning their holdings of subnational government bonds with ESG investment principles. Specific ESG rating tools have emerged for municipalities, encouraging ESG disclosure and increasing transparency and accountability on information not found in typical municipal disclosures, such as the creation of sustainability plans with targets linked to KPIs and the disclosure of progress and outcomes for each reporting period (Marlowe, 2024[15]).

Enhancing sustainable investment in regions and cities

Given the significant need to meet climate and environmental objectives and the key role of subnational governments in this, there is a need to find ways to scale-up sustainable investment and better mobilise sustainable finance. This report outlines a framework for supporting regional and local governments to scale-up financing for sustainable investment (Table 1.1). Section 2 of this report examines the need to mobilise financial resources for sustainable investments and to improve access to finance for some subnational governments. Section 3 examines how to most effectively use available financial resources to maximise their benefits.

Table 1.1. Framework for financing sustainable investment by regional and local governments

Unlock targeted financial resources Mobilise financial resources at the subnational level to help meet climate objectives within fiscal frameworks		**Use financial resources effectively** Make the most of available financial resources to support the climate transition through effective investment	
Identifying relevant funding and financing instruments Identify funding and financing instruments that could support enhanced sustainable investment	**Supporting access to financial instruments** Ensure appropriate access to those financial instruments for sustainable investments	**Strategically allocating resources for long-term impact** Allocate financial resources towards the investments that most effectively support long-term climate and environmental objectives	**Ensuring efficient implementation of sustainable investments** Use financial resources effectively to deliver the planned investments for maximum impact
▪ Conventional funding and financing instruments ▪ Sustainable funding and financing instruments	▪ Fiscal rules and regulations ▪ Public financial management ▪ Financial intermediaries ▪ Guarantees ▪ Capital markets	▪ Data and indicators ▪ Strategic planning ▪ Project appraisal ▪ Green budgeting ▪ Vertical and horizontal co-ordination	▪ Stakeholder engagement ▪ Institutional capacity ▪ Green public procurement

Source: Author's elaboration, building on OECD (2023[16]) and G20-OECD (2022[17])

2 Unlocking resources for sustainable investment in regions and cities

Regional and local governments will need to mobilise both conventional and sustainable finance to meet sustainable investment needs. The cross-cutting and urgent nature of climate and environmental issues implies that various sources of finance will be needed. This means mobilising 'labelled' sustainable funding and financing instruments where appropriate, but also leveraging the wider budget of governments and more conventional funding and financing instruments (e.g., user charges, environmental taxes, unlabelled loans) (G20-OECD, 2022[17]). Increasing any form of subnational government revenue – or borrowing for investment – could potentially be directed to support climate action (OECD, 2022[5]).

Identifying relevant funding and financing instruments

Addressing the green infrastructure investment gap will require mobilising both 'funding' and 'financing' for investment at the subnational level. Funding – through sources such as transfers, taxes and user charges – is required to pay operational and maintenance costs of infrastructure, and to ultimately repay financing in the future. Financing is required to help spread the high up-front costs of investment over time, support inter-generational equity and increase the fiscal space for needed investments (G20-OECD, 2022[17]). While borrowing is often needed to help spread long-term costs of investments over time, governments also need to ensure that borrowing is used for high quality investments and is undertaken within fiscal limits. Crucially, in order to meaningfully close the investment gap, funding and financing efforts must ensure that climate-labelled investments provide additional resources rather than simply relabelling existing expenditures.

Funding instruments can provide additional revenue for sustainable investments

A wide range of funding instruments are available for sustainable investments. Funding instruments include grants and subsidies, taxes, user charges, asset revenues and land value capture instruments (OECD, 2021[18]). In 2021, 42.2% of subnational government revenue in OECD countries came from tax revenue (both shared and own source), 41.9% from grants and subsidies, 12.8% from user charges and 2.0% from property income (OECD, 2023[19]). As subnational budget resources vary widely from one country to the next, as do the degrees of autonomy over these sources, relevant instruments are often country specific; however, in general, diversifying sources of revenue can provide stability, predictability, and resilience to national and international economic fluctuations and other shocks.

The most common type of climate-related funding instruments for subnational governments in OECD and EU countries are earmarked grants and funds (OECD, 2022[20]). There are large variations in how constrained the use of these funds are. Several European countries rely heavily on European Union funds (in particular the EU Cohesion Fund and the Modernisation Fund) that are channelled through regional governments to encourage climate action at the subnational level. Some countries have also introduced environmental conditionalities in the allocation of grants and subsidies for infrastructure projects (e.g., Canada's Climate Lens Programme) (Box 2.1). Central or federated governments can also support

subnational climate action by establishing climate or green funds. Examples of green or climate funds that can be accessed by subnational governments exist in Canada, France, Germany and at the state level in Jalisco (Mexico) (Box 2.1) or California (United States), among other countries.

Box 2.1. Examples of climate-earmarked grants and funds

Canada Climate Lens Programme

Since 2018, the Canadian Climate Lens Programme is a federal initiative that integrates climate considerations into subnational public infrastructure investments via the federal and provincial grant system. Through this Programme, applicants to specific federal investment funding programmes (*Investing in Canada Infrastructure Program* and the *Disaster Mitigation and Adaptation Fund*) are required to assess the environmental footprint of their projects, in particular greenhouse gas (GHG) emissions and climate resilience.

To help applicants, Infrastructure Canada and Environment and Climate Change Canada have developed guidance documents and modules, as learning tools to help introduce GHG quantification and respective mitigation measures into investment design. These tools are updated regularly to remain aligned with advancing assessment methodologies. In parallel, the Federation of Canadian Municipalities also developed a free tool for municipalities to evaluate their emissions' reduction action. The costs incurred by municipalities and other applicants to conduct the Climate Lens can be partly covered by federal funding for federally approved projects.

Jalisco's Environment Fund

In the State of Jalisco (Mexico), the Ministry of Environment and Territorial Development (SEMADET) operates the Fund for Environmental Protection of the State of Jalisco (Fondo Estatal de Protección al Ambiente del Estado de Jalisco - FEPAJ). The FEPAJ is dedicated to finance local climate and environmental initiatives, including investment projects related to the improvement of public transport systems, improving air quality and prevention and restoration programmes for ecological balance.

The FEPAJ is funded by the state government's own revenue derived from the "Responsible Verification" program (aimed at limiting the circulation of polluting vehicles), fines and environmental procedures, and revenues from transportation companies. Between 2020 and 2023, the spending incurred by the fund amounted to 550 million Mexican pesos.

Source: Housing, Infrastructure and Communities Canada (2024[21]) *Investing in Canada Plan; Jalisco Gobierno del estado* (2024[22]), *Fondo Ambiental de Jalisco*

Other funding instruments include environmental taxation (including carbon taxes), user charges and fees, revenue from assets and land-value capture instruments specifically designed to generate revenues to be used towards investments in infrastructure. More complex instruments, such as carbon pricing, can be used to help cover climate investment needs by generating revenues while reducing emissions, although for the moment, they exist at the subnational level mostly in the United States (e.g., California), Canada and are at a pilot stage in China (OECD, 2023[2]). Sustainable funding instruments can be combined or chosen based on objectives and constraints specific to the project or to the issuing entity (Table 2.1).

