G20-OECD Policy Toolkit to Mobilise Funding and Financing for Inclusive and Quality Infrastructure Investment in Regions and Cities

Prepared by the OECD with input from ADB, in support of the Indonesian G20 Presidency

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Executive Summary

Over the coming years, many regions and cities will need significant infrastructure investment to sustain economic growth and improve well-being. Yet, infrastructure investment needs and priorities are not evenly distributed across regions and cities. Many urban areas will need substantial investments in new sustainable and resilient infrastructure to accommodate an additional 1.5 billion inhabitants by 2050. Meanwhile, rural areas will also need investment to build sustainability, increase resilience, and improve well-being in the face of demographic change, climate change and the digital transition. Meeting the specific and interdependent infrastructure needs of each region and city in the face of these challenges is critical for inclusion and to meet the Sustainable Development Goals (SDGs).

Subnational (state, regional and local) governments have a key role to provide the infrastructure that supports economic development, alleviates poverty, helps to address climate change and improves well-being in regions and cities. In G20 countries, these governments are responsible for almost 60% of total public investment. This means that supporting subnational governments to better undertake infrastructure investment can help to meet investment needs in regions and cities and addressing territorial disparities. Supporting subnational government investment requires getting the right enabling environment in place and unlocking funding and financing for investment.

Creating an **enabling environment** for subnational government investment is critical to mobilise funding and financing in regions and cities. The enabling environment refers, firstly, to the fiscal and regulatory frameworks that support or enable the use of funding or financing. It also refers to having access to suitable financial markets (for accessing loans and bonds), as well as adequate institutional capacity to leverage funding and financing effectively. As infrastructure investment is a shared responsibility between central/federal and subnational governments in many countries, the enabling environment also includes mechanisms to support co-ordination and cooperation across levels of government and among jurisdictions (e.g. inter-municipal cooperation). Delivering quality and inclusive public infrastructure investment also requires understanding the investment needs of many stakeholders and engaging them in the investment cycle, to build trust amongst different stakeholders (e.g. citizens, businesses, not-for-profits, etc.).

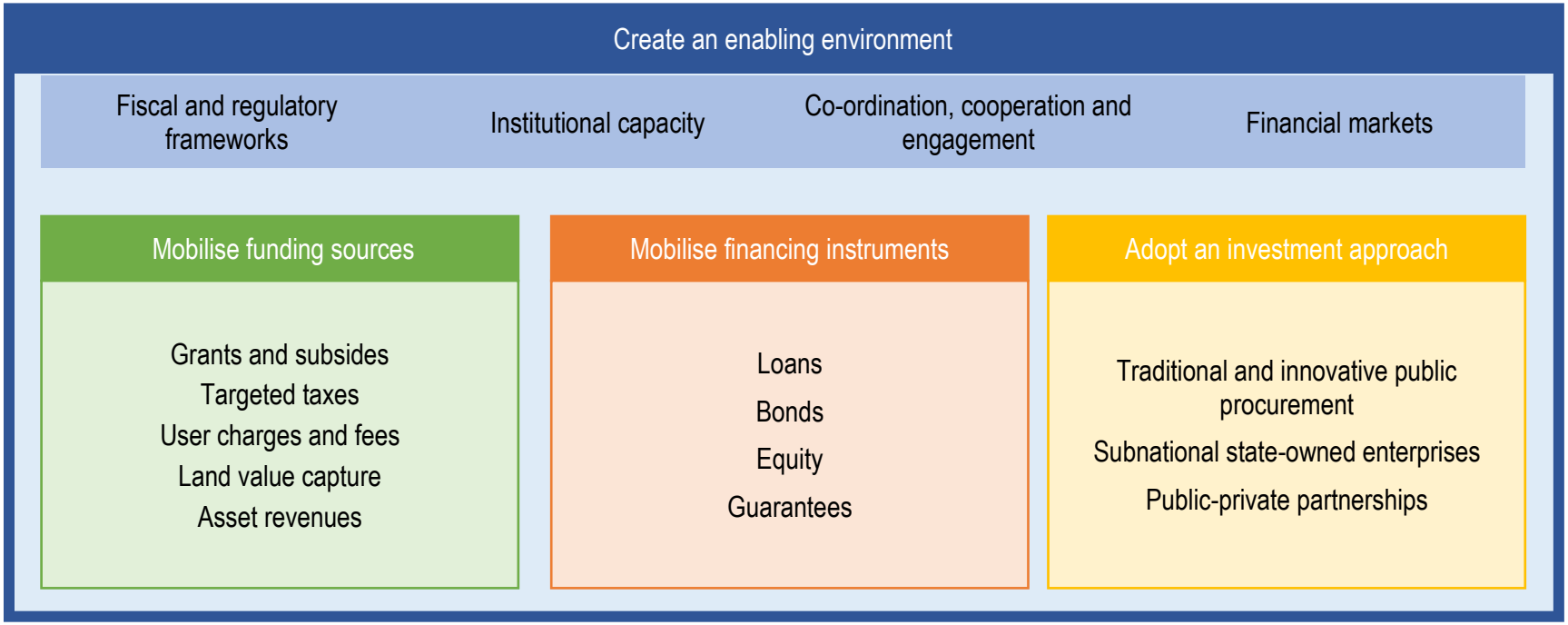
Unlocking funding for inclusive and quality subnational infrastructure can be supported by better exploiting grants and subsidies, mobilising targeted taxes, implementing user charges and fees, harnessing land value capture and better managing existing infrastructure assets. While the management of assets may not unlock 'additional' funding, it can increase available funding for new investments over the long-term. Without sufficient funding sources, a subnational government may have lower access to external finance, particularly due to the link between funding availability and creditworthiness.

Mobilising finance is essential to help subnational governments meet the high up-front costs of infrastructure investment and to spread those costs across the future beneficiaries of an investment. Opportunities for subnational governments to mobilise external financing mainly relate to the use of debt (loans and bonds), but equity also often supports subnational government infrastructure investment. More innovative financing instruments harnessed by subnational governments include the use of green, social, climate and sustainability bonds or loans. Another instrument to mobilise finance for subnational governments are guarantees provided by upper-level governments or multi-lateral development banks. While the use of guarantees needs to be carefully considered, this instrument can be an effective tool to improve access to finance for quality infrastructure investment by subnational governments, particularly where a project is economically and financially viable but includes risks that financiers would have little control over or may not be willing to bear.

Regions and cities can also explore different **investment approaches** to mobilise funding and financing. When delivering an investment, a subnational government might evaluation different options, including traditional and more innovative public procurement of infrastructure, the use of a public-private partnership or harnessing a state-owned enterprise (e.g., a municipal company). To support more inclusive investment, they may also explore the use of different procurement innovations such as adopting green or social procurement. While subnational governments may also consider procuring infrastructure-related services rather than infrastructure (e.g. waste services), this approach is not detailed in this toolkit as the focus is placed on public infrastructure investment.

Supporting inclusive and quality infrastructure investment in regions and cities is the responsibility of all levels of government. This detailed Policy Toolkit presents a list of potential tools to support this objective, with concrete examples included for inspiration (Annex A) and additional resources to support inclusive and quality infrastructure investment (Annex B). The diagram below illustrates the key components covered in this document.

What can be done to mobilise funding and financing for subnational infrastructure investment?



Résumé

Au cours des prochaines années, de nombreuses régions et villes auront besoin d'investissements significatifs dans les infrastructures pour soutenir la croissance économique et améliorer le bien-être. Pourtant, les besoins et les priorités en matière d'investissement dans les infrastructures ne sont pas répartis de manière égale entre les régions et les villes. De nombreuses zones urbaines auront besoin d'investissements substantiels dans de nouvelles infrastructures durables et résilientes pour accueillir 1,5 milliard d'habitants supplémentaires d'ici 2050. Parallèlement, les zones rurales auront également besoin d'investissements pour renforcer la durabilité, accroître la résilience et améliorer le bien-être face aux changements démographique et climatique et à la transition numérique. Répondre aux besoins d'infrastructures spécifiques et interdépendants de chaque région et ville face à ces défis est essentiel pour l'inclusion et pour atteindre les objectifs de développement durable (ODD).

Les gouvernements infranationaux (états fédérés, gouvernements régionaux et locaux) ont un rôle clé à jouer pour fournir l'infrastructure qui soutient le développement économique, réduit la pauvreté, aide à lutter contre le changement climatique et à améliore le bien-être dans les régions et les villes. Dans les pays du G20, ces gouvernements sont responsables de près de 60 % de l'investissement public total. Cela signifie qu'aider les administrations infranationales à mieux entreprendre les investissements dans les infrastructures peut aider à répondre aux besoins d'investissement dans les régions et les villes et à remédier aux disparités territoriales. Soutenir les investissements des gouvernements infranationaux nécessite de mettre en place un environnement favorable et de débloquer des financements pour couvrir les besoins d''investissement.

La création d'un environnement propice aux investissements des gouvernements infranationaux est essentielle pour mobiliser des fonds et des financements dans les régions et les villes. L'environnement favorable fait référence, premièrement, aux cadres budgétaires et réglementaires qui soutiennent ou permettent l'utilisation de fonds ou de financements. Cela fait également référence à l'accès à des marchés financiers appropriés (pour accéder aux prêts et aux émissions obligataires), ainsi qu'à une capacité institutionnelle adéquate pour mobiliser efficacement des fonds et des financements. Étant donné que l'investissement dans les infrastructures est une responsabilité partagée entre les gouvernements central/fédéral et infranationaux dans de nombreux pays, la mise en place d'un environnement favorable comprend également des mécanismes pour soutenir la coordination et la coopération entre les niveaux de gouvernement et entre les juridictions (par exemple, la coopération intercommunale). La réalisation d'investissements dans les infrastructures publiques inclusives et de qualité nécessite également de comprendre les besoins d'investissement de nombreuses parties prenantes et de les impliquer dans le cycle d'investissement, afin de renforcer la confiance entre les différentes parties prenantes (par exemple, les citoyens, les entreprises, les organisations à but non lucratif, etc.).

Le déblocage de financements pour des infrastructures infranationales inclusives et de qualité peut être soutenu par une meilleure exploitation des dotations et des subventions, la mobilisation de taxes ciblées, des redevances et des recettes tarifaires ainsi que l'exploitation des valeurs foncières et une meilleure gestion des infrastructures existantes. Bien que la gestion des actifs ne débloque pas de financement « supplémentaire », elle peut augmenter le financement disponible pour de nouveaux investissements à long terme. Sans sources de financement suffisantes, une administration régional ou local aura un accès plus limité aux financements externes, notamment en raison du lien entre la disponibilité des financements et la solvabilité.

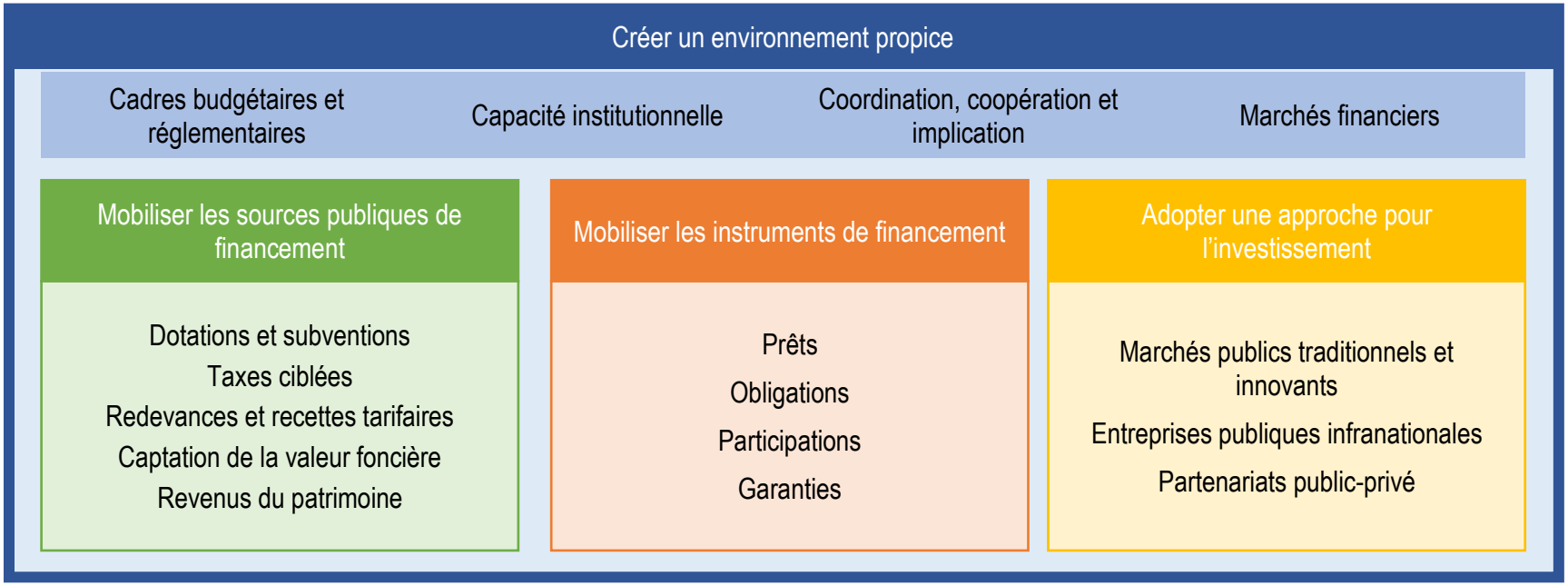
La mobilisation de financements est essentielle pour aider les administrations infranationales à faire face aux coûts initiaux élevés des investissements dans les infrastructures et à répartir ces coûts entre les futurs bénéficiaires des investissements. Les opportunités pour les administrations infranationales de mobiliser des financements externes sont principalement liées à l'utilisation de la dette (prêts et obligations), mais les capitaux propres soutiennent aussi souvent les investissements dans les infrastructures des administrations infranationales. Les instruments de financement plus innovants exploités par les gouvernements infranationaux comprennent l'utilisation d'obligations ou de prêts verts, sociaux, climatiques et durables. Un autre instrument pour mobiliser des financements pour les gouvernements infranationaux sont les garanties fournies par les

gouvernements de niveau supérieur ou bien les banques multilatérales de développement. Bien que l'utilisation de garanties doive être soigneusement examinée, cet instrument peut être un outil efficace pour améliorer l'accès au financement pour financer des infrastructures de qualité par les gouvernements infranationaux, en particulier lorsqu'un projet est économiquement et financièrement viable mais comporte des risques sur lesquels les financeurs auraient peu de contrôle ou qu'ils ne souhaiteraient pas prendre.