Table 2.1. Selection of sustainable funding instruments to cover investment projects

Instrument	Description	Uses and benefits	Barriers to use
General capital grants with conditionalities linked to environment	General grants and subsidies conditioned to criteria that prevent from using the grant for projects unfavourable to climate.	▪ Ensure policy coherence across levels of governments and sectors. ▪ Require actions to be favourable to climate objectives.	▪ Allocation criteria can be complex and vary significantly among grants, hindering transparency. ▪ Cost of reporting and monitoring of the use of the grants. ▪ Rigid awarding criteria may adversely impact territorial innovation. ▪ The time required for payment transfers may force subnational governments to pre-finance projects.
Earmarked capital grants with conditionalities linked to environment	Earmarked grants and subsidies are a vehicle for supra-national, national and state governments to influence subnational spending and investment towards climate priorities. (e.g., energy funds, transportation funds).	▪ Ensure policy coherence across levels of governments and sectors, to pursue climate objectives that are country-specific (e.g., afforestation, transition to renewable energy, etc). ▪ Tackle social, economic and territorial inequalities related to climate change.	▪ Heavy administrative burdens related to complex allocation criteria, cost of reporting and monitoring. ▪ Potential competition between subnational governments (in some cases). ▪ Rigid awarding criteria may adversely impact territorial innovation. ▪ The time required for payment transfers may force subnational governments to pre-finance projects.
Earmarked capital grants to environment and climate	Earmarked grants and subsidies are a vehicle for supra-national, national and state governments to influence subnational spending and investment towards environmental and climate priorities. (e.g. climate funds, green funds).	▪ Ensure policy coherence across levels of governments and sectors, to pursue climate objectives that are country-specific (e.g. afforestation, transition to renewable energy, etc). ▪ Tackle social, economic and territorial inequalities related to climate change.	▪ Allocation criteria can be complex and vary significantly among grants, hindering transparency. ▪ The time required for payment transfers may force subnational governments to pre-finance projects.
Environmental taxation	Taxes that specifically target environmental protection. They can be classified into four broad sectors: energy (e.g. carbon taxes, tax on electricity, etc.), transport (cars sales/registration taxes), pollution taxes and taxes on water abstraction and resources extraction.	▪ Foster green practices, providing incentives to invest in green, low-carbon infrastructure. ▪ Eliminate “anti-green” bias of former taxes, reducing inefficient subsidies and distortionary taxation. ▪ Changing behaviours (e.g., more sustainable urban development patterns with the property tax, etc).	▪ By contributing to GHG emission reduction or climate adaptation, environmental taxes may have the paradoxical effect of reducing revenues. ▪ Reliant on subnational governments’ taxation powers (ability to modify tax rates and bases), which are often limited. ▪ Acceptance by taxpayers (business, citizens).
Taxes earmarked to fund green investment	Taxes that are specifically designed to generate revenues to be used towards investments in infrastructure and services in a specific sector (e.g., tourist taxes, mobility/transport taxes)	▪ Create a visible link between taxation and expenditure. ▪ Increase public acceptance of new taxes.	▪ May restrain the ability of subnational governments to allocate revenue to the most productive priorities as part of overall budgeting processes.
Environmental user charges and fees	User charges and fees with a climate and environmental lens include congestion charges, parking fees, high occupancy toll lanes, water and wastewater user fees, urban tolls or utility fees.	▪ User charges that are time- and place-contingent can price externalities more efficiently. ▪ Substitute for tax revenue when they phase out (e.g. road user charges to replace fossil fuel taxes).	▪ Legal ability of subnational governments to create and determine the level of the fees. ▪ Users’ capacity and willingness to pay. ▪ Capacity to administer, collect and manage the fees.
Revenue from assets	Subnational revenue from land and other non-financial assets, such as subsoil assets (e.g., land leasing, royalties from natural resource exploitation).	▪ Create revenue from existing assets by supporting their productive use.	▪ Capacity to administer, collect and manage the revenue. ▪ Strong regulatory and institutional frameworks are required. ▪ May reduce public control over land and assets, which can result in inefficiencies and reduce equity and accessibility.

Instrument	Description	Uses and benefits	Barriers to use
Land value capture instruments	Policies that allow public authorities to recover some of the increases in private land value that result from government actions, such as the infrastructure provision or the alteration of land use regulations	▪ Reclaim gains from investments or changes in land regulations through land value capture instruments. ▪ Make provisions up-front so that funding is put aside for future maintenance interventions.	▪ Need of adequate legal framework on land use, consistent regulations, functioning land markets, secure property rights and government capacity. ▪ Difficulty of quantifying the incremental value generated by public interventions. ▪ Need to strike the right balance between capturing a fair value and providing incentives for private sector market participation in development.

Source: (OECD, 2023[16]; OECD, 2022[5]) (OECD, 2023[2]) (G20-OECD, 2022[17])

Sustainable finance instruments could be further mobilised by subnational governments

Financing instruments that may be available to subnational governments include loans from official or private sector institutions or bonds issued directly or indirectly on domestic or international capital markets. In many countries, loans are the most common form of finance for subnational governments, while bonds are more frequently used with larger and more creditworthy governments in countries with a well-established subnational bond market, as is the case in Canada, China, India, Japan, Korea, Germany, Sweden and the United States (OECD, 2021[18]).

The emerging use of sustainable financing instruments may provide an opportunity for regional and local governments to access alternate sources of finance for investment. Indeed, much of the infrastructure that subnational governments provide – in sectors such as water, wastewater, waste, green public buildings and public transport – are well aligned with sustainable finance taxonomies (OECD, 2022[6]; OECD, 2023[16]). This means that regional and local governments could potentially harness a range of sustainable financing instruments for their investments, subject to fiscal frameworks and debt stability.

A wide range of sustainable financing instruments could be mobilised by regional and local governments. Subnational governments may be able to access sustainable loans from public or private finance institutions, particularly adapted for smaller borrowing amounts. Where subnational governments can access capital markets, they may also look to issue GSS+ bonds for sustainable investment programmes by considering the benefits and potential barriers to use (Table 2.2). Subnational governments can also innovate in the types of bonds that they issue. In Sweden, the City of Helsingborg issued the first city's Sustainability-Linked Bond (SLB) in 2022 (OECD, 2023[16]). The City's bond was linked to returns on moving towards a target of net-zero greenhouse gas emissions by 2035. It includes a Key Performance Indicator that links the premiums paid by the city to the achievement of GHG emissions.

Table 2.2. Selection of sustainable financing instruments that can be used for investment projects

Instrument	Description	Uses and benefits	Barriers to use
Green, social and sustainable (GSS) loans	GSS loans are granted via financial institutions, earmarked to finance specific projects (eligibility criteria determined by the Green Loan Principles, or similar).	▪ Can be used to finance small-size to medium-sized investments and for SNGs who cannot access capital markets. ▪ Can be matched to a GSS bond issuance, or to grants, through blended finance mechanisms.	▪ Requires enabling framework at the national level. ▪ Can only be used for certain purposes. ▪ Requires additional reporting.
Green, social and sustainable (GSS) bonds	GSS bonds are subnational bonds whose proceeds are earmarked towards defined green, social and sustainable projects (eligibility criteria determined by the Green Bond Principles).	▪ Similar to "GSS loans". ▪ Enhanced transparency on the use of proceeds and impact of investments. .	▪ Similar to "GSS loans". ▪ Can only be used for certain purposes. ▪ Require additional expertise for issuing, reporting and auditing, and co-ordination for identifying suitable projects.

Instrument	Description	Uses and benefits	Barriers to use
Sustainability-linked bonds (SLBs)	SLBs are subnational bonds whose proceeds are linked to the achievement of specific, predefined objectives (Sustainability Performance Targets or Key Performance Indicators).	▪ Proceeds are available for general purposes, which provides SNGs with more budget flexibility. ▪ Potential to align financing with long-term policy objectives while providing budget flexibility and reducing compliance costs for subnational governments.	▪ Require specific expertise for monitoring the key performance indicators. ▪ Require well-designed targets and penalties to be effective. ▪ Lower transparency of the use of the proceeds.
Catastrophe bonds	Catastrophe bonds are insurance-linked securities that allow the issuer to get proceeds from the capital market only if a catastrophic condition occurs. Those bonds can align with green, social, and sustainability bonds when structured appropriately and, thus, be considered a climate resilience instrument[6].	▪ SNGs can transfer defined risks from catastrophic events off their balance sheet to manage exposure. ▪ Provides an alternative form of insurance against future risks, such as hurricanes, floods, bushfires or earthquakes.	▪ High transaction costs due to its complexity. ▪ "Niche" investor base. ▪ As a result, catastrophe bonds have most commonly been issued by national or state governments.

Source: (OECD, 2023[16]; OECD, 2022[5])

Potential benefits of harnessing sustainable finance include a potential 'greenium', improved alignment of investments and sustainability objectives and increased transparency. One of the potential benefits of sustainable finance is that it might provide a more affordable form of finance as compared to conventional finance (the 'greenium'). While evidence of this is mixed [7], a greenium does seem to exist in some contexts, such as in developing countries (Ando et al., 2022[23]; OECD, 2023[16]). Other benefits can include the demonstration of GSS-related policy actions to stakeholders, increased transparency, and better alignment of investments with policy priorities (OECD, 2023[16]). Furthermore, using sustainable loans or bonds helps to publicly demonstrate the environment and climate impacts of their investments.

Regional and local governments weigh benefits of sustainable finance against specific challenges of these instruments. One potential explanation for lower use of sustainable finance instruments than conventional instruments is that earmarking through the 'use of proceeds' can reduce budget flexibility, which might make subnational government budgets more complex to manage (OECD, 2023[16]). Sustainable instruments may also not cover the entire capital works budget of a government entity, meaning that multiple sources of financing are needed (e.g., a separate smaller municipal bond issuance for non-sustainable investments). Other factors that may affect uptake include requirements for internal co-ordination and costs associated with the issuance, management and reporting (OECD, 2023[16]). Regional and local governments also need to ensure financial instruments are mobilised within the limits set by fiscal frameworks.

Subnational governments' use of sustainable finance could be supported by tailoring instruments to the needs and constraints of local and regional governments. This can include defining standardised sustainable finance criteria that can be integrated into subnational investment plans. Higher government levels and international financial institutions, such as multilateral development banks, can also provide incentives to local and regional governments for using green financial products. This can include technical assistance, financial incentives, pooled financing mechanisms, or credit enhancing instruments (e.g., guarantees). In India, a federal incentive scheme by the Ministry of Housing and Urban Affairs provides INR 10 Cr[8] in grants per 100 Cr of bonds issued by a municipal government, supporting municipal bond issuance (Box 2.2). The use of such instruments can also support de-risking and make bonds issued by subnational governments more appealing to investors (OECD, 2023[16]).

Box 2.2. Federal incentives to support municipal government bond issuance in India

The Indian Ministry of Housing and Urban Affairs Government set up an incentive scheme to support municipal bonds and green bonds issuance through the Atal Mission for Rejuvenation and Urban Transmission programmes (AMRUT and AMRUT 2.0), launched with the objectives or making Indian cities resilient and water secure.

According to the scheme, 20 Urban Local Bodies (ULB) were eligible (on a "first come, first served basis") to receive an incentive of Rs. 10 Cr per every Rs. 100 Cr of bonds issued, subject to a limit of Rs. 20 Cr per ULB. For issuers that have already issued a municipal bond, the subsequent bond issuance has to meet the definition of green bonds according to India's Security and Exchange Board (SEBI).

The Vadodara Municipal Corporation (VMC), in the state of Gujarat (India), benefited from this incentive scheme in 2022 when it issued a municipal bond in the framework of the AMRUT, receiving an incentive of 13 Cr in grants per its 100 Cr bond issuance. Following this first experience, the VMC issued the first green municipal bond at the country level in early 2024, worth Rs 100 Cr, at a 7.90% rate. The bond is aimed at complementing a contribution of Rs 620.60 Cr, dedicated to a total of 47 projects worth Rs 1,220.53 Cr approved under the AMRUT 2.0 programme.

Since then, other ULBs in India have engaged in municipal green bonds issuances, such as Surat Municipal Corporation and Ahmedabad.

Source: OECD (2023[16]) *Financing Cities of Tomorrow: G20/OECD Report for the G20 Infrastructure Working Group under the Indian Presidency*, https://doi.org/10.1787/51bd124a-en ;Retail Research (2023[24]) *Indore Municipal Corporation – Green*

While sustainable finance can support regional and local government investment, these instruments will generally not extend the borrowing capacity of subnational governments to support higher amounts of investment. Sustainable finance does not overcome basic limitations on regional and local government access to finance. Sustainable loans and bonds remain restrictive financial instruments for subnational governments, whose use is limited by borrowing rules that still apply, as well as sound fiscal health and creditworthiness considerations. Therefore, in addition to unlocking financing at the subnational level, it may be relevant to ensure subnational governments have sufficient fiscal space to meet their sustainable investment needs within a country's fiscal framework, including by ensuring sufficient access to revenue and appropriate borrowing limits. Beyond this, it is crucial to optimise the use of available proceeds from these instruments (G20-OECD, 2022[17]; OECD, 2022[5]) (see Section 3).

Enabling subnational government to access funding and financing

Creating an enabling environment requires ensuring sufficient access to funding and financing for investment and building long-term creditworthiness. An enabling environment depends on a country's fiscal and regulatory frameworks, subnational institutional capacity, co-ordination and cooperation across levels of governments and the availability of domestic capital markets and financial institutions, such as national, subnational and multilateral development banks (G20-OECD, 2022[17]) (see Box 2.2).

Fiscal and regulatory frameworks create the overarching parameters and rules that shape regional and local government borrowing (G20-OECD, 2022[17]). These frameworks define expenditure and investment responsibilities (including for infrastructure provision), public financial management practices, assignments of revenues (often according to the "matching principle" to avoid under or unfunded mandates) and the use of financing instruments (loans, bonds, etc.). Fiscal frameworks have a direct impact on subnational

government creditworthiness and their ability to access and affordably borrow from financial markets. Fiscal frameworks aim to provide sufficient ability for subnational governments to raise sufficient funding (e.g., through tax revenue or user charges) for the full costs of service provision and other current expenditure, while avoiding fiscal risks.

Effective fiscal and regulatory frameworks seek to enable and support subnational investment, while also managing risks associated with subnational government debt. In most countries, a level of subnational government borrowing is considered appropriate given subnational investment responsibilities (IMF, 2020[25]). To prevent excessive borrowing that can pose a risk to macro-economic stability, rules are often put in place to limit subnational government borrowing. In particular, most countries in the OECD, and globally, have a 'golden rule' that limits subnational governments – and particularly local governments – to use borrowing for investment purposes (OECD/UCLG, 2022[26]).

Public financial management, which refers to the systems and processes in place to manage resources, is essential to strengthen local and regional governments' access to finance for infrastructure investment. Public financial management can support subnational governments to use financial resources effectively and produce high returns on those resources, even in a constrained fiscal environment and in a global context where successive shocks require permanent adjustments in spending (G20-OECD, 2022[17]). Effective financial management also requires subnational governments to have skilled human resources and the technical and managerial capacity to manage financial resources and comply with public financial management regulations and rules.

One common way to improve access to finance for subnational governments is through the establishment of financial intermediaries for subnational governments. National or subnational governments can create intermediaries using a wide range of structures and approaches. In general, financial intermediaries issue bonds on capital markets or borrow from other lenders and then lend on to subnational governments. Lending from these institutions is typically on better terms than would have otherwise been available to a subnational government because these financial intermediaries understand the risk profile of subnational governments and investment risk is pooled. Examples of financial intermediaries can include state or municipal bond banks, national infrastructure banks, treasury corporations, regional development banks and local government financing agencies. In Japan, for example, the Japan Finance Organisation for Municipalities (JFM) was established as a joint funding organisation for municipalities, which is able to raise funds in the capital market at more favourable terms than individual municipalities, owing to factors such as its economies of scale and higher credit rating.