Les régions et les villes peuvent également explorer différentes approches d'investissement pour mobiliser des fonds et des financements. Lors de la réalisation d'un investissement, une administration infranationale peut évaluer différentes options, y compris les marchés publics traditionnels et plus innovants d'infrastructures, l'utilisation d'un partenariat public-privé ou l'exploitation d'une entreprise publique (par exemple, une entreprise municipale). Pour soutenir des investissements plus inclusifs, ils peuvent également explorer l'utilisation de différentes innovations en matière de passation de marchés publics, telles que les marchés publics verts ou intégrant des critères sociaux. Bien que les gouvernements infranationaux puissent également envisager d'acquérir des services liés aux infrastructures plutôt que des infrastructures (par exemple, des services de gestion des déchets), cette approche n'est pas détaillée dans cette boîte à outils car l'accent est mis sur l'investissement dans les infrastructures publiques.

Soutenir dans l'investissement dans des infrastructures inclusives et de qualité dans les régions et les villes relève de la responsabilité de tous les niveaux de gouvernement. Cette boîte à outils présente une liste d'outils potentiels pour soutenir cet objectif, avec des exemples concrets (Annexe A) ainsi qu'une liste de ressources clés supplémentaires susceptibles de soutenir l'investissement dans des infrastructures inclusives et de qualité (Annexe B). Le schéma ci-dessous illustre les composants clés couverts dans ce document.

Mobiliser les sources de financement pour répondre aux besoins d'investissement dans les infrastructures infranationales ?



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List of case studies

No.	Category	Case
Enablers		
1.	Fiscal and regulatory frameworks	Ensuring Local Fiscal Discipline and Fiscal Sustainability: The Mexican Financial Discipline Law for Federal Entities and Municipalities
2.	Fiscal and regulatory frameworks	An Innovative Approach to Infrastructure Financing: The New Zealand Infrastructure Funding and Financing Act, 2020
3.	Institutional capacity	The multilateral online infrastructure project preparation and management software: SOURCE
4.	Institutional capacity	Achieve higher creditworthiness of cities: The City Creditworthiness Initiative
5.	Co-ordination, co-operation and stakeholder engagement	Inter-governmental contract to support bottom-up projects: The Korean Regional Development Investment Agreement
6.	Co-ordination, co-operation and stakeholder engagement	Collective risk pooling for city disaster risk reduction and management: The City Disaster Insurance Pool in the Philippines
7.	Access to financial markets	State assistance for municipal capital market finance: The Minas Gerais Development Bank in Brazil
8.	Access to financial markets	Facilitate regional government access to finance: The Federal Fiduciary Fund for Regional Infrastructure in Argentina
9.	Access to financial markets	Supporting mid-size municipalities to access to finance: The INCA Municipal Debt Fund in South Africa
Funding sources		
10.	Grants and subsidies	Support the green transition at the local level: The On-Street Residential Chargepoint Funding Scheme in the United Kingdom
11.	Grants and subsidies	Competitive Grant Financing of Urban Infrastructure in Switzerland: The Swiss Federal Agglomeration Programmes
12.	Taxes	Tax on companies to support public transport and mobility: The Versement Mobilité in France
13.	Taxes	Earmarked tax for climate-related projects: Climate Action Taxes in Boulder, Colorado, United States
14.	User charges and fees	Innovative Road/Congestion Pricing: Pico y Placa Solidario Programme and on-street parking charges in the City of Bogotá
15	Asset revenues	Harnessing development opportunities around urban rail infrastructure: The “rail plus property” model of Shenzhen metro in People’s Republic of China
16.	Land value capture	Reducing land acquisition costs for infrastructure projects: The use of Transferable Development Rights in Hyderabad, India
Financing instruments		
17.	Loans	Low-cost loans to support local government infrastructure investment in Australian states
18.	Bonds	Pooling to attract institutional investors: Viveracqua hydrobond in Veneto, Italy
19.	Equity	Promoting equity financing: The International Municipal Investment Fund
20.	Guarantees	Facilitating municipal access to credit: The Municipal Guarantee Board in Finland
Investment approaches		
21.	Traditional and innovative public procurement	Promoting Social Efficient Procurement: Green procurement system in Valladolid, Spain
22.	Subnational State-owned enterprises	Municipal-owned energy utilities promoting renewable energy: “Stadtwerke” in Germany
23.	Subnational Public-private partnership	PPP with viability gap funding support from national government: The Umbulan Water Supply System Project in East Java, Indonesia

Introduction

About this Toolkit

Inclusive and quality infrastructure investment is critical to lay the foundations for economic growth, help reduce poverty and improve well-being in regions and cities. As we start to emerge from the COVID-19 crisis, and already face new challenges from megatrends and shocks, it will be critical to support infrastructure investment in regions and cities that is inclusive, sustainable, resilient and high-quality.

Infrastructure investment is a shared responsibility across levels of government. In many countries, state, regional and local governments (collectively 'subnational governments') provide a large proportion of basic public infrastructure that is essential for inclusiveness, including healthcare, transport, education and social housing (OECD, 2014[1]). In the G20, these governments are responsible for almost 60% of public investment (OECD, 2021[2]; OECD/UCLG, 2019[3]). They are also important actors in the green transition, being responsible for 69% of climate related public investment (OECD, 2022[4]).

This means that addressing global, regional and local infrastructure gaps, and achieving an inclusive recovery, will require more and better infrastructure investment by subnational governments. All actors – national and subnational governments, multilateral development banks, other international organisations and the private sector - have a role to play to support inclusive and quality infrastructure investment by subnational governments.

G20 agenda on subnational infrastructure disparities and social inclusion

During the 2022 Indonesian Presidency, G20 Finance Ministers and Central Bank Governors committed to *"develop policies and strategies to mobilise inclusive infrastructure investment to enhance social inclusion and address subnational disparities in regions and cities"* (Communiqué, February 2022). The Indonesian Presidency's focus on subnational infrastructure investment reinforces work under the Italian G20 Presidency in 2021, who introduced the topic of local infrastructure investment into the G20's Infrastructure Working Group (IWG) agenda.

To support infrastructure investment in regions and cities, the G20 with support of the Organisation for Economic Co-operation and Development (OECD) and the Asian Development Bank (ADB) have developed this Toolkit, as a deliverable for the G20 IWG. This Toolkit builds upon the *G20 High-Level Conference on Local Infrastructure Investment* in Genoa Italy on 29 September 2022, the *OECD Recommendation on Effective Public Investment Across Levels of Government* and an OECD report on *Unlocking Infrastructure Investment: Innovative funding and financing in regions and cities (2021)*. To support the development of this toolkit, the OECD also prepared an accompanying report for the IWG on inclusive infrastructure investment titled *Addressing territorial disparities in future infrastructure needs in the wake of the COVID-19 crisis* that will be published in late 2022.

The Toolkit also links to other G20 infrastructure work, including the *Roadmap to Infrastructure as an Asset Class* and the *G20 Principles for Promoting Quality Infrastructure Investment* (QII Principles).

Why this Toolkit?

The main objective of this Toolkit is to help national and subnational governments mobilise funding and financing for infrastructure investment in regions and cities. To help achieve this objective, the Toolkit firstly highlights the key role of creating an enabling environment that support subnational governments to mobilise funding and financing. The Toolkit then details common and innovative funding sources, financing instruments and investment approaches. For each topic, the Toolkit provides a brief description, features related tools and highlights relevant examples. The Toolkit is accompanied by detailed case studies (Annex A) and a list of relevant resources relating to each topic (Annex C).

This Toolkit seeks to be practical. Rather than recommending specific instruments, it provides a 'toolbox' of policy opportunities to serve as a starting point for policymakers and policy practitioners. Whether, when, where and how to use these sources and tools should be considered on a case-by-case basis in line with the national and local contexts and the related enabling environment.

Why focus on subnational infrastructure investment?

Infrastructure investment needs in regions and cities are significant

To sustain growth and improve well-being, many regions and cities will need substantial infrastructure investment over coming years. At a global level, over USD 95 trillion in public and private investment will be needed between 2016 and 2030 in energy, transport, water and telecommunications infrastructure to sustain growth and well-being (OECD, 2017[5]; GIH, 2017[6]). In developing Asia alone, there is a need to invest USD 26 trillion in infrastructure to maintain the region's growth momentum and respond to climate change between 2016 and 2030 (ADB, 2021[7]). Local infrastructure investment is also critical to help achieve the Sustainable Development Goals (UNCDF, 2022[8]; OECD, 2020[9]).

Investment needs are being shaped by asymmetric megatrends and shocks

Infrastructure investment needs vary substantially across different regions and cities, both within and across countries (OECD, 2022[10]; OECD, forthcoming[11]). Among other causes, these different investment needs reflect pre-existing territorial disparities in investment and the existing and anticipated asymmetric impacts of megatrends and shocks including urbanisation, climate change, digitalisation, demographic shifts, and the COVID-19 pandemic. The COVID-19 pandemic, for example, has revealed many pre-existing territorial inequalities in access to health, social and digital infrastructure, highlighting a need for more inclusive infrastructure investment (OECD, 2021[12]).

There is a need to understand the specific investment needs of different places and their interdependences

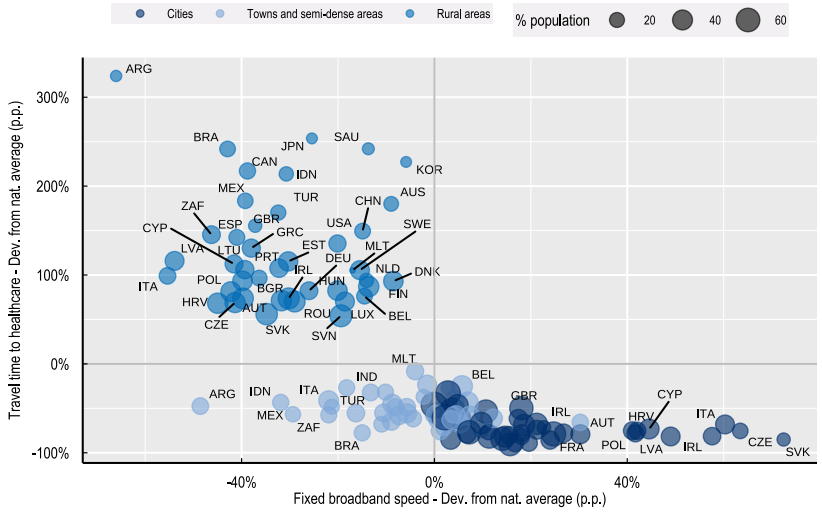
With rapid global urbanisation, many urban areas will require substantial investment in both existing and new infrastructure. It is projected that the population living in cities will reach 5 billion (55% of the global population) by 2050, up from 3.5 billion in 2015 (OECD/European Commission, 2020[13]). Supporting this population increase will require substantial new investment in basic infrastructure such as housing, waste and water management and transport networks. At the same time, existing infrastructure in urban areas will need to be transformed and better maintained to become more sustainable and resilient in the face of climate change and demographic shifts (OECD, 2022[10]).

Rural areas will also need transformative investment in infrastructure to build resilience, improve well-being, increase connectiveness and adapt to demographic shifts. De-population and ageing trends, for example, are often concentrated in rural and remote areas making it difficult for affected subnational governments to provide cost-effective and financially sustainable public services and infrastructure (OECD/EC-JRC, 2021[14]; OECD, forthcoming[11]). Infrastructure investment will need to be adapted to align with demographic shifts. Meanwhile, although digitalisation provides significant opportunities for supporting economic development and well-being in rural areas, these areas often face a "twin divide" meaning that they have low access to physical infrastructure and online alternates such as emerging public services in education (e.g., online distance learning activities) and healthcare (e.g., telemedicine) (OECD, forthcoming[11]). In G20 countries internet download speeds over fixed networks in rural areas are 31% lower than the national average (OECD, 2021[15]). Lower internet download speeds, for example, is correlated with having lower access to physical healthcare in G20 and OECD countries (Figure 1).

Inclusive infrastructure investment improves access to essential public services

Improving access to quality basic services and related-infrastructure can offer high social returns to investment, including not only through better education and healthcare outcomes but also improved life-long and intergenerational income and well-being (OECD, forthcoming[11]). Indeed, bridging access gaps can generate higher tax revenues and decreased spending on social support services and more complex and costly health services. As the COVID-19 pandemic demonstrated, investing in reducing inequalities can also improve the resilience of systems to respond to unexpected shocks (OECD, 2021[12]).

Figure 1. Location gap in travel time to healthcare versus location gap on internet speed, OECD and G20 countries



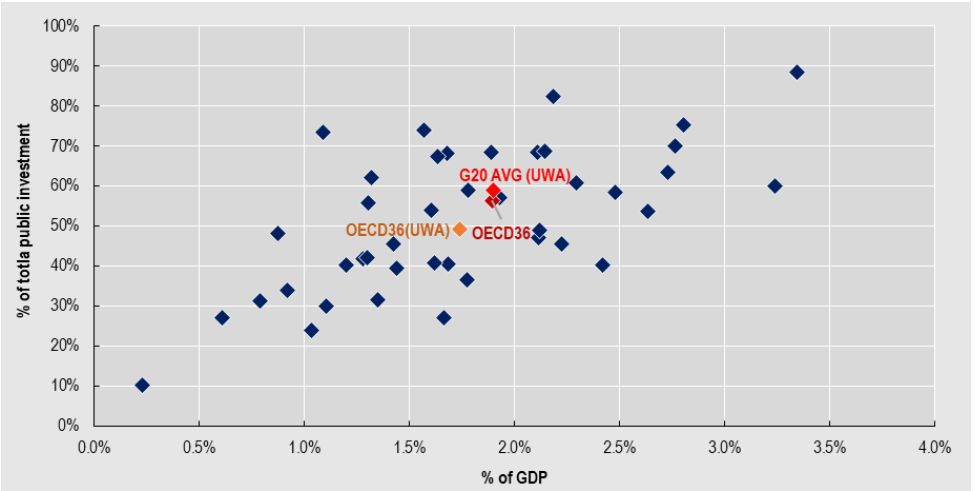
Note: Travel time to healthcare calculated using driving as transport mode. Deviation from the national average calculated from median values by degree of urbanisation weighted by population levels in each 1km2 grid cell. Speedtest data corresponds to 2020Q4. The data for average fixed and mobile broadband download Speedtests reported by Ookla measures the sustained peak throughput achieved by users of the network. Measurements are based on self-administered tests by users, carried over iOS and mobile devices. Aggregation according to the degree of urbanisation was based on GHS Settlement Model (GHS-SMOD) layer grids. The figure presents average peak speed tests, weighted by the number of tests.

Source: For travel time to healthcare: own calculations based on (Weiss et al., 2020[16]). For fixed broadband speed: Own calculations based on Speedtest® by Ookla® Global Fixed and Mobile Network Performance Maps. Based on analysis by Ookla of Speedtest Intelligence® data for 2020Q4. Provided by Ookla and accessed 2021-01-27 (see (OECD, 2021[15]) for details). Ookla trademarks used under license and reprinted with permission.

Subnational governments are important public infrastructure investors

In many countries, subnational governments have important responsibilities to provide public services and infrastructure that support economic development, poverty reduction and well-being (Box 1). They are often responsible for providing essential local infrastructure for transport, education, social protection, health, environmental protection and housing, among other areas. In G20 countries, these governments are responsible for almost 60% of total public investment, representing 1.9% of GDP (see Figure 2, (OECD/UCLG, 2019[17]; OECD, 2021[2])).

Figure 2. Subnational public investment in G20 and OECD countries



Note: 1. Data for People's Republic of China and Saudi Arabia are not available. 2. Data for Israel are excluded since direct investment by the central government is carried out by public companies and not recorded in General Government Expenditure, thus the share of subnational public investment in total public investment is overestimated. Subnational public investment in Israel accounted for 1.4% of GDP. 3. Data for G20 (non-OECD) countries are from the year of 2016; data for Chile, Japan, New Zealand and Türkiye are from 2018; others are from 2019. 4. EU 28 data are weighted averages of EU 28 countries in 2019. Source: (OECD, 2021[18]; OECD/UCLG, 2019[19])

Subnational governments have important climate-related spending and investment responsibilities.

In OECD countries, for example, they are responsible for 63% of climate and environment related public expenditures and 69% of climate and environment related public investments (OECD, 2022[4]).This means that subnational governments are important players in supporting the green transition and often have opportunities to harness sustainable financing (e.g. green bonds) for green investment projects (e.g. energy efficiency upgrade in public facilities, rail transport, bike lanes).

Box 1. The role of subnational governments

Present both in unitary and federal countries, subnational governments are broadly defined as decentralised or devolved entities who have general responsibilities and some authority with respect to budget, staff and assets. This term "subnational government" covers tiers of government lower than the central/federal level, irrespective of their country-specific denomination, such as state, regional, provincial, municipal and local governments, councils or authorities, among other terms.

Subnational governments are very diverse across countries in terms of demographic and geographic size, governance structure, responsibilities, and fiscal arrangements. While responsibilities vary significantly across countries, subnational governments often provide infrastructure and services that support local economic development and well-being (see table below). They often have key responsibilities for land use planning and permitting, which are critical for the success of infrastructure projects.

Typical responsibilities by level of subnational government

Local level	Intermediary level	Regional (state) level
Education (nursery, pre-elementary and primary)	*Specialised and more limited responsibilities of supra-municipal interest.*	Education (secondary)
Urban planning	Education (Secondary or specialised)	Spatial planning
Local utilities (water, sewerage)	Social and youth Welfare	Regional economic development
Local transport	Secondary healthcare	Health (hospitals)
Primary healthcare	Waste	Regional roads and public transport
Recreation	Transport (Secondary roads, public transport)	Culture, heritage and tourism
Culture centres	Environment	Environmental protection
Public order and safety		Social housing
Environment		Public order and safety
Local economic development		

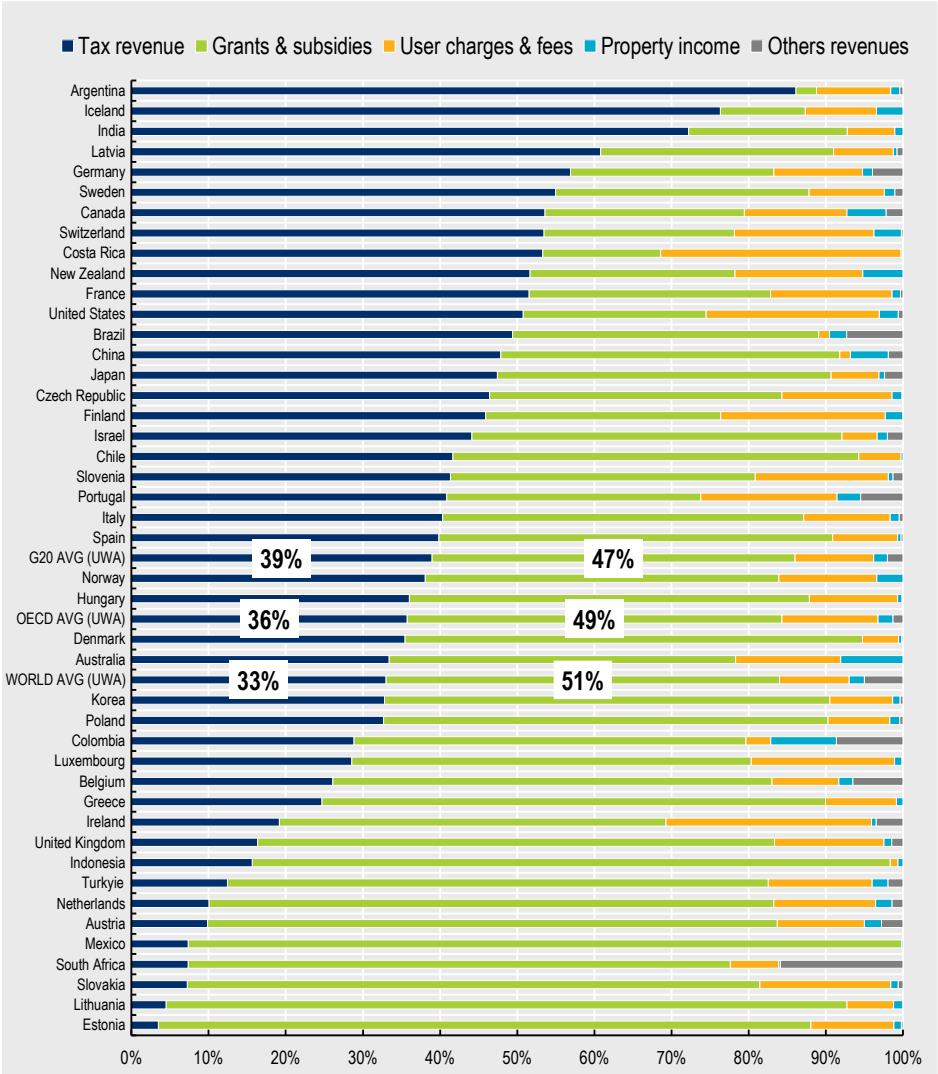
Source: Adapted from OECD (2019) Making Decentralisation Work: A Handbook for Policy-Makers

Funding sources and financing instruments for subnational governments infrastructure vary across countries

Funding for subnational infrastructure investment mainly comes from a mix of grants and transfers from upper-level government, taxes, user-charges and property income. Transfers from the national government (grants and subsidies) are the main source of revenue for subnational governments, representing 47% of revenue for G20 countries (OECD/UCLG, 2019[19]). While tax revenues and user charges and fees are the next largest sources of revenue, representing 39% and 10% of total subnational revenue on average in G20 countries (Figure 3). Revenue sources that may be available for subnational governments are typically defined within inter-governmental fiscal arrangements, which differ across countries based on the institutional context of a country. They vary substantially across G20 countries (Figure 3).

Financing instruments for subnational government infrastructure investment are mainly debt through loans and bonds. Approximately 40% (unweighted average) of subnational government debt in G20 countries is loans and 27% is from bonds (or debt securities), with the remaining 33% being other categories of debt (Figure 4) (OECD/UCLG, 2019[19]). The use of financing instruments also varies substantially across countries and is highly dependent on the intergovernmental fiscal arrangements in a particular country, in particular the borrowing regulatory framework applied to subnational governments. As subnational government debt can create sovereign fiscal risk, many countries place restrictions on the use of borrowing, including the "Golden Rule" (see below). In some countries, subnational governments, in particular at the local level, may not be able to access financial markets as they are not allowed to borrow at all (via bank loans or bond issuance).

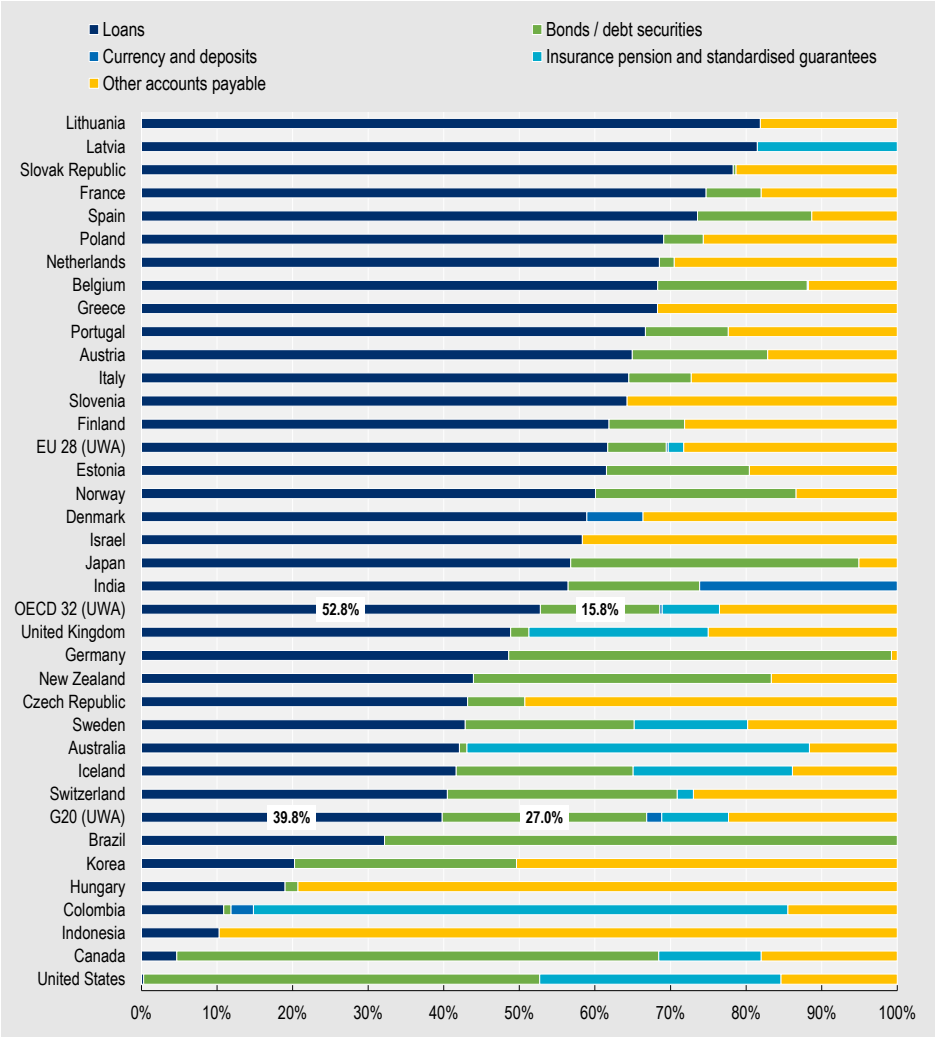
Figure 3. Subnational government revenue by category as a percentage of total revenues



Source: (OECD/UCLG, 2019[3]).

Figure 4. Subnational government debt by instrument

Share of total outstanding debt



Note: More recent data available with the 2022 edition of the OECD-UCLG World Observatory on Subnational Government Finance and Investment.

How to support subnational infrastructure investment?