Guarantees can also play a role in helping subnational governments access funding, but they need to be carefully managed to avoid unnecessary risks to the guarantor. Small revenue bases and less revenue diversification can mean subnational governments struggle to access financing as they are perceived as riskier borrowers compared to the central government. Guarantees, which are typically provided by central governments, development banks or international organisations, may help to mitigate risks for investors by ensuring that they are covered by the guarantor in the event of a default. Nevertheless, the issuance of guarantees should be guided by a transparent and robust credit assessment framework and the establishment of ceilings or exposure limits to ensure prudent fiscal risk management at the central level.

The development of local capital markets has a key role in subnational governments' access to sustainable loans and bonds. In many countries, in particular developing economies, one of the key constraints for subnational governments to access affordable finance is the availability and depth of local-currency bond markets (OECD/UNCDF, 2020[27]). Investors, including insurance providers or pension funds, can be reluctant to invest in countries with a limited history of local currency bond issuances due to unfamiliarity with the credit risk and lack of reliable pricing stemming from illiquid benchmark bonds. Meanwhile, issuing debt in foreign currency exposes the issuer to exchange rate risk, as their revenues are denominated in local currency while their liabilities are in foreign currency. Hence, improving the depth of local currency

debt markets and supporting instruments to reduce currency exchange risk has an important role in improving access to finance for subnational governments.

Green bond taxonomies and guidelines can support the development of a market for sustainable finance. The adoption of GSS+ bond issuance taxonomies and specific instruments can provide clarity to investors on the products that they are purchasing (OECD, 2023[16]). In Japan, for example, the development of the GSS+ bond issuances was supported by green bond guidelines that aligned with international taxonomies, alongside other finance mechanisms (Box 2.3).

Box 2.3. The growth of SDG bond issuances by Japanese local governments

Since the Tokyo Metropolitan Government issued the first 'social bond' in 2017, Japanese local governments have increasingly turned to the bond market to fund initiatives aligned with the Sustainable Development Goals (SDGs). By December 2024, 21 out of 47 prefectures and 13 municipalities had issued these bonds, reflecting a significant increase in both the volume of issuances and the number of participating issuers (Figure 2.1, panel a).

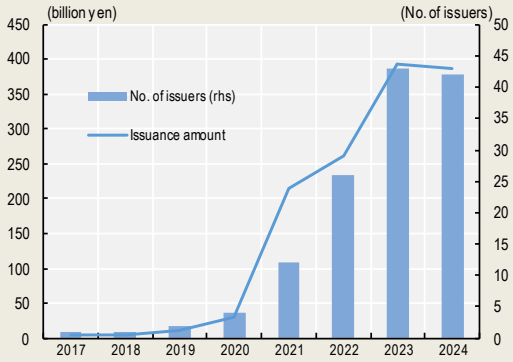
This growth has been driven by various government-led initiatives aimed at promoting environmentally and socially responsible investment. The introduction of Japan's Stewardship Code in 2014 and the Corporate Governance Code in 2015, along with their subsequent revisions, established principles for institutional investors to act as responsible stewards of finance, with a focus on sustainable growth. The Green Bond Guidelines, published in 2017, further enhanced the investment landscape by adapting internationally recognised principles to the Japanese context. Additionally, the Bank of Japan's 2021 funds-supplying operations for climate change provided further momentum by encouraging financial institutions to invest in climate-friendly projects, thereby deepening the capital market.

Local governments have also diversified their financing methods to improve access to capital. For example, several municipalities have issued mini-bonds targeted at retail investors, which not only broaden the funding base but also raise public awareness of the local government’s sustainable development initiatives. Additionally, many local governments have participated in a pooled bond issuance scheme, enabling those with smaller funding needs to access the bond market while reducing administrative costs by sharing a common document that outlines adherence to green bond principles for all participating entities. Furthermore, local governments also indirectly access the bond market through loans from the Japan Finance Organization for Municipalities (JFM), a local government-funded organisation that raises capital by issuing bonds under its Green Bond Framework.

Market conditions have also been favourable for bond issuance. Many issuers have enjoyed a modest premium, known as a "greenium," over conventional bonds, averaging around 1 basis point (bps) in recent years and occasionally reaching 2 bps. However, there has been considerable variability, with some bonds issued at a discount (Figure 2.1, panel b). Given the recent growth of the market, this "greenium" likely reflects strong investor demand for these bonds, although it remains uncertain whether these favourable conditions will persist as the supply of such bonds increases.

Figure 2.1. ESG bond issuance by local governments in Japan

(a) Volume and number of issuers



(b) Estimates of the 'greenium'

units: %

	2021	2022	2023	2024
Mean	-0.003	0.008	-0.009	-0.006
S.d.	0.009	0.032	0.044	0.009
25%	-0.010	-0.009	-0.018	-0.010
50%	-0.001	-0.003	-0.008	-0.006
75%	0.001	0.012	0.000	-0.001
N	9	21	36	35

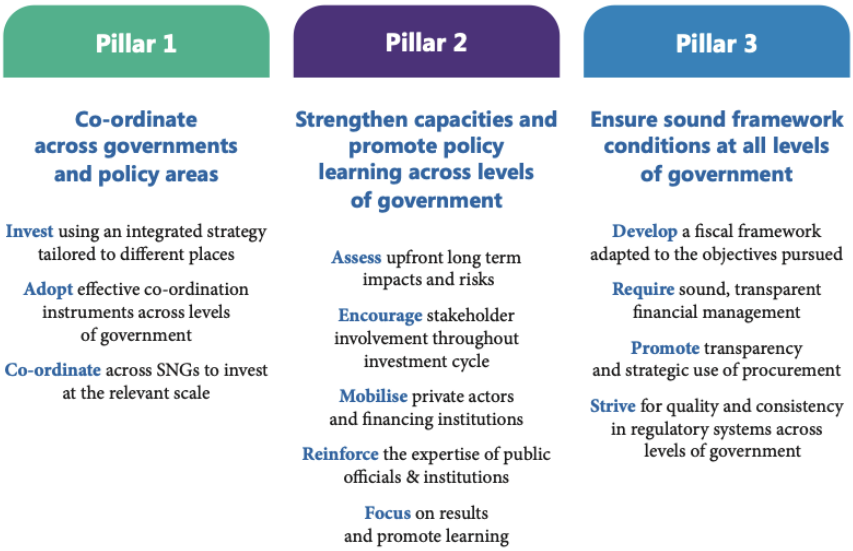
Note: The 'greenium' was estimated by matching ESG bonds with 2 conventional bonds with the closest maturity (less than 2 years in absolute difference) that have been issued from the same issuer with the same currency, bond structure, and coupon type. In line with (Zerbib, 2019[28]), the eligible conventional bonds are restricted to those with (i) an issuance amount greater than one-quarter and less than four times the green bond's issuance amount and, (ii) with an issue date that is, at most, six years earlier or six years later than the green bond's issue date to account for difference in liquidity. The synthetic conventional bond yield is calculated by linear interpolation or extrapolation of the yields of the 2 conventional bondsat the maturity date of the ESG bond. The 'greenium' is calculated as the yield spread between the ESG bond and the synthetic conventional bond. Among the 131 bonds issued between Jan. 2021 and Dec. 2024, 101 bonds were eligible for the analysis.

Source: Japan Exchange Group, Japan Local Government Bond Association, Japan Securities Dealers Association

3 Scaling-up sustainable public investment in regions and cities

Unlocking additional financial resources for sustainable investment is not always possible or sufficient – so any available financial resources also need to be used effectively. This requires strategically allocating resources to have the highest long-term benefit for climate and environmental objectives. The OECD Recommendation on Effective Public Investment Across Levels of Government (the Recommendation) outlines the importance of effectively managing public investment at both national and subnational levels of government (Figure 3.1). The Recommendation is used in this paper to highlight key elements to support effective public investment for sustainability objectives.

Figure 3.1. Principles for action of the OECD Recommendation on Effective Public Investment Across Levels of Government



Source: OECD Recommendation on Effective Public Investment Across Levels of Government

Strategically allocating resources for long-term impact

Available financial resources need to be strategically allocated toward the most impactful sustainability investments. Taking a holistic and systemic view of future infrastructure needs is essential for creating sustainable regions. This requires understanding existing infrastructure systems and how these can be adapted or supplemented to support climate mitigation and adaptation. Four key elements of this include developing data and indicators to inform investment strategies, strategically planning future infrastructure

and land use, prioritising the future use of resources through budgeting processes, and enhancing vertical and horizontal co-ordination.

Data on climate risks, assets and financial flows is essential to inform investment decisions

Developing sustainability indicators for climate risks, assets and financial flows, and enhancing the availability and use of those indicators, can help to improve decision-making. In line with Principle 1 of the Recommendation, there is a need to support the production of data at the relevant scale to inform investment strategies and produce evidence for decision-making. Data and indicators are required to highlight the main sources of greenhouse gas emissions in regions so that these can be mitigated by future investments. Similarly, to support climate adaptation, there is a need to understand future risks created by extreme weather events. Data can also be used to better track investment and finance flows to progress for meeting green objectives.

Enhancing the availability of climate finance data can enable local and regional governments to better estimate the investment gap they face to implement their climate adaptation and mitigation objectives. Many countries categorise their spending and investment using the classifications systems, such as the Classification of Functions of Government (COFOG) developed in the framework of the International System of National Accounts; however, classification systems can fails to grasp cross-cutting issues such as resilience and sustainability, at a time when demand for information and data on government expenditure related to climate and the environment to inform policy-making and investment decisions has increased. As a result, several initiatives are underway to improve the availability and quality of data on public investment related to climate and the environment at the national (e.g., Jamaica, Chile), subnational (e.g. Colombia, France, Mexico, the Netherlands) or international level (e.g., OECD-EC project, see Box 3.1).

Box 3.1. OECD-EC project on enhancing the tracking of regional and local government climate finance

In 2022, the OECD developed a pilot methodology to track subnational government climate expenditure and investment in the framework of a project in collaboration with the European Commission DG REGIO. The OECD methodology relies on data from the National Accounts database, more specifically from the “Government expenditure by function” dataset (COFOG data).

While this unique methodology provides a standardised estimate for a few countries and represents great progress, it remains imperfect due to data unavailability for COFOG in many countries and because it does not allow for the inclusion of other non-financial environment and climate indicators. In addition, there is a broad consensus that the COFOG, which is more than 20 years old, is no longer fit for the purpose, especially with respect to cross-cutting issues of special and increasing interest to policymakers in the environmental field, for example climate, biodiversity, integrated water management, and the circular economy.

The issue was raised by the G20 “Data Gaps Initiatives” (DGI), which aims to assess the data gap that exists and limits governments’ ability to act in several policy areas, including climate change and the digital transition. This initiative called for organisations such as the IMF to improve data availability and provision on several related policy areas (e.g., Recommendation 7 stresses the need for estimates of current and capital expenditure on domestic and national climate change mitigation and adaption).

Several COFOG revisions are currently being discussed, involving relevant users and producers, and organisations such as the United Nations Statistics Division, the Interamerican Development Bank, the

OECD, Eurostat and the IMF. The OECD co-organised a side-event on this topic on the OECD COP28 Virtual Pavilion in December 2023, that featured presentations from the OECD, the Inter-American Development Bank and the International Monetary Fund on this topic.

Source: OECD (2022[6]) *Subnational Government Climate Expenditure and Revenue Tracking in OECD and EU countries,* https://doi.org/10.1787/1e8016d4-en.

Holistic strategic planning is essential to maximise impact from limited resources

Subnational governments need to use their mandate over strategic planning to facilitate sustainable development by prioritising strategic investments. Local and regional strategies and plans (e.g., land-use decisions, development control) should leverage available data to assess the most effective pathways for reducing long-term greenhouse gas emissions and specific investments to support this. They can also consider non-infrastructure solutions, such as demand management and nature-based solutions (OECD, 2024[3]). Overall, regional development strategies and investment plans should be based on an assessment of regional (or local) characteristics, competitive advantages, growth, innovation, job creation potential and considerations of equity and environmental sustainability. In Scotland, for example, the masterplan of the Metropolitan Glasgow Strategic Drainage Partnership had an objective of "habitat improvement" coupled with a guiding principle of "urban biodiversity enhancement" that took a holistic view and supported nature-based solutions as an important complement to traditional grey infrastructure approaches (OECD, 2021[29]).

Subnational governments should develop strategies and plans that incorporate green objectives and are aligned with financial planning strategies to support an effective allocation of resources. Subnational governments can take the lead in setting climate objectives. In Spain, for instance, the Andalusian Climate Plan (PAAC) sets out regional objectives to reduce GHG emissions from mobility between 30% and 43% by 2030 compared to 2018 (OECD, 2023[30]). Subnational governments' climate action plans can help prioritise future sustainability investments. But strategies and plans are not enough – plans should be accompanied by funding to ensure long-term objectives are realised. In the US, among 50 of the country's largest cities, only eight have climate action implementation plans that clearly identify detailed funding sources or financing approaches (Brookings, 2022[31]).

Box 3.2. Denver's Five-Year Plan for its Climate Protection Fund

In 2020, the City of Denver (United States) created a Climate Protection Fund, along with a detailed Five-Year Plan, elaborated by the City's Office of Climate Action, Sustainability and Resiliency to guide the fund's implementation. The Plan, available in English and Spanish, details the financial outlook over five years. Based on revenue raised by an additional 0.25% sales tax - specifically created for the Fund – the Department of Finance foresees an annual budget of USD 40 million.

The Plan also gives information on the allocation of the funds, aimed primarily at financing programs to reduce greenhouse gas emissions, reduce air pollution and adapt to climate change. It identifies six "allowable use categories," ranging from "investments in solar power and other renewable energy technology" to "neighbourhood-based environmental and climate justice programs." In early years, large-scale projects that can achieve a high level of GHG emissions reductions may be prioritized, with the objective to grow the Fund over time.

Source: Brookings (2022[31]), Not according to plan: exploring gaps in city climate planning and the need for regional action; Office of Climate Action, Sustainability (2021[32]), Climate protection fund five-year plan.

Potential public investment projects should be assessed to understand long-term benefits, risks and costs for sustainable development. Investment appraisal processes are essential to examine whether projects identified at a strategic level are likely to achieve net-zero targets and at what risks. Comprehensive and long-term assessments should be undertaken to clarify investment goals, help identify social, environmental and economic impacts, and investigate which investment method and financing instrument is likely to yield the best value for money.

Green budgeting can better allocate financial resources towards sustainable objectives

Budgeting processes are emerging at the subnational level to allocate financial resources towards investments that have the highest potential sustainability impact. Investments should be identified based on an assessment of their potential benefits and costs, in a process that considers the potential contribution of an investment to achieving climate and environmental targets. Green budgeting processes can help to ensure these are properly considered in investment processes (Box 3.3) and can be linked with GSS bond issuances.