Subnational governments can be mobilised to support inclusive and quality infrastructure investment in regions and cities. This Policy Toolkit focuses on four key topics that are essential to mobilise funding and financing for inclusive and quality infrastructure investment by these governments.

The **enabling environment** is the first topic covered. This refers to various frameworks, regulations, processes, systems, organisations, networks and other structures that define how infrastructure investment can be carried out by subnational governments. A supportive enabling environment can increase the ability of subnational governments to harness funding sources, leverage financing instruments and adopt different investment approaches. The enabling environment is an also key consideration in the credit ratings for subnational governments. Key elements of the enabling environment covered in this Toolkit are: fiscal and regulatory frameworks; institutional capacity; mechanisms for co-ordination, cooperation and community engagement; and, access to financial markets for subnational governments.

Mobilising **funding** is the second topic covered. Funding is essential to pay for infrastructure investment, operations and maintenance. It can also help to mobilise financing (Box 2). Insufficient funding is often a key investment barrier for subnational governments to scale-up infrastructure investment and low availability of funding sources can affect these government credit ratings (Box 3). For subnational governments, funding might be collected directly (e.g., grants and subsidies, taxes, user charges, etc.) or through specific user-charges collected by a private operator of public infrastructure (e.g., through a concession agreement). Funding sources considered in this Policy Toolkit are grants and subsidies, taxes, user charges and fees and land value capture. The opportunity to increase funding availability through improved asset management is also considered.

Mobilising **finance** is the third topic covered in this Policy Toolkit. Finance is essential to help subnational governments meet the high up-front costs of infrastructure investment, which could otherwise be unaffordable or may place substantial pressure on subnational government budgets. The appropriate use of finance can increase the ability for subnational governments to undertake needed investments and spread the burden of payment across future beneficiaries (e.g. users, citizens). Opportunities for subnational governments to mobilise financing mainly relate to the use of debt (loans, bonds), rather than equity; however, equity can also be mobilised and is covered in this toolkit. The key financing and creditworthiness instruments included are bonds, loans, equity and guarantees.

Box 2. 'Funding', 'financing' and 'investment approaches'

'Funding', 'financing' and the 'investment approach' are interlinked but distinct terms used throughout this toolkit.

Funding refers to the money ultimately used to pay for an investment. It may come through various consolidated subnational government revenue sources (i.e. grants and subsidies, taxes, various user charges and fees, reserves, property income, etc.) or from a specific user-charge paid by a user to a public or private infrastructure operator (for example, under a concession agreement). While funding is not required to pay up-front investment costs, it is always required to pay for operations, maintenance and the repayment of financing.

Financing refers to money from private or public financiers used to pay some or all of the up-front investment costs, which comes with an obligation for future repayment. In most countries, the 'golden rule' applies meaning that financing for subnational governments is only permitted to cover investment needs and cannot be used to cover current expenditure (e.g. operating costs). Financing may be debt (loans, bonds) or equity, particularly in the case of a Public Private Partnership. Financing is repaid from funding sources.

The **investment approach** refers to the model used to leverage funding and financing to deliver an infrastructure investment. Possible approaches include the provision of infrastructure through traditional – or more innovative - public procurement by a public body, delivery through a state-owned enterprise or delivery through a public-private partnership (PPP).

The **investment approach** is the final topic. This refers to the how funding and financing are leveraged to deliver infrastructure investments. The choice of investment approach can be separate to the choice of funding sources and financing instruments, but these topics are inter-related and usually decided together during project development. For example, any investment approaches may be financed through a loan or bond or can be funded through a grant or user charge. Investment approaches covered in this Policy Toolkit include the provision

of infrastructure through traditional public procurement, delivery through a state-owned enterprise or delivery in a public-private partnership (PPP).

Box 3. The credit rating of subnational governments is linked to the enabling environment and funding sources available

Credit ratings are used by financial institutions and markets to help determine the risk premium that is applied when lending to a subnational government. This means that improving the credit rating of a subnational government is an important lever to increase the accessibility and affordability of finance for infrastructure investment.

Credit rating agencies apply pre-defined criteria to determine a credit rating for subnational government debt. Fitch Ratings, for example, considers the following key risk factors: the risk profile, debt sustainability, extraordinary support and asymmetric risks, and the influence of the sovereign rating.

Risk profile: This considers the interplay between 'risk sources' and corresponding 'risk mitigants'. Risk pillars considered in this assessment include revenues, expenditures, and debt and liquidity. The analysis also considers the extent to which resilience to risk can be derived from the ability of the subnational government to adjust revenues, curtail or recover expenses, and access backup liquidity. The influence of the institutional framework (enabling environment) is captured in this analysis.

Debt sustainability: This considers quantitative metrics that assess the ability of a subnational government to withstand a reasonable economic downturn given the forecast level of debt in a five-year forward-looking scenario.

Extraordinary support and asymmetric risks: This considers additional positive or negative risk factors such as transparency, governance and the possibility of extraordinary support from an upper-level government.

Influence of the sovereign rating: This considers the sovereign rating, as subnational government ratings are typically capped by the sovereign rating, in recognition of the higher degree of control and potential intervention by national governments even in the most decentralised frameworks.

Source: International Local and Regional Governments Rating Criteria (Fitch Ratings, 2021[20])

Enablers of subnational infrastructure investment

Creating an enabling environment is essential to support subnational governments to undertake inclusive and quality infrastructure investment. Strengthening the enabling environment can help to improve the quality and 'bankability' of projects, enhance subnational government creditworthiness, and support the effective mobilisation of funding sources and financing instruments.

Building on relevant G20 documents and OECD recommendations (OECD, 2014[1]; OECD, 2020[21]), this toolkit outlines four key elements of the enabling environment for subnational government infrastructure investment: (i) fiscal and regulatory frameworks; (ii) institutional capacity; (iii) co-ordination, cooperation and stakeholder engagement mechanisms; and (iv) access to financial markets.

Enabling environment for subnational infrastructure investment

FISCAL AND REGULATORY FRAMEWORKS	INSTITUTIONAL CAPACITY	CO-ORDINATION, COOPERATION AND STAKEHOLDER ENGAGEMENT	ACCESS TO FINANCIAL MARKETS
Well-designed fiscal and regulatory frameworks can support infrastructure investment in areas where subnational governments have responsibility. This involves creating fiscal space for subnational investment while managing risks relating to subnational deficits and debt, and facilitative regulatory provisions (e.g., for PPPs, land use, property rights, procurement, etc.)	Institutional capacity of subnational governments, including human resources, skills, relevant policies, processes, and systems required for planning, prioritising investments, project designing and implementation, financial structuring, delivery of public services, as well as monitoring and evaluation of investment outcomes.	Co-ordination and cooperation with government and non-government actors at all levels and across all sectors, including businesses, civil society organisations, citizens, and sectors to ensure that there are no duplications but complementarities, and avenues for effective partnerships.	Identification and access to various external financing sources, including private businesses, and domestic and international financial markets besides public finance for subnational government infrastructure investments. Co-ordination (largely to exchange information) and partnerships between subnational governments and financing institutions are key.
Featured Tools			
Inter-governmental fiscal frameworks Budget balance rules Debt rules Internal and external audits Fiscal risk assessment Monitoring and early warning systems Independent fiscal institutions	Capacity building programmes Technical assistance facilities Project preparation and monitoring platforms PPP units	City and regional deals/contracts Regional and local development strategies Inter-governmental investment co-ordination platforms Inter-municipal cooperation arrangements Stakeholder engagement	Credit assessments Subnational pooled financing mechanisms Trust funds National Infrastructure banks
Case Studies			
1. Financial Discipline Law for Federal Entities and Municipalities (Mexico) 2. Infrastructure Funding and Financing Act, 2020 (New Zealand)	3. Preparation and Management Software: SOURCE (International) 4. The City Creditworthiness Initiative (International)	5. Regional Development Investment Agreement (Korea) 6. City Disaster Insurance Pool (The Philippines)	7. Minas Gerais Development Bank (Brazil) 8. Federal Fiduciary Fund for Regional Infrastructure (Argentina) 9. INCA Municipal Debt Fund (South Africa)

Fiscal and regulatory frameworks

Fiscal and regulatory frameworks create the overarching parameters and rules for subnational infrastructure investment. These frameworks define expenditure and investment responsibilities (including for infrastructure provision), assignments of revenues (often according to the "matching principle" to avoid under or unfunded mandates) and the use of finance (loans, bonds, etc.) for investments. Effective fiscal and regulatory frameworks seek to enable and support subnational infrastructure investment, while also managing risks associated with subnational government budget imbalances and indebtedness.

Developing effective **intergovernmental fiscal frameworks** is essential for supporting quality infrastructure investment in regions and cities (OECD, 2014[1]). They can also help to support inclusive infrastructure investment by reducing public investment disparities between regions (OECD, forthcoming[11]).

Fiscal frameworks may seek to find a balance between creating sufficient fiscal space for investments and limiting risks relating to subnational government debt. A clear fiscal responsibility framework supports transparency, increases accountability, provides timely and predictable revenues, and includes relevant fiscal rules, which guide subnational governments in optimising the available resources for investments, and at the same time improve creditworthiness of subnational governments. Key elements of an appropriate fiscal framework for subnational governments to consider include notably (a) a clear assignment of responsibilities; (b) a sufficient and adequate level of revenues to cover spending obligations, based on intergovernmental transfers and own-source revenues (tax bases and rates, user charges and fees, property income, etc.); (c) the stability and predictability of revenues (d) access to external financing (e) sound rules for fiscal discipline and responsibility (i.e. budget balance, borrowing) (OECD, 2019[22]).

One of the purposes of *fiscal rules* is to limit the risk from unsustainable levels of subnational government debt. This can include **budget balance rules** and **debt rules**. One of the most common fiscal rules is the so-called "golden rule", which allows subnational governments to borrow only for capital investment instead of current expenditures. Fiscal rules may also include caps on debt service (interest and capital reimbursement), caps on the levels of outstanding debt and on new annual borrowing, limitations on loans with foreign institutions or on the use of foreign -currency borrowing, balanced budget requirements and restrictions on bond issuance or on the use of risky financial instruments (e.g. derivatives).

Sound fiscal frameworks need to be accompanied by effective **budgetary, accounting and reporting systems** across different levels of governments, along with **external and internal audit** procedures and independent oversight of audit systems to avoid insolvency or default. This monitoring processes may include *fiscal risk assessments* to measure the fiscal capacity and creditworthiness of subnational governments, which could be conducted by subnational governments themselves, or by a higher-level government, a financial institution (public or private bank), an external rating agency or specialised consulting company.

Internal and external assessments are both important and can be complementary. External credit rating agencies could assess debt affordability of subnational governments to support the pricing of debt in capital markets by evaluating the credit rating of subnational government debt against clear and pre-defined criteria. In some countries, national credit rating agencies or other *independent fiscal institutions* may also assess subnational government debt with consideration of local risks and characteristics. Regular monitoring of the fiscal capacity, fiscal health and creditworthiness of subnational governments is also important, as it can help to understand the borrowing capacity of subnational governments, identify levers to improve access to affordable finance, and provide clarity to investors on investment risks. Ex-ante regulations and **early warning systems** can also help to mitigate fiscal risks. Two examples of recent changes to fiscal frameworks and regulations that aim to support subnational government investment were in Mexico and New Zealand (See Case study 1 and Case study 2 in the Annex A).

Various other high-quality and coherent regulations are also required to support subnational infrastructure investment in general (e.g., an efficient and transparent procurement system, land use and environmental regulations, PPP legislation, SOE legislation, etc.). Having effective PPP regulations, for example, can facilitate the adoption of PPPs by subnational governments (OECD, 2018[23]). Regulatory systems also shape the risk perception (and cost) of private sector participants (financiers, developers, etc.) in subnational infrastructure projects. Divergent, overlapping, contradictory or constantly changing regulations at a national or subnational level can impose costs, reduce efficiency, and dissuade investments in infrastructure.

Featured tools:

Inter-governmental fiscal frameworks	Inter-governmental fiscal frameworks include clearly defined constitutional and/or legal provisions regarding fiscal structure, as well as basic principles for assigning appropriate public functions and revenues to subnational governments (grants, shared tax revenues, own-source revenues, etc.). They may involve fiscal equalisation mechanisms to transfer financial resources to and between subnational governments, with the aim of mitigating regional differences in fiscal capacity and expenditure needs (OECD, Forthcoming[24]). In the fiscal framework, it is important to define accountability relationship – with citizens and/or other local actors, with higher-levels of government, and between legislators and administrators at the subnational level (ADBI, 2016[25]; OECD, 2019[22]).
Budget balance rules	Budget balance rules set a ceiling on a jurisdiction's budget deficit, with the aim of promoting the sustainable use of debt over the long-term. These rules can be zero deficit ("balanced budget"), a maximum permissible deficit or even on a budget surplus. The main drawback of budget balance rules is that they can entail pro-cyclical policies, which means that subnational governments may reduce borrowing and investment during economic downturns. Some approaches look to introduce cyclically adjusted or structural balance rules. Another fiscal rule is expenditure-growth ceilings that aim to restrain subnational governments' spending growth over the medium-to-long run, thereby indirectly limiting subnational deficits (Vammalle and Bambalaite, 2021[26]).
Debt rules	The most common fiscal rule at the sub-central level is the "Golden Rule", which restricts the use of borrowing to capital expenditure but not current expenditure, allowing subnational governments to invest. Besides the Golden Rule, other prudential rules include rules that target debt levels, new borrowing, debt servicing or foreign currency borrowing. Common restrictions are limits on the total debt level and the issuance of new debt. They are mostly expressed as a share of sub-central total or current revenues, sometimes as a percentage of GDP and, in rare cases, a ceiling on total debt in absolute terms is set (OECD, 2016[27]; Eyraud et al., 2020[28]). Limitations on foreign-currency borrowing may be implemented to reduce currency exchange risk. Other prudential rules may exist, including limits on short-term borrowing and commercial debt, choice of debt (loans vs bonds) and lenders, or on the type of transactions. Debt rules can promote the fiscal sustainability of subnational governments, especially debt services rules (OECD, Forthcoming[29]) .
Internal and external audits frameworks	Internal audit frameworks are organisational policies and procedures to ensure reliable record keeping, promote operational efficiency and monitor adherence to policies (Baltaci and Yilmaz, 2006[30]). They can improve financial and administrative management capacity by limiting fiscal and investment behaviours that result in waste and misallocation of resources. External audits may be performed by upper-level governments or by an external audit agency.
Fiscal risk assessment	Fiscal risk assessments evaluate a subnational government's degree of exposure to fiscal risks. Undertaking fiscal risk assessments can support subnational governments to improve their investment performance and fiscal governance by revealing risks and areas for improvement. For example, the State of Michigan in the United States has a 10-point scale fiscal stress monitoring system for local governments. The system tracks indicators such as population growth, real taxable value growth, large decreases in real taxable value and general fund operation deficit, among other factors. (MSU, 2015[31])
Monitoring and early warning systems	Monitoring and early warning systems may be put in place to alert relevant authorities when subnational governments are incurring issues such as over-indebtedness. Monitoring and early warning systems serve as a tool to promote sustainable investment by supporting early identification of fiscal risks so that remedial actions can be undertaken. Research suggests that monitoring and early warning systems should assess both the explicit and implicit sources of risk, as well as the associated direct obligations and contingent liabilities (Brixi, 2005[32]). For example, a traffic light alert system in Mexico was developed to assess and monitor subnational debt levels (See Case study 1 in Annex A.)

Independent fiscal institutions	Independent fiscal institutions are independent parliamentary budget offices and fiscal councils aimed at promoting sustainable public finances. Some IFIs include subnational governments in their scope by monitoring fiscal performance and compliance of fiscal rules by subnational governments throughout the budget cycle (OECD, 2020[33]). Other IFIS are established at the subnational level in federal countries, such as Canada and Australia but also in the United Kingdom in Scotland and Northern Ireland (EC, 2022[34]; OECD, 2021[35]). They assess the reasonableness of targets and plans, the risk of noncompliance and the progress of corrective action. They can also serve as an early warning system by impending budgetary emergencies at an early state so that appropriate countermeasures can be initiated in a timely manner. For example, in Ontario, Canada, the Financial Accountability Office provides independent analysis on the state of the province's finances, trends in the provincial economy and related matters (FAO, n.d.[36]; OECD, 2021[35]).

Institutional capacity

Effective and quality subnational infrastructure investment requires substantial institutional capacity, including appropriate skills of staff and fit-for-purpose processes and systems (OECD, 2019[22]). While some larger regional and local governments may have good investment capacity, many smaller subnational governments or those with newly devolved responsibilities may require additional support to manage and implement infrastructure investment, including to use different funding sources and financing instruments (OECD, 2020[21]) (OECD, 2014[1]; OECD, 2020[21]). More inclusive infrastructure investment is supported by building the capacity of subnational governments (OECD, forthcoming[11]).

Subnational governments need to build a wide range of institutional capacities to cover all stages of an infrastructure project, from the planning infrastructure through to decommissioning (Mizell and Allain-Dupré, 2013[37]). Efficiency of public investment is increased through long-term strategic planning of regional and local development, transparent project selection, capital budgeting within a medium-term perspective, effective procurement and implementation and monitoring (OECD, 2014[1]; Kim, Fallov and Groom, 2020[38]; Manescu, 2021[39])

Among other areas, effective infrastructure investment usually requires institutional capacity within subnational governments for:

- *Strategic planning*: to support the identification of long-term regional and local development priorities that guide infrastructure investments and other complimentary policy actions (such as land use changes) in line with **regional and local development strategies**.
- *Project planning and appraisal*: to help ensure specific infrastructure investments are well defined, efficiently prioritised, provide value-for-money and contribute to regional and/or local development objectives. This can include online **project preparation and monitoring platforms** such as **SOURCE**, which has been established by multilateral development banks to help national and subnational governments prepare quality infrastructure investment projects (See Case study 3 in Annex A).
- *Public financial management*: to budget and manage life-cycle investment costs, align budget frameworks, monitor and account for financing flows, account for risks and contingent liabilities and undertake auditing processes. For example, the World Bank and other partners launched the City Creditworthiness Initiative to build the public finance management capacity of cities, aiming to enhance their creditworthiness (See Case study 4 in Annex A).
- *Public procurement*: to clearly articulate and prioritise the objectives of procurement to private constructors and assess options against value for money criteria and other objectives.
- *Monitoring and evaluation*: to conduct regular and rigorous ex-post evaluation and use monitoring and evaluation information to enhance decision–making.

Among other mechanisms, building institutional capacity within subnational governments for infrastructure investment can be supported through dedicated **capacity-building programmes**, **technical assistance facilities** or specialised groups such as PPP knowledge centres or **PPP Units**.

Featured tools:

Capacity building programmes	Capacity building programmes seek to improve the ability of subnational governments to deliver infrastructure investment. Among many areas, capacity building can consist of classroom training, the creation of guidelines and training materials, formative activities delivered by experts to subnational officials and staffing policies (i.e. secondment programmes). For example, the City Creditworthiness Initiative developed by the World Bank and other partners seeks to address the knowledge gap in subnational borrowing by teaching city leaders the fundamentals of creditworthiness enhancement (See Case study 4 in Annex A).

Technical assistance facilities	Technical assistance facilities created by multi-lateral development banks, national/state, governments or other organisations aim to strengthen policies, regulations and institutions for infrastructure investment and support effective private-sector participation in infrastructure. These facilities often provide experts to support subnational governments with specific projects or activities and promote knowledge-transfer. The experts could also be shared between jurisdictions or government departments where permanent placement of experts is not needed or is difficult to recruit. For example, PPIAF's Subnational Technical Assistance Program helps develop public financial management skills, strengthen credit ratings and build capacity (PPIAF, 2021[40]).
Project preparation and monitoring platforms	Infrastructure project preparation and management platforms support the development, management and monitoring of quality infrastructure projects. These online platforms provide easy to use documents to support effective infrastructure planning and investment processes. They usually provide a comprehensive map of all aspects to consider for the preparation of sustainable infrastructure projects and example documents. For example, multilateral development banks have developed SOURCE to provide a complete range of documents to support infrastructure planning and investment processes (see Case study 3 in Annex A)
PPP Units	PPP Units with dedicated and technically sound expert teams (in house and/or contractual) can strengthen subnational governments capacity in undertaking PPPs. Most PPP Units are national, but some countries also have PPP Units at the subnational level. Although their specific role varies, PPP Units tend to perform a combination of five main functions: policy formulation and co-ordination, gate keeping and quality control, technical assistance, education and capacity development, and PPP promotion. For example, the PPP Unit in the Brazilian State of Bahia aims to promote and support PPP activities in the region (State of Bahia, n.d.[41]).

Co-ordination, cooperation and stakeholder engagement

Many infrastructure responsibilities are shared across national and subnational governments, so 'vertical' co-ordination across levels of government and 'horizontal' co-ordination across jurisdictions is essential to ensure that investment occurs at the right scale and in the right place (OECD, forthcoming[11]). Engagement with local communities and stakeholders is also critical for inclusive infrastructure investment.

Vertical co-ordination helps to strengthen efficiency, effectiveness and complementarities of infrastructure investments (OECD, 2014[1]; OECD, 2020[21]). Co-ordination can help ensure that investments achieve their intended benefits. If a national or regional government decides to construct a highway or airport, for example, complimentary local investments are also required for municipal roads and public transport in surrounding areas. An effective platform for co-ordination among different levels of government and other stakeholders can help to align planning and implementation across levels of government.

Effective vertical co-ordination also helps to identify shared investment opportunities and bottlenecks, manage joint responsibilities, minimise contradictory investments, and pool funds for joint investments or for specialised support. Vertical co-ordination mechanisms can include co-funding arrangements across levels of government such as **city and regional contracts or deals**, and **regional or local development strategies**. For example, the Korean Regional Development Investment Agreement is a co-funding arrangement between the national and local governments to support regional development (See Case study 5 in Annex A). Mechanisms can also include platforms for inter-governmental dialogue and dedicated regional development agencies that design and implement investment programmes under national frameworks (OECD, 2019[42]).

Horizontal co-ordination between jurisdictions is also essential given that many types of infrastructure investments do not neatly fit within one jurisdiction (OECD, 2014[1]; OECD, 2020[21]). Effective co-ordination and cooperation can contribute to ensuring that infrastructure investments occur at the relevant scale and promote efficiency by harnessing economies of scale (where they occur across boundaries) and enhancing policy synergies among jurisdictions. Cross-jurisdiction co-ordination can be encouraged through financial and non-financial incentives, and agreements between jurisdictions, such as **inter-municipal cooperation arrangements** like in France where they are widespread. In the Philippines, 10 cities have joined together to create an insurance pool to jointly fund the repayment of infrastructure after disasters (See Case study 6 in Annex A).

Engaging with public, private sector and civil society stakeholders in the design and implementation of public investment strategies is critical to enhance social and economic value of investments, and to support accountability. These stakeholders could be residents, civil society organisations, unions, private companies or business associations, among other groups. All levels of government should involve stakeholders in development of investments at an early stage of the investment cycle, and, at later stages, in feedback and evaluation. Information on public investment plans, expenditures, and results should be exposed to some level of public scrutiny to promote transparency, accountability and trust. Consultation processes should be inclusive, open and transparent, and promote transparency and integrity (OECD, 2014[43]).

Featured tools:

City and regional deals/contracts	City and regional contracts bring together all levels of government, the community and the private sector with the aim of aligning planning, investment and governance practices to maximise the efficiency of a city/region's investments. Contracts are tailored to each city/region's comparative advantages, assets and challenges and adopt a place-based approach by putting community-identified priorities at the centre of the plan. Contracts may also encourage innovation among public and private actors, challenging established models and working methods. Contracts may rely on central and shared funding, and they can operate over short periods. In essence, deals can be perceived as vehicles for co-operation, which allow stakeholders to pool resources. Examples include "city deals" (United Kingdom, the Netherlands), State-Regions contracts and *Contrats de relance et de Transition écologique* in France. Another example is the Korean Regional Development Investment Agreement that is an inter-governmental contract to support bottom-up infrastructure projects (see Case study 5 in Annex A).

Regional and local development strategies	Regional and local development strategies and plans help to identify and coordinate investments and other public interventions at a regional, metropolitan, or local level to support economic development and improve well-being. These strategies and plans can help to foster co-ordination and engagement with the community during their preparation. They often serve as a long-term guide for sequencing multiple investments and can help to shield investments from political changes. Regional and local development strategies and plans provide a good opportunity to engage with stakeholders and build public support for future investments. For example, regions and cities in the Czech Republic develop local development plans, which are then collected through the system of Regional Permanent Conferences and contribute to the elaboration of a national development plan. (OECD, 2019[42])
Inter-governmental investment co-ordination platforms	Countries may create regular dialogue platforms or institutions to coordinate infrastructure investment across levels, including by reviewing infrastructure needs within a country, identifying policy and investment priorities, strategically coordinating and planning investments across jurisdictions, and ensuring that various infrastructure investments are complementary and contribute to common goals at all levels. For example, the National Forum for Regional Growth and Attractiveness in Sweden brings together national and subnational governments for ongoing political and strategic dialogues, based on national strategies and Regional Development Programmes (OECD, 2019[42]).
Inter-municipal cooperation arrangements	Co-operation between subnational governments can support investment at the right scale and in the right place. Formal or informal inter-municipal co-operation arrangements can facilitate the provision of joint municipal services and to ensure investment at an efficient scale, avoiding fragmentation of investment projects. This can be particularly beneficial for facilitating investments at the metropolitan scale and to reinforce urban-rural linkages. Inter-municipal co-operation can also be useful for small municipalities who may have scarce public resources to efficiently deliver quality public goods to their citizens and to derive economies of scale with their own investment projects. For example, municipalities in France are encouraged to collaborate on the provision of public services and infrastructure through Public Establishments for Intermunicipal Cooperation (EPCI) (OECD, 2019[22]; AdCF, 2020[44]).
Stakeholder engagement	Ensuring that all stakeholders (citizens, businesses, NGOs, etc.) are given the opportunity to participate and engage in public investment planning and implementation is critical to setting investment priorities that are consistent with local preferences and need, providing a feedback loop on project implementation and supporting transparency, accountability, trust, and integrity of investment processes. Among other areas, stakeholder engagement can be supported through regional development planning processes, community consultations and public engagement in environmental regulatory approvals. For example, in the Netherlands many urban regions have set up “Economic Boards”, which consist of a triple-helix co-operation between subnational governments, knowledge institutes (e.g. universities), and the private sector to identify investment opportunities that can spur development in the regions (OECD, 2019[42]).

Access to financial markets

Subnational governments' access to financial markets is essential to scale-up inclusive and quality infrastructure investment. Financing instruments that may be available to subnational governments include loans from public or private financial institutions and the issuance of bonds directly 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. The bond market for subnational government debt is however well established in many countries including, Brazil, Canada, China, India, Japan, Korea and the United States for municipal and state governments (OECD, 2021[2]),

In many countries, one of the key constraints for subnational governments to access affordable finance is the availability and depth of **local-currency capital markets** for subnational governments (UNCDF, 2022[8]). Local investors may be reluctant to invest in subnational government bonds in countries with limited history of bond issuances, as they are unfamiliar with related risks. Meanwhile, international investors who are familiar with these bonds might face additional currency risk for which they may seek a higher investment return. Hence, improving the depth of local currency debt markets has an important role to improve access to finance for subnational governments.