Priority-based practices such as green budgeting can also unlock access to external finance such as green loans and bonds. Green budgeting can be an effective tool to with public or private financial institutions that provide sustainable development funds and green bonds issuers. Green budget tagging, for example, can be used to select expenditure items to be funded using green bonds and green loans, as has been done by the Autonomous Community of Andalusia. The methodology allows the region to measure the amount of expenditure within each budget programme with a positive climate, environment, or social impact and, therefore, the expenditure items to be funded (OECD, 2022[5]).

Box 3.3. Mobilising green budgeting to better prioritise green investment projects

Subnational green budgeting has emerged in recent decades, regional and local levels. These initiatives can be referred to as “green budgeting”, based on a broad definition of the term as “using the tools of budgetary policymaking to help achieve environmental and climate objectives” (OECD, 2020[33]). Behind this definition, green budgeting encompasses a variety of environmentally-related budgeting practices including carbon budgets, ecoBudgets, climate budgets, environmental and climate impact analyses, green budget tagging and more.

Fully incorporating environmental and climate concerns into the budgetary process can play a pivotal role in better prioritising green investment projects. To make the most out of green budgeting for driving green investment, green budgeting can be combined with other means of government action (e.g. regulation, green public procurement, environmental planning) and aligned with a regional/local climate strategy. To support the implementation of green budgeting practices by subnational governments, the OECD developed six guidelines for subnational governments, accompanied by a self-assessment tool, to apply when developing their green budgeting practices.

Note: The OECD Guidelines and Self-Assessment Tool (in Excel format) are available on the Subnational Government Climate Finance Hub : https://www.oecd.org/regional/sngclimatefinancehub.htm
Source: (OECD, 2022[5])

Co-ordination is required to prioritise and deliver green investments at the right scale

Effective co-ordination across and among levels of governments is required to achieve sustainability benefits from public investment and minimise competition for resources. Investment policies are particularly complex, involving all levels of government and various types of stakeholders, making their

effective implementation challenging. Co-ordination can help to identify investment opportunities and bottlenecks, manage joint policy competencies, minimise the potential for investments to work at cross-purposes, ensure adequate resources and create trust among actors.

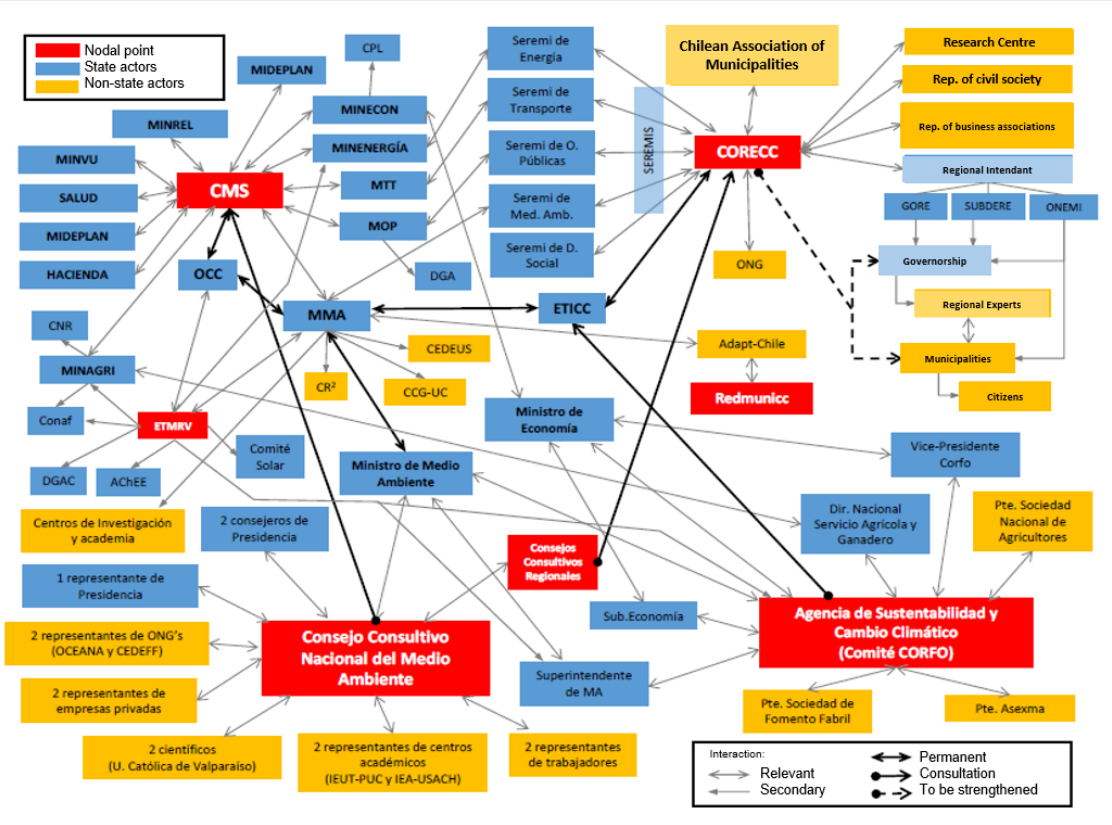
Given the global scale of climate change, vertical and horizontal co-ordination are required to align regional climate with global targets and limit inefficient competition between jurisdictions. In Chile, for example, the government has established Regional Climate Change Committees to coordinate climate action (Box 3.4). Contract agreements between national and subnational governments are another example of a vertical co-ordination mechanism to help foster place-based, well-co-ordinated and long-term action for reaching climate objectives (e.g., Netherlands Climate Adaptation Incentive Scheme). Horizontal co-ordination between jurisdictions is also essential to manage the risk of strict emissions controls in one jurisdiction resulting in the dislocation of carbon emissions to other jurisdictions.

Box 3.4. Enhancing multi-level governance to address climate change in Chile

In 2022, Chile enacted its Climate Change Framework Law, setting a goal to achieve net zero emissions by 2050. This law marked a significant shift in policymaking, moving from a centralised to a decentralised approach by redistributing responsibilities across various ministries, as well as regional and municipal authorities.

At the subnational level, Regional Climate Change Committees (CORECC) were established to coordinate regional efforts in implementing climate policies. Their responsibilities were shaped by an institutional mapping exercise aimed at identifying gaps in the multi-level governance framework. This exercise mapped the roles and relationships of key institutions, including those from the public and private sectors, academia and civil society. It highlighted a gap in co-ordination between the CORECC, municipalities, and governorships (Figure 3.2). In response, technical assistance initiatives were introduced and the CORECC's action framework was strengthened to enhance local participation in policymaking, as formalised in the 2022 framework law.

Figure 3.2. Climate Change Governance Actor Map in Chile



Note: The institutional map identifies nodes (red) which convene multiple actors, state-actors (blue) and non-state actors (yellow). The arrows identify the relationship between actors, where "relevant interaction" illustrates relationships among actors of a node; "secondary interaction" is the relationship between actors that offer inputs, knowledge and vital information to an important state actor, "permanent interaction" are relationships that provide an exchange of information among actors that are a part of the different governance process; "consultation" is an advisory relationship; and :"interactions to be strengthened" identify relationships that need to be strengthened through rules, regulations and or training.

Source: Adapt Chile (2019[34]) *Multi-Level Governance and Climate Actions: Institutional Mapping of Chile*; Harris, Muller and Woods (2019[35]), *Climate action in Chile: Towards multi-level governance*

Ensuring efficient implementation of sustainable investments

Using resources effectively to achieve planned investment benefits is essential for having a long-term impact on climate and environmental objectives. While there are many elements to supporting effective public investment, some key elements include effective stakeholder engagement, reinforcing public sector capacity, promoting transparency and strategic use of public procurement.