Beyond deepening capital markets, one common way to improve access to finance for subnational governments is by establishing targeted **financial intermediaries** for subnational governments. National or subnational governments may create these 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 on-lend to subnational governments. Lending is typically on better terms than would have otherwise been available, partly because these financial intermediaries may better understand the risk profile of subnational governments. Examples of financial intermediaries include state or municipal bond banks, **national infrastructure banks**, treasury corporations, regional development banks and local government financing agencies. For example, the Minas Gerais Development Bank in Brazil provides finance especially to less developed municipalities in the region (See Case study 7 in Annex A). Where financial intermediaries are created by multiple subnational governments pooling their resources they may be referred to as **subnational pooled financing mechanisms** (or local government funding agencies)**.** These mechanisms exist in Japan, New Zealand, France, Sweden, Finland and Norway, among other countries.

Trust funds, such as those established by multilateral development banks, also have a key role to support subnational infrastructure investment. These funds may be established using contributions from different countries, private organisations and/or philanthropic groups or individuals, and may provide grants or loans to subnational governments through dedicated programs. Trust funds may have a defined purpose to support subnational governments, including a focus on improving urban infrastructure or municipal finances. In Argentina, for example, the federal government created a fund for regional infrastructure that lends to provincial governments for essential infrastructure (see Case study 8 in Annex A). In South Africa, the INCA Municipal Debt Fund seeks to support investments in 'intermediary cities' (see Case study 9 in Annex A).

Improved information exchange between subnational governments and finance providers can also help to improve access to finance by reducing frictions and clarifying risks (GIZ, 2012[45]). Information exchange is relevant for both parties: subnational governments can develop better knowledge of capital markets and financial products; and, financial providers can better understand subnational governments' borrowing needs, risks and constraints. Effective information exchange might be supported through effective financial market regulations, credit rating assessments, educational material, and market transparency and disclosure rules.

Subnational government access to capital markets can also exert pressure on these governments to improve their fiscal discipline (for example, via financing and credit ratings). This might ultimately mean that there is a lower need for budget constraints to be put in place by national governments (Ter-Minassian, 2007[46]).

Featured tools:

Credit assessments	Credit assessments consider the creditworthiness of an entity or a financial instrument. Assessments may be provided by private companies, public or international organisations. For example, the World Bank has developed a technical assistance package and credit rating tool to help assess credit risk of public companies, which might be applied to subnational SOEs. (World Bank, 2022[47])
Subnational Pooled Financing Mechanisms	Subnational or municipal debt pooling is a practice where subnational governments jointly issue debt on capital markets. Subnational governments may set up a financial intermediary to improve the affordability of debt and access to capital markets.
Trust Funds	National governments, private companies or philanthropic institutions may contribute to trust funds that have an explicit purpose to support subnational infrastructure investment. These funds can be established with a defined purpose, such as to support climate friendly urban infrastructure in specific countries. For example, the ADB administers the USD150 million Urban Climate Change Resilience Trust Fund, which aims to support fast-growing cities in Asia to reduce climate vulnerability risks. Another example is the INCA Municipal Debt Fund in South Africa (See Case Study 9 in Annex A).
National infrastructure banks	National infrastructure banks may be established and have an important role to support infrastructure investment by subnational governments. In some cases, these banks may also provide technical assistance and guarantees to subnational infrastructure projects. For example, the United Kingdom Infrastructure Bank can provide financing to local governments to carryout high-value infrastructure projects (UK Infrastructure Bank, n.d.[48]).

Funding sources to support subnational infrastructure investment

Funding is essential to support infrastructure investment by subnational governments. Funding can help to pay up-front costs and is also required to pay operational and maintenance costs, which usually cannot be paid by financing ('golden rule'). In the case where financing is leveraged to help meet up-front costs, funding also needs to be made available to re-pay financing in the future.

Funding sources for subnational government infrastructure investment are mainly grants or subsidies from upper-level governments, shared or own-source taxes, and user charges or fees. Two other potential funding sources are 'land value capture' and revenues from infrastructure assets. Each of these funding sources provides opportunities for subnational governments to support inclusive and quality infrastructure investment.

Potential funding sources for subnational governments

Grants and Subsidies	Taxation	User Charges and Fees	Asset Revenues	Land Value Capture
Transfers and subsidies from upper-level governments, international organisations and, in some cases, philanthropy that can cover current or capital expenditure (for infrastructure investment) by subnational governments. In general, the share of capital grants in subnational revenues is in general quite small on average, and volatile.	Taxes levied on income, commercial activities, wealth or property, production of goods or capital, which may be own-source ("autonomous") or shared with other levels of governments (typically personal income tax, corporate income tax, and value-added tax).	Charges or fees to the users of public infrastructure or for public services provided (e.g. waste collection), which may be collected by a subnational government or operator.	Subnational governments can seek to adopt a portfolio management approach to effectively manage their assets in the long-term public interest. This includes increasing revenues and asset benefits or decreasing whole-of life costs.	Instruments that seek to capture some of the windfall gains from public policy interventions or infrastructure investments, which could then be used by subnational governments to pay for investments.
47% of total subnational government revenue in G20 countries	39% of total subnational government revenue in G20 countries	10% of total subnational government revenue in G20 countries	*Not applicable*	*Included in other categories*
Featured tools				
Regional development funds Viability gap funding Competitive grant programmes Matching grants Conditions on grants	Property taxes Tax increment financing Carbon taxes Tourism taxes Mobility/transport taxes	Utility charges Parking fees and urban congestion charges	Public property or land leasing Asset recycling	Developer obligations Infrastructure levies Charges for development rights Land readjustment Strategic land management Transferable development rights
Case Studies				
10. On-Street Residential Chargepoint Funding Scheme (United Kingdom) 11. Federal Agglomeration Programmes (Switzerland)	12. Versement Mobilité (France) 13. Climate Action Taxes in Boulder, Colorado (United States)	14. Pico y Placa Solidario Programme and On-Street Parking Charges in Bogotá (Colombia)	15. "Rail plus property" model of Shenzhen metro (People's Republic of China)	16. Use of Transferable Development Rights In Hyderabad (India)

Grants and subsidies

Grants and subsidies for subnational governments are mainly transfers from higher-level of governments, but can also come from multilateral organisations (e.g., European Structural and Investment Fund) and in some cases, philanthropy. In G20 countries, grants and subsidies represent 47% of total subnational government revenue on average (OECD/UCLG, 2019[3]). Capital grants have been especially important during the COVID-19 crisis, as many national governments provided grants to encourage local infrastructure investment as part of the recovery (OECD, 2021[49]).

Grants and subsidies can be unconditional (i.e., general-purpose grants or block grants) or capital grants. Unconditional grants are usually provided based on a pre-defined formula and may be used for infrastructure investments selected and prioritized by a subnational government. Capital grants are given to fund specific infrastructure investments.

Capital grants may be used to fund some or all of a project's up-front costs and are typically earmarked for specific projects or programmes. These grants might be provided to encourage subnational government to undertake certain investments that align with upper-level government policy objectives and would not have otherwise occurred in a timely manner. The United Kingdom government, for example, rolled out a funding programme to support local authorities to develop electric vehicle charging infrastructure, as a policy measure to achieve its fully zero emission agenda (See Case study 10 in Annex A). Capital grants can help to overcome subnational governments budgetary constraints, encourage collaboration and support investment at the right scale. The Swiss Federal Agglomeration Programme, for example, provides competitive grants for transport infrastructure in Swiss agglomerations, with the aim of incentivising coordination and cooperation among local authorities (See Case study 11 in Annex A).

Grants for subnational infrastructure investment can be distributed and administered through a range of different structures and approaches. In some cases, national governments establish specific **regional development funds** or investment programmes that then allocate resources to projects or subnational governments in line with defined policy objectives. **Viability gap funding** programmes, for example, is a specific type of funding programme to support the use of PPP projects. Grants may be awarded through an application process (**competitive grant programs)** and may be created as a **matching grant**, where funding is also required to be contributed by a subnational government. For example, the Swiss Federal Agglomeration Programme provides contributes 30% to 50% funding to the selected investment projects, with the corresponding subnational government required to contribute remaining funding (See Case study 11 in Annex A). Various other **conditions on grants** may also be in place with the aim of ensuring that subnational government investment aligns with wider policy objectives (environmental, safety, private investment facilitation, etc.).

Featured tools:

Regional development funds	National or higher-level governments may establish a specific regional development fund to administer grants in a way that supports regional development and infrastructure investment. This approach seeks to harness grants to address multiple, inter-linked and long-term development objectives, beyond single infrastructure investments in line with the mandate of the fund. For example, the *Fondo Nacional de Desarrollo Regional* in Chile is a Fund for regional development that has the objective of achieving balanced territorial development. (OECD, 2021[2])
Viability gap funding	Viability gap funding involves grants being provided for PPP infrastructure projects that are economically justified and viable for private investors, but would not otherwise receive financing. In general, the rationale is to improve the financial feasibility of the project for private investors and ensure that public services offered by the infrastructure are provided at an affordable rate. Funding may come with certain conditions, such as to support projects where private sector sponsors are selected through competitive bidding, encouraging projects that use the 'user-pays principle', or supporting projects with a minimum investment cost. For example, viability gap funding in India provides funding up to INR 10,000,000 (USD 12.6 million) for each project that is approved for the scheme (Indian Department of Economic Affairs, 2019[50]).

Competitive grant programmes	Competitive grant programmes allocate funding to subnational governments based on the quality of investment proposal against a set of defined indicators and criteria, rather than formulas - with an aim to ensure that funding goes to projects that provide the highest potential net benefits. Competitive grant programmes may be linked to existing investment and development strategies or programs to ensure that the funds are used to pursue strategic objectives. Competitive grants might consider differences in the level of institutional capacity of subnational governments to avoid grants being received by governments with higher capacity to prepare applications. For example, in Switzerland, The Swiss Federal Agglomeration Programmes provide competitive grants for individual and public transport infrastructure (See Case study 11 in Annex A).
Matching grants	Matching grants involve the recipient contributing a certain share of its own funding to "match" the original grant (also known as co-funding). For matching grants, effective grant design might consider the fiscal capacity of subnational governments given that some subnational governments may not have the same resources to co-fund investments or institutional capacity to prepare high quality funding applications. For example, the European Regional Development Fund aims to strengthen economic, social, and territorial cohesion in the European Union by correcting imbalances between its regions and involves co-funding from regional and local governments. (EC, 2022[51])
Conditions on grants	Conditions on grants can help to ensure that subnational infrastructure investments are undertaken in line with broader policy objectives. Conditions on grants may ensure funding is used in line with specific objectives or principles relating to environmental performance, ex-ante economic evaluation requirements, implementation of accompanying reforms, and cooperation with other governments, stakeholder engagement or involvement of the private sector, among other areas. The use of conditions, especially earmarking, should be carefully considered to help achieve objectives while avoiding excessive resource and administrative burdens.

Tax revenues

Among G20 countries, taxes represent 39% of total subnational government revenue (OECD/UCLG, 2019[17]) and many subnational governments harness a portion of this tax revenue to fund infrastructure investment. The spectrum of subnational government taxes varies significantly across countries. They may include 'shared taxes', such as value added taxes (VAT), personal income taxes (PIT) and corporate taxes (CIT), or include 'own-source' taxes, often property taxes, sales taxes, vehicle and fuel taxes and some environmental taxes.

Property taxes are often a key source of revenue for subnational governments and the revenue raised from these taxes has a direct link to the quality of local infrastructure and public services. Among G20 countries, recurrent property taxes account for 1.3% of GDP, 27.5% of subnational tax revenue and 8.9% of total subnational government revenue. Property taxes have a lot of merits (stable tax base, solid return on tax collection, lack of vertical tax competition, a link to infrastructure provision, etc.); however, the proportion of property taxes within subnational tax revenue still varies considerably across countries. One of the main constraints is that almost all countries encounter is the difficulty of calculating the value of tax bases. Beyond this, in many countries, the lack of an efficient and reliable cadastre and land registry, and procedures to resolve land disputes are an obstacle (OECD, 2022[52]). In some countries, overcoming these constraints and implementing property taxes can provide an important way to support infrastructure investment (OECD, 2021[2]).

In most cases, subnational government taxes are not earmarked (or hypothecated) to fund specific interventions or infrastructure. Indeed, often it is considered better to avoid earmarking of taxes to allow subnational governments to allocate revenue to the most productive priorities as part of overall budgeting processes (Christen and Soguel, 2021[53]). However, there are some examples where earmarked taxes are used by subnational governments to support infrastructure investment. This can help to create a visible link between taxation and expenditure, which may increase public acceptance of new taxes.

Examples of earmarked taxes can include **transport taxes** to help fund transport infrastructure and **carbon taxes** to fund investments in the green transition. In France, Versement Mobilité is a tax that is earmarked to help fund sustainable local public transport investments (See Case study 12 in Annex A). In Boulder, Colorado (United States) a local carbon tax has been used to support green investments (See Case study 13 in Annex A). Given the important link between infrastructure investment and property taxes, many infrastructure investments also look to use **Tax Increment Financing** to support infrastructure investment. This mechanism typically allocates expected increases in property taxes across a defined area towards the repayment of financing for that investment.

Featured tools:

Property taxes	Subnational governments often apply taxes on properties (buildings and land) within their jurisdictions. Property tax is an ad valorem tax on real estate, assessed by local government and paid by the property owner (individuals or businesses). Almost all countries encounter difficulty in calculating the value of tax base for property taxes. In an increasing number of countries, the tax base is calculated based on the value of the property, which can be the rental value or the market value. Beyond valuation and revaluation difficulties, a primary obstacle in many countries to the efficient collection of this tax is the lack of an efficient and reliable cadastre and land registry, including procedures to resolve land disputes. For example, in countries like Australia, Canada, Ireland, New Zealand and the United Kingdom, immovable property tax represent between 85% and 100% of local tax revenue (OECD/UCLG, 2019[17]). In South Africa, in Johannesburg, income from the property tax is used to pay for a wide range of public services, including infrastructure maintenance. (City of Johannesburg, 2018[54]).
Tax increment financing (TIF)	TIF supports subnational governments to finance infrastructure investment by earmarking future property tax revenue to help repay the financing used for the investment. To harness TIF, a local government identifies a Tax Incremental District (TID) and relevant infrastructure projects in that district. As property values or rates rise, the municipality uses a portion of future revenues in the TID to repay the investment financing. The use of a TIF requires robust real estate and economic conditions, as well as property records and valuations. For example, TIF is to be used in Medellin, Colombia to finance 45 projects from 2021 to 2035 in the city's innovation district. (World Bank, 2021[55])

Carbon taxes	Carbon taxes are a levy on carbon emissions or carbon emission equivalents designed to account for the negative external cost of pollution. These instruments are sometimes referred to carbon pricing and are widely recognised as one of the most efficient ways to reduce emissions while incentivising innovation. (IPCC, n.d.[56])For example, in Boulder, Colorado a carbon tax with different rates for residential, commercial and industrial electricity users has been in place since 2006 (See Case study 13 in Annex A).
Tourism taxes	The use of tourism taxes, such as hotel room charges, have been increasing for more than a decade as a local government tax. In quite a few cases, local governments use tax revenue on restoration of cultural heritage, development of tourism infrastructure, nature preservation, or compensation for local citizens for noise pollution from air traffic. Such a tax needs to be carefully designed to consider any effect on local tourism, while also seeking to raise funding towards investments in infrastructure and services used by tourists. Tourism taxes can sometime also aim to lower tourism demand in places where excessive tourism is seen to have disruptive impact on a city or region. For example, the City of Venice in Italy uses an accommodation tax levied on visitors to invest in the restoration and salvation of tourist attractions and infrastructure (Venezia Unica, 2014[57]).
Mobility/ transport taxes	Taxes levied on users or beneficiaries of transport infrastructure. These taxes might be levied in many different ways, such as a flat rate per vehicle per year, or by taxing train passengers per kilometer (European Environment Agency, 2015[58]). For example, in France, mobility authorities levy a tax on employers to contribute to the investment and maintenance of public transportation infrastructure (See Case study 12 in Annex A).

User charges and fees

User charges and fees are levied on individuals or companies who use infrastructure and services provided by subnational governments or their related entities (e.g. water, electricity, gas, sewage, garbage collection, transport, etc.). These charges and fees often help cover the ongoing operational costs of infrastructure, but may also be used to repay financing from the initial investment. In some countries, specific subnational SOEs (or local public companies) may leverage user charges and fees for providing infrastructure and services (e.g., municipal water companies). In a user-pays PPP, user charges and fees will help to cover some of the initial investment and operating costs by the private sector. Among the G20 countries, user charges and fees represent around 10% of subnational government revenue (unweighted average, (OECD/UCLG, 2019[19])).

User charges and fees that might be collected by subnational governments include **utility charges**, administrative service fees, **parking fees and urban congestion charges,** public transport fares, tickets at sporting and cultural facilities (e.g., municipal theatres, concert venues, etc.) and various fines, penalties and forfeits (e.g., parking fines, speeding fines, etc.)[1]. Parking fees are a common source of revenue for local governments that can be targeted to reduce congestion and support local transport infrastructure investment. For example, the City of Bogota (in Colombia) has developed the *Pico y Placa Solidario* Programme to reduce road congestion and support the public transport system (See Case study 14 in Annex A).

There are several limitations to the development of user charges and fees, including the legal capacity of subnational governments to create and determine the level of such fees in areas considered as essential (e.g. energy), the capacity and willingness of users to pay and capacity management (OECD, 2019[59]). While charges and fees, when designed appropriately, can provide a direct and equitable link between the beneficiaries of infrastructure or related services and payment, they can also create a barrier to access those infrastructure and services for lower socio-economic groups. Considering the capacity and willingness of users to pay may support the implementation of tiered user charges, such as with transport concession fares, or direct subsidies to lower-income households.

Featured tools:

Utility charges	Utility charges are collected from the users of utility services (e.g. sewage, water and publicly provided electricity). Charges may be incurred based on a volumetric basis and/or as a regular fee. Utility charges are typically used when benefits of the infrastructure or related services accrue to identifiable individuals or households and the payment of the charges varies with consumption. For example, water charges in Cape Town are calculated on an increasing scale based on the circumference of the metered connection. These costs are used for repairs and maintenance programmes of the city's water supply system. (City of Cape Town, 2022[60])
Parking fees and urban congestion charges	Parking fees and urban congestion charges can seek to prevent traffic congestion and help to reduce air pollution, carbon emissions and noise pollution, while also generating revenue for transport improvement in urban areas. Parking fees are charged by local governments through various approaches (inspectors, meters, electronic tickets) with an aim to discourage driving and reduce congestion. Congestion pricing is another travel demand management approach that charges a fee for vehicles which enter certain areas. Both parking fees and congestion charges can vary with the time of day to manage demand. For example, in Bogota, Colombia, where vehicles were only allowed to drive every other day, a pay-to-opt-out scheme was introduced, which was complimented by on-street parking fees in 2021 (See Case study 14 in Annex A).

[1] Note that for this report "rental income" is included in the "asset revenue" section; however, under the system of national accounts this type of income is defined as "user charges and fees".

Asset revenues

Subnational governments may own and manage substantial asset portfolios, which can include land and infrastructure. Assets can provide revenue for subnational governments (e.g., property income[2], rental income[3]) and have operational and maintenance costs. Subnational governments can seek to adopt a portfolio management approach to effectively manage these assets in the long-term public interest (United Nations, 2021[61]). This might involve seeking opportunities to increase asset revenues, to create additional benefits from existing assets (for example, by optimising the use an existing rail network) or to decrease whole-of-life costs. While creating additional benefits and decreasing costs does not create 'additional' funding it can lower future funding requirements, meaning that funding can be used for other priorities.

In some cases, subnational governments may seek additional revenue by **leasing public property or land** to private users, particularly if assets are not being effectively used for public purposes and the government has a reason to retain public ownership. Leasing can create income for subnational governments to support the operations and maintenance of that property. It can also provide surplus income to be invested in other infrastructure or used for other purposes. In some specific infrastructure sectors (e.g., urban rail transit, regional highway), subnational governments (and/or related entities) can also use commercial leasing (e.g., operation of advertisement resources) to generate additional revenues for infrastructure. This is the case of the Shenzhen Metro Group in the People's Republic of China (See Case study 15 in Annex A).

As government assets are 'non-renewable' resources they need to be carefully managed over time; however, in some cases, subnational governments may seek to divest public assets. Divestment is generally considered relevant where continued ownership is no longer considered to be in the long-term public interest. Divestment might be considered from the perspective of maximising long-term 'public wealth' (Dag Detter and Stefan Fölster, 2018[62]). This might be achieved by ensuring that funds released from any divestment are used effectively. An **asset recycling programme,** for example, seeks to ensure that funding from divestment of commercially viable assets is used for new productive infrastructure.

Strong regulatory and institutional frameworks are required to ensure that subnational government assets are managed effectively and in the long-term public interest (United Nations, 2021[61]). Long-term leases or asset divestment can reduce public control over land and assets, which can result in inefficiencies and reduce equity and accessibility. It can also increase the cost of future public interventions as, for example, the sale of public land might prevent public upgrades in the future without expensive land acquisition.

Featured tools:

Public property or land leasing	Subnational governments may lease land or buildings while maintaining public ownership. This can provide income for these governments over a defined period, while also retaining control over future uses of that land or asset. Property leasing can be complex, and subnational governments need to carefully consider the tenure and proposed use of leased premises, as well as other legal obligations.
Asset recycling	Asset recycling involves the divestment or sale of an asset with the explicit purpose of using proceeds to fund another investment. While this method provides funding in the short term, it does not generate any 'additional' funding over the long-term as future income from the assets is foregone. A prominent example was the Asset Recycling Initiative in Australia, where the national government supported state governments to divest existing assets (i.e. ports, electricity infrastructure) and use funding to invest in new infrastructure assets (i.e. metro lines, highways). For example, in Australia the Asset Recycling Initiative incentivised state governments to divest assets through a contribution valued at 15% of the assessed sale value. AUD 5 billion was made available to States and Territories through this initiative. (Parliament of Australia, n.d.[63])

[2] According to the system of national accounts, property income includes interest on deposits and investments, dividends, withdrawal of income from subnational public companies, as well as rents on land and subsoil assets (e.g., royalties). This type of income accounts for approximately 2% of total subnational government revenues among G20 countries and globally (OECD/UCLG, 2019[17]).

[3] Note that the asset revenue section includes "rental income" as focus is placed on this type of revenue separately to user charges; however, under the system of national accounts this type of income is defined as "user charges and fees".

Land value capture

Infrastructure investment and other policy interventions can result in significant increases in the value of nearby land. Capturing some of these increases can provide subnational governments with an important source of revenue.

Land value capture refers to 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 (OECD, 2017[64]). Land value capture instruments seeks to capture 'windfall gains' from public interventions that may materialise in increased land prices (Smolka, 2019[65]). Land value capture is most common seen in large or growing urban areas. It has particularly strong potential in developing countries faced with rapid population growth and high infrastructure investment needs.

The term 'land value capture' includes various taxes, user charges and fees, and other revenue sources. The *OECD-Lincoln taxonomy of land value capture instruments* highlights five main types of land value capture: **developer obligations**, **infrastructure levies**, **charges for development rights**, **land readjustment** and **strategic land management** (OECD/Lincoln Institute, 2022[66]). Alongside charges for development rights, some jurisdictions also allow for development rights to be traded as **transferable development rights (TRDs)**. While TDRs may not provide 'additional' revenue in subnational government budgets, they can be an effective tool to avoid high land acquisition costs and support acquisition processes. In Hyderabad, India, for example, transferable development rights supported land acquisition process as part of a Strategic Road Development Plan (See Case Study 16 in Annex A).

Land value capture instruments are often complex and can face a number of obstacles. For example, there may be a lack of an adequate legal framework on land use, failure to consistently apply regulations (when they do exist), absence or dysfunction of land markets, insecure property rights, potentially high initial costs, insufficient government capacity and implementation problems, among other challenges. One key technical difficulty is quantifying the incremental value generated by public interventions. Governments may also struggle to strike the right balance between capturing a fair value and providing incentives for private sector market participation in development.

Featured tools:

Developer obligations (also known as impact fees, negotiated exactions, development charges, linkage fees, parkland dedication, etc.)	*"A developer obligation is a cash or in-kind payment designed to defray the costs of new or additional public infrastructure and services private development requires."* (OECD/Lincoln Institute, 2022[66]) These obligations are most often linked to obtaining development approval to develop or build on a land parcel. In some countries, developers are required to build affordable housing in exchange for approval. This practice, called inclusionary zoning, can be viewed as a form of developer obligation. Unlike the infrastructure levy, developer obligations are triggered by the initiative of private developers and land owners. The obligations can be either negotiated between the government and developers, or calculated using a fixed formula.
Infrastructure levies (also known as betterment contributions, betterment levies, special assessments, etc.)	*"An infrastructure levy is a tax or fee levied on landowners possessing land that has gained in value due to infrastructure investment initiated by the government."* (OECD/Lincoln Institute, 2022[66]) Subnational governments can levy a fee or tax from landowners possessing land that has gained in value due to infrastructure investment initiated by the government. Infrastructure levies may be used to finance the construction and upgrade of sidewalks, streets, water mains, storm sewers and sewers. Levies are either one-off or spread over several years. For example, local councils in the United Kingdom can levy a charge on new developments to help them deliver needed infrastructure to support the development. (United Kingdom Government, 2022[67])

Charges for development rights (Related concepts include sale of development rights, sale of air rights, density bonus and transfer of building rights.)	*"Charges for development rights are cash or in-kind contributions payable in exchange for development rights or additional development potential above a set baseline."* (OECD/Lincoln Institute, 2022[66]) Subnational governments can charge developers for additional development rights above a defined land-use, density and/or height baseline, but within the maximum level permitted by the zoning plan. Different flexibility can be built in this mechanism: in some cases, developers can bid to purchase development rights in the form of higher floor area ratio certificates at an auction. For example, in Sao Paulo, Brazil the government provides Certificated of Additional Construction Potential to generate revenue for public infrastructure projects. (WRI, 2020[68])
Land readjustment	*"Land readjustment is the practice of pooling fragmented land parcels for joint development, with owners transferring a portion of their land for public use to capture value increments and cover development costs."* (OECD/Lincoln Institute, 2022[66]) Land readjustment is where privately-owned, contiguous plots of land are pooled and developed jointly. It is often accompanied by zoning changes or relaxed density regulations so that newly developed land becomes more valuable. In turn, landowners provide a share of their plots for public infrastructure and services, such as public roads, utilities and parks. Landowners are returned a smaller plot of land that is nonetheless more valuable due to the improvements made. Land readjustment can be initiated by local governments or private landowners. The instrument is referred to as land pooling in some countries. For example, land readjustment was used in Ahmedabad, India in order to carry out the Sabarmati Riverfront Development (World Bank, 2015[69]).
Strategic land management	*"Strategic land management is the practice of governments actively taking part in buying, developing, selling and leasing land to advance public needs and recoup value increments borne through public action."* (OECD/Lincoln Institute, 2022[66]) With strategic land management, governments buy land or use existing land holdings to extract values from them, which can in turn be used to fund public infrastructure and services. If governments acquire land at pre-development prices, they can fully capture increases in land value that are due to public development or regulatory changes. Governments can recover land value gains with the sale or lease of rezoned and developed plots that are greater in value. Similarly, governments can lease usage rights, capturing value increments through higher rents. For example, in Hong Kong, the government provides the MTR (Mass Transit Railway) with development rights at stations that can be converted into land by paying a land premium based on the land's value without the railway. The MTR then builds a railway, partners with developers to build properties, and receives a share of the profits, which it reinvests in infrastructure. (OECD, 2021[2])
Transferable development rights	The principle of Transferable Development Right (TDR) is to unbundle the development potential of a given property from the land, and make the development rights a separate commodity, which a property owner can choose to sell at a negotiable price. In some cases, this is used to allow public authorities to obtain space to provide facilities or infrastructure by compensating an owner without a monetary payment. In general, a property owner can obtain TDRs from a local public authority in the form of certificates, which the owner can subsequently use for a property development or trade. For example, TDRs have been used in Indian cities to acquire land for infrastructure projects, including in Hyderabad (See Case study 16 in Annex A).