Stakeholder engagement helps gain buy-in for sustainable investments

Engaging public, private sector and civil society stakeholders in the design and implementation of sustainable investments can enhance their social and economic value and ensure accountability. Achieving benefits from public investment requires ensuring that local stakeholders are positively engaged. Investments that seek to mitigate or adapt to climate change may be unpopular with some local

communities, which can risk their implementation. In line with Principle 5 of the Recommendation, all levels of government should be involved in investment projects throughout the investment cycle. The Portuguese Strategic Environmental Assessment (SEA), for example, is an instrument that systematically analyses the significant environmental effects of plans, programmes and policies during the drafting process and before they are approved (OECD, 2019[36]). Its general objective is to help environmental integration and the evaluation of opportunities and risks of actions in the context of sustainable development and allows stakeholders to evaluate and compare alternative development options, while these are still in the design phase. Another example is the city of Melbourne, Australia, which has actively engaged with the community throughout the lifecycle of its urban forestry program (see Box 3.5).

Box 3.5. Citizen engagement for green infrastructure in Melbourne

The City of Melbourne, Australia, launched its Urban Forest Strategy 2012-32 with the aim of creating a resilient urban forest to address the impacts of climate change. The strategy's key objectives include increasing tree canopy cover, improving soil moisture and promoting biodiversity.

From the outset, community engagement has been central to the strategy's implementation. Recognising the need to involve a broad range of stakeholders throughout the project's lifecycle, the city conducted extensive community consultations and has maintained ongoing engagement activities. For example, during the consultation phase between November 2011 and April 2012, the city held multiple community meetings, developed an online consultation platform, distributed an explanatory video and released over 30 media articles. A design competition was also held to generate ideas for promotional materials.

Ongoing engagement is facilitated through the Urban Forest Visual platform, where residents can report issues such as tree damage on an online map. Interestingly, this platform was developed as a vehicle for people to express their connection with particular trees. The city has further nurtured public awareness of urban forestry challenges through its Citizen Forester Program**,** which trains residents in tree care and urban forest management. Through continuous collaboration with its citizens, Melbourne has successfully developed tailored urban forest plans for each of its 10 precincts, ensuring community input remains integral to the city's green transformation.

Source: City of Melbourne (n.d.[37]) *Urban Forest Strategy - Making a Great City Greener 2012-2032*; Bush (2017[38]), *Cooling cities with green space: policy perspectives*

Sustainable investment can require new public sector capabilities

Delivering sustainable investment can require reinforcing the expertise of public officials and institutions. In line with Principle 7 of the Recommendation, human resources management, as well as cultivating knowledge and relationships, are essential. Specific skills related to sustainable investment should be developed, including assessing potential greenhouse gas emission pathways, undertaking sustainable assessments and sustainable construction approaches. Harnessing sustainable finance, for example, generally requires investment in upskilling programmes to train government staff in managing projects with private and third-sector parties and complying with reporting and accountability requirements (OECD, World Bank and UNEP, 2018[4]). The UNCDF Local Climate Adaptive Living Facility, for example, helps local government authorities in the least developed countries and other developing countries access climate finance through capacity-building and technical support needed to respond and adapt to climate change.

Green public procurement can help align investments with sustainability objectives

Achieving value-for-money in sustainable investment processes requires undertaking effective procurement processes, while also considering sustainability objectives. In line with Principle 11 of the Recommendation, transparency and strategic use of public procurement at all levels of government are needed to achieve the benefits of investment projects. Procurement systems should be transparent, competitive, and monitored to ensure funds are used as intended and effective at registering and addressing complaints (OECD, 2019[36]). To support the achievement of climate objectives, wider government objectives may be incorporated into procurement processes. In Italy, for instance, since the publication of a National Action Plan for Green Public Procurement, several regions have enacted their regional action plans. Among them, the Lombardy Regional Action Plan, enacted in 2020, includes an analysis of the key characteristics of the Lombardy context and sets up a time frame of action, six operational objectives and four lines of action.

Conclusions

To effectively scale-up sustainable investment, regions and cities must strengthen their ability to mobilise both funding and financing. This requires leveraging a mix of conventional resources, such as taxes, grants and loans, alongside sustainable financial instruments, including green loans and sustainability-linked bonds. Subnational governments have been early adopters of green, sustainable and social bonds, with some jurisdictions issuing sustainable bonds before their own central governments—although uses vary widely from country to country. Identifying and deploying the right combination tools is essential to support more sustainable and climate-resilient local and regional economies.

Equally important is establishing a well-calibrated framework that enables subnational governments to access financial instruments within the boundaries of existing fiscal rules. Enhancing access may require ensuring sound subnational own-source revenue bases, regulatory reforms, improvements in public financial management, the creation of financial intermediaries, or the use of guarantees and credit enhancement mechanisms, among other areas.

Once financing mechanisms are in place, resources must be allocated strategically to maximise long-term environmental and economic impact. This calls for data-informed investment planning, guided by climate risk assessments and asset evaluations. Instruments such as strategic planning, green budgeting and inter-governmental co-ordination bodies can help ensure that investments are effective and align with broader sustainability goals to deliver lasting benefits.

Finally, achieving results on the ground hinges on effective implementation. Regions and cities will need to ensure that prioritised investments translate into real progress, which requires institutional capacity, and strong stakeholder engagement.

References

Adapt Chile (2019), *Multi-Level Governance and Climate Actions: Institutional Mapping of Chile*. [34]

Ando, S. et al. (2022), *Sovereign Climate Debt Instruments: An Overview of the Green and Catastrophe Bond Markets*, https://www.imf.org/en/Publications/staff-climate-notes/Issues/2022/06/29/Sovereign-Climate-Debt-Instruments-An-Overview-of-the-Green-and-Catastrophe-Bond-Markets-518272 (accessed on 21 May 2023). [23]

Brochado, A. and S. Dougherty (2024), "Riding the rollercoaster: Subnational debt in turbulent times", *OECD Working Papers on Fiscal Federalism*, No. 47, OECD Publishing, Paris, https://doi.org/10.1787/c0a7fdc3-en. [12]

Brookings (2022), *Not according to plan: exploring gaps in city climate planning and the need for regional action*, Brookings. [31]

Bush, J. (2017), *Cooling cities with green space: policy perspectives*. [38]

CBI (2023), *Green and other Labelled Bonds Held Market Share in 2022 Amidst Fall of Global Fixed-Income*, https://www.climatebonds.net/resources/press-releases/2023/01/green-and-other-labelled-bonds-held-market-share-2022-amidst-fall (accessed on 21 May 2023). [10]

City of Melbourne (n.d.), *Urban Forest Strategy - Making a Great City Greener 2012-2032*. [37]

Copernicus (2024), "The 2024 Annual Climate Summary: Global Climate Highlights 2024", https://climate.copernicus.eu/global-climate-highlights-2024. [1]

EIB (2023), *The state of local infrastructure investment in Europe - EIB Municipalities Survey 2022-2023*, https://doi.org/10.2867/84744. [7]

Environmental Finance (2024), *Sustainable Bonds Insight 2024*, http://www.environmental-finance.com (accessed on 21 May 2023). [9]

G20-OECD (2022), *Policy Toolkit to Mobilise Funding and Financing for Inclusive and Quality Infrastructure Investment in Regions and Cities*, OECD Publishing, Paris, https://doi.org/10.1787/99169ac9-en. [17]

Harris, J., S. Muller and T. Woods (2019), *Climate action in Chile: Towards multi-level governance*, https://ledsgp.org/2019/01/climate-action-in-chile-towards-multi-level-governance/?loclang=en_gb. [35]

Housing, Infrastructure and Communities Canada (2024), *Investing in Canada Plan*. [21]

IMF (2020), *How to Design Subnational Fiscal Rules: A Primer*, IMF, https://www.imf.org/en/Publications/Fiscal-Affairs-Department-How-To-Notes/Issues/2020/02/25/How-to-Design-Subnational-Fiscal-Rules-A-Primer-48967 (accessed on 26 November 2022). [25]

IRENA (2023), *World Energy Transitions Outlook 2023: 1.5°C Pathway*. [8]

Jalisco Gobierno del estado (2024), *Fondo Ambiental de Jalisco*. [22]

Marlowe, J. (2024), "ESG Factors in Municipal Securities Disclosures: Toward a Materiality Concept", *Northern Illinois University Law Review*, Vol. 44. [15]

OECD (2025), *Global Debt Report 2025: Financing Growth in a Challenging Debt Market Environment*, OECD Publishing, https://doi.org/10.1787/8ee42b13-en. [39]

OECD (2024), *Climate Finance Provided and Mobilised by Developed Countries in 2013-2022*, Climate Finance and the USD 100 Billion Goal, OECD Publishing, Paris, https://doi.org/10.1787/19150727-en. [11]

OECD (2024), *Global Debt Report 2024: Bond Markets in a High-Debt Environment*, OECD Publishing, Paris, https://doi.org/10.1787/91844ea2-en. [13]

OECD (2024), *Infrastructure for a Climate-Resilient Future*, OECD Publishing, Paris, https://doi.org/10.1787/a74a45b0-en. [3]

OECD (2023), *A Territorial Approach to Climate Action and Resilience (TACAR)*, https://doi.org/10.1787/fa744789. [2]

OECD (2023), *Environmental tax policy review of Andalusia*, OECD Publishing, https://doi.org/10.1787/fe6d8b45-en. [30]

OECD (2023), *Financing Cities of Tomorrow: G20/OECD Report for the G20 Infrastructure Working Group under the Indian Presidency*, OECD Publishing, https://doi.org/10.1787/51bd124a-en. [16]

OECD (2023), *Subnational Governments in OECD countries: key data*, OECD Publishing. [19]

OECD (2022), *Aligning Regional and Local Budgets with Green Objectives: Subnational Green Budgeting Practices and Guidelines*, OECD Multi-level Governance Studies, OECD Publishing, Paris, https://doi.org/10.1787/93b4036f-en. [5]

OECD (2022), *Compendium of Financial Instruments for Subnational Climate Action in OECD and EU Countries: Analysis*, OECD Publishing. [20]

OECD (2022), *Subnational Government Climate Expenditure and Revenue Tracking in OECD and EU countries*, https://doi.org/10.1787/1e8016d4-en. (accessed on 23 May 2023). [6]

OECD (2021), *Enhancing the Effectiveness of Sub-National Biodiversity Policy: Practices in France and Scotland, United Kingdom*, OECD Publishing. [29]

OECD (2021), *Unlocking infrastructure investment: Innovative funding and financing in regions and cities*, OECD Publishing, Paris, https://doi.org/10.1787/9152902b-en. [18]

OECD (2020), *Paris Collaborative on Green Budgeting: OECD Green Budgeting Framework*, http://www.oecd.org/environment/green-budgeting/. [33]

OECD (2019), *Effective Multi-level Public Investment OECD Principles in Action*, https://www.oecd.org/effective-public-investment-toolkit/ (accessed on 6 November 2023). [36]

OECD, World Bank and UNEP (2018), *Financing climate futures: rethinking infrastructure*, OECD Publishing. [4]

OECD/UCLG (2022), *World Observatory on Subnational Government Finance and investment*, https://www.sng-wofi.org/reports/ (accessed on 20 June 2022). [26]

OECD/UNCDF (2020), *Blended Finance in the Least Developed Countries 2020: Supporting a Resilient COVID-19 Recovery*, OECD Publishing. [27]

Office of Climate Action, Sustainability (2021), *CLIMATE PROTECTION FUND FIVE-YEAR PLAN*. [32]

Painter, M. (2019), "An inconvenient cost: The effects of climate change on municipal bonds", *Journal of Financial Economics*. [14]

Retail Research (2023), *Indore Municipal Corporation – Green*, https://www.hdfcsec.com/hsl.docs//Indore%20Municipal%20Corporation%20Green%20Bond%20Note-202302101314226141917.pdf. [24]

Zerbib, O. (2019), "The effect of pro-environmental preferences on bond prices: Evidence from green bonds", *Journal of Banking and Finance*, Vol. 98, pp. 39-60, https://doi.org/10.1016/j.jbankfin.2018.10.012. [28]

Notes

[1] The term 'climate-significant' applies to expenditure and investment classified under 13 second-level COFOG categories that have been linked to activities significantly contributing to climate change adaptation and mitigation objectives, according to the EU Taxonomy's Technical Screening Criteria. 'Climate-significant expenditure' covers both current and capital expenditure. Current expenditure consists of staff expenditures, intermediate consumption, non-capital subsidies, and tax expenditure. Interest expenditures are not included. Capital expenditure refers to indirect investment (capital transfers and capital subsidies) and direct investment (gross fixed capital formation (GFCF) minus disposals of non-financial, non-produced assets). 'Climate-significant investment' refers to a subset of capital expenditure, specifically direct investment (GFCF minus disposals of non-financial, non-produced assets). Measuring investment provides a way to focus on the amounts invested in climate-related infrastructure specifically. Using this subset also provided a more accurate estimate of climate-related infrastructure investment spending than the overall spending category could provide (OECD, 2022[6]).

[2] 'Sustainable investment' refers in this document to investments that contribute to reaching environmental sustainability objectives. This includes investment to mitigate climate change and to adapt to climate change. 'Investment' in charts in this report refers to a subset of capital expenditure, specifically direct investment (Gross Fixed Capital Formation minus disposals of non-financial, non-produced assets). The defining characteristic of sustainable infrastructure is that it is planned, designed, built and operated in a way that anticipates, prepares for, and adapts to changing climate conditions, throughout the life of the

asset. It can also withstand, respond to, and recover rapidly from disruptions caused by changed climate conditions.

[3] Weighted averages out of a sample of 32 OECD and EU countries, deflated to 2015 USD (See: http://data-explorer.oecd.org/s/hf).

[4] In this document, the term 'sustainable finance' (or 'green' finance) refers to 'labelled' financing instruments that are earmarked to support green, social and sustainable objectives and projects. There is no official and standard definition of the term 'sustainable finance' at the global level, but several initiatives are underway to establish definitions for 'sustainable finance', such as in Japan, China, France, the Netherlands, and at the EU level. Definitions differ in sector coverage but also in terms of approaches in principle to defining what is sustainable, but they also share some similarities – e.g., coverage of certain economic sectors such as renewable energy. The EU regulation stands out in its combined approach of several environmental objectives, with a substantial contribution to one objective, such as climate mitigation, joined with a no significant harm requirement for other environmental objectives, such as adaptation and other natural capital objectives.

[5] More recent data by the London Stock Exchange Group shows that corporate and official sector issuance of sustainable bonds reached USD 1 025 billion in 2024 (OECD, 2025[39]).

[6] While catastrophe bonds are not inherently labelled as a "green" or "sustainability" bond, they can align with climate adaptation objectives when structured, for instance, around climate-risk and disaster resilience, and focusing on reducing risks of exposure.

[7] Evidence on the 'greenium' achieved by GSS bonds is often inconclusive, although some research indicates a premium is achieved in some circumstances, and that this premium might be higher in developing markets. For example, see, (Ando et al., 2022[23]; OECD, 2023[16]; OECD, 2024[13]).

[8] 1 Crore = 10 million Indian Rupees

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