Financing instruments to support subnational infrastructure investment

Finance is essential to help subnational governments spread the high up-front costs of infrastructure investment over time. This can distribute the payment for infrastructure across future citizens and users who will benefit from that investment, providing an equitable way to pay for infrastructure. Yet, accessing affordable finance remains a challenge for many subnational governments.

Improving access to finance requires effectively using available financing and credit enhancement instruments. This section of the Toolkit provides a brief overview of four main instruments to support the use of finance: loans, bonds, equity and guarantees (for credit enhancement).

Financing instruments (including for credit enhancement)

Loans	Bonds	Equity	Guarantees
Loans are the most accessible form of finance for subnational governments. Loans are provided by a public or private financial institution to support an investment project or large investment programme.	Bonds are debt that is securitised through an underwriter and is issued on domestic or international capital markets. In some countries, subnational governments can issue a variety of different types of bonds to finance investment.	Equity is capital-at-risk provided in return for an ownership share of an asset or entity with a potential financial upside. Equity may be invested in PPPs, partially-owned SOEs or private infrastructure companies.	Guarantees are not financing instrument in themselves, but provide credit enhancement or credit substitution to a debt instrument, such as a loan or a bond. These instruments can thus help to improve the creditworthiness of subnational government debt for investors
57% of subnational government debt across G20 countries (OECD/UCLG, 2019[19])	27% of subnational government debt across G20 countries (OECD/UCLG, 2019[19])	In 2019, 31.5% of finance for infrastructure investment in low and middle-income countries was equity investment (World Bank, 2019[70]).	
Featured tools			
Project loans Concessional loans Green loans	General obligation bonds (municipal bonds) Revenue bonds and project bonds Thematic bonds (e.g. green bonds)	Impact investing Equity in PPPs Blended finance	Performance guarantees Financial guarantees
Case Studies			
17. Low-cost loans to support local government infrastructure investment (Australia)	18. Vivaracqua Hydrobond in Veneto (Italy)	19. The International Municipal Investment Fund (International)	20. The Municipal Guarantee Board (Finland)

Loans

Loans are one of the main sources of financing for subnational governments and are often the only source of financing available to smaller governments. Loans represent approximately 40% of subnational government debt in G20 countries, and 57 % of subnational government debt globally (unweighted average (OECD/UCLG, 2019[17])).

Loans are the most accessible form of finance for supporting subnational infrastructure investment. They are particularly important for smaller subnational governments and those who cannot directly access capital markets to issue bonds. Loans are often customisable and can come with flexibility in terms of scale, duration and repayment schedule (OECD, 2015[71]). Depending on the country and relevant fiscal and regulatory frameworks, subnational governments might be able to access loans from a wide variety of financial providers, including commercial banks, multi-lateral development banks and public financial institutions. In some cases, financial intermediaries may issue bonds on capital markets and on-lend to subnational governments (see 'access to financial markets' section).

A wide variety of different loans and lenders exist. Three particularly relevant types of loans for subnational government infrastructure investments are commercial loans, **concessional loans** and **green loans**. Commercial loans are provided at a market rate, while concessional loans (or low-interest loans) are provided at a below-market interest rate. The lower interest rate is achieved through a subsidy provided by a higher level- government or other institution who is seeking to incentivise investment. In Australia, for example, state governments often seek to support local government investment and borrowing by providing low-costs loans and pooling financing needs (See Case Study 17 in Annex A). **Green loans** are loans that must be allocated to support defined 'green projects' following an industry definition, such as those defined by ICMA (Loan Market Association, 2018[72]).

Loans may be also provided to subnational governments as structured project finance. **Project loans** are typically used for larger infrastructure projects with defined revenue streams, such as PPP projects. These loans typically involve 'ring fencing' assets, revenues and costs from a governments balance sheet through a special purpose vehicle. In the case of default, lenders are then able to recover money from the 'ring fenced' assets, but not from other government assets or revenues (non-recourse) unless a specific guarantee or other arrangement is in place. Project loans are typically leveraged in public-private partnerships (PPPs).

Featured tools:

Concessional loans	Subnational governments may be able to access concessional loans that provide favourable terms, particularly lower-interest rates. Concessional loans may be subsidised by a higher level of government or a multi-lateral development bank, typically with the aim to help crowd-in other private investment. For example, concessional loans are used in Australia to incentivise local governments to undertake infrastructure investment (See Case study 17 in Annex A).
Green loans	Subnational governments have the potential to increasingly leverage green loans to support infrastructure investments. These loans are earmarked to be used for green purposes, such as funding of an eligible green project (i.e., renewable energy), as defined by an accepted standard. This requires subnational governments to have processes that allow them to identify green investment projects (green budgeting, taxonomies, etc.). For example, La Banque Postale in France launched green loans for local authorities in 2019 to finance infrastructure projects with high environmental impact, such as in waste recovery, energy renovation of public buildings, renewable energy generation and clean transport. (La Banque Postale, 2019[73])

Bonds

Bonds are debt instruments that are issued in capital markets and can be used to finance the construction of infrastructure (e.g. municipal bonds or sub-sovereign bonds). By issuing bonds, subnational government debt becomes tradeable on secondary markets, allowing multiple investors to purchase portions of that debt and allowing securitisation (OECD, 2015[71]).

Bonds make up 27% of subnational government debt in G20 countries and 12% globally (unweighted average, (OECD/UCLG, 2019[17])). While bonds represent an important portion of subnational government debt, the use of bonds by subnational governments varies significantly across countries and across levels of subnational government. In the United States and Canada, for example, up to two-thirds of subnational government debt is financed by bonds. Meanwhile, in many emerging and developing countries there is limited or no use of bonds by subnational governments. In Europe, bond issuance is mainly done by state or regional governments (Austria, Belgium, Germany, Spain, etc.), except in Norway and Sweden where local governments are active issuers.

Many different types of subnational government bonds exist. One of the main characteristics to define a bond relates to options for recourse in the case of default (i.e., for debt repayment). **General-obligations bonds** are backed by the government's ability and power to tax and raise revenues. This type of bond is an important and traditional source of finance for subnational governments but is not explicitly 'infrastructure finance' (OECD, 2015[71]). **Revenue bonds** or **project bonds** have repayment is linked to a specific revenue stream from a project. For revenue bonds, governments may not be explicitly liable in the case of default, but rather project assets and revenues are 'ring fenced' from other government assets. Another key characteristic of bonds relates to the how finance is used. A range of **thematic bonds** (e.g., green, climate, social, sustainability, sukuk, etc.) seek to align finance with policy objectives, such as to support the green transition.

Bonds have the potential to provide lower cost financing for subnational governments; however, subnational bond issuance can also entail high transaction costs arising from legal and commercial services, credit ratings, underwriters and bond issuance and compliance. The higher cost of bonds means that they are typically suited to large and long-term investment programmes or projects, and therefore often for higher levels of subnational government or large cities.

Bonds may be issued directly by a subnational government or through a financial intermediary acting on behalf of one or more subnational governments. While larger subnational governments may directly issue bonds as they have sufficient scale, smaller subnational governments may look to jointly issue bonds as occurs with "subnational pooled financing mechanisms". In some cases, subnational governments also have the option to aggregate projects and mini-bonds to reach the threshold for a larger bond-issuance (FMDV, 2021[74]). This is the case of the Viveracqua hydrobond, which was jointly issued by eight municipal water companies in Veneto region (Italy) to finance water infrastructure (Case study 18).

Featured tools:

General obligation bonds	A subnational government can issue bonds backed by its full capacity to levy and raise taxes for repayment. This means that the subnational government can repay debt obligations from any available revenue stream. The performance of such issues is linked more to the fiscal creditworthiness of the borrower, rather than the infrastructure asset (OECD, 2015[71]). For example, between 2020 and 2021, New York City issued USD 4.9 billion worth of general obligation bonds, with USD 2 billion going towards capital projects (New York City, 2021[75]).
Revenue bonds and project bonds	A subnational government can also issue bonds backed by a specific revenue stream (e.g. water tariffs) or revenue generated from a specific infrastructure project (e.g. toll fees from a highway). These bonds are typically sold directly to investors through the fixed income markets, generally have long-term maturities, pay fixed or floating coupon rates (and are sometimes zero-coupon bonds), and are rated by the major rating agencies (OECD, 2015[71]).
Thematic bonds (Green, Climate, Sustainable, Social, sukuk etc.)	A subnational government might harness various thematic bonds (green bonds, social bonds, climate bonds, sustainable bonds, sukuk etc.) to finance specific activities in accordance with relevant principles (i.e. Green Bond Principles). These bonds earmark money for specific purposes such as renewable energy, affordable housing and basic infrastructure. Scaling-up the use of these bonds, can be supported through guidelines, standards, reporting, certification, technical assistance, capacity building and credit enhancement (Climate Bond Initiative, 2015[76]). For example, in 2017, Argentina's Jujuy Province raised funding via a green bond tied to a 300-MW solar project. (Renewables Now, 2017[77]).

Equity

Equity is capital-at-risk provided in return for an ownership share of an asset or entity with a potential financial upside (OECD, 2015[71]). While the direct role of equity to support infrastructure investment by subnational governments is smaller than for debt financing, equity does have an important role to support infrastructure investment in regions and cities. In 2019, for example, USD 96.7 billion was invested in infrastructure in low and middle-income countries of which 31.5% was through equity investments and 67% was through debt (World Bank, 2019[70]).

Equity can support infrastructure investment in regions and cities through three main channels. First, equity can be directly invested in a subnational government's public private partnerships (PPP) through a 'special purpose vehicle' (SPV). With **equity in PPPs**, the financial upside for equity may come from a contractual performance or outcome related trigger that allows for a return above an original base case. If the 'equity upside' is to come from user fees (i.e. user-pays PPP), then the equity investor would consider if debt service coverage levels from those user fees will have to be high enough to support the potential equity upside payment. If the 'equity upside' is to come from government grants or availability payments (i.e. government-pays PPP), then the equity investor would consider if sufficient free cash flow or dedicated reserves from that payment stream remain available to support the potential equity upside payment.

Second, equity can be invested in private companies who support infrastructure investment in regions and cities. Many private companies support infrastructure investment and provide opportunities for equity investors. These can include planning and engineering consultancies, construction companies and infrastructure operators.

Third, equity might be invested where a subnational government does not maintain full ownership in a state-owned enterprise (SOE).

Two emerging areas of equity finance that have the potential to become increasingly relevant for subnational infrastructure investment are **impact investing** and the use of **blended finance**. With impact investing, investors seek to use investments to generate positive, measurable social and environmental impact, alongside a financial return (GIIN, 2020[78]). Impact investing is particularly relevant for infrastructure in regions and cities as this type of infrastructure has important social and/or environmental impacts. With blended finance, development finance is leveraged to mobilise additional commercial capital towards projects that contribute to sustainable development, while providing financial returns to investors (OECD, 2021[79]). Blended finance can mobilise a mix of grants, debt and equity to support sustainable development. The International Municipal Investment Fund, for example, was created by the United Nations Capital Development Fund and other international organisations to provide capital for investments in local infrastructure projects in emerging economies (See Case study 19 in Annex A).

Featured tools:

Impact investing	Impact investing seeks to support investments with positive and measurable social or environmental outcomes. While not explicitly linked to infrastructure, the infrastructure and energy sectors represents around 20% of total impact investments (GIIN, 2020[78]). For example, the Solar Impulse Foundation has developed the Infrastructure Impact Fund that uses an Environmental & Social Management System to ensure that projects follow certain sustainability and resilience requirements. (Solar Impulse Foundation, 2021[80])
Equity in PPPs	Equity investors can provide capital-at-risk in return for an ownership share of a special purpose vehicle established for a PPP project. For example, PPP projects include an equity share, which typically ranges from approximately 10-30% of the finance needed for an infrastructure investment (OECD, 2015[71]). In Indonesia, a PPP was used for the Umbulan Water Supply System Project (See Case study 23 in Annex A)
Blended finance	Blended finance is the use of development finance to mobilise commercial finance for sustainable development. This strategy focuses on unlocking private sector capital that would not have been invested without co-investors. (OECD/UNCDF, 2020[81]) For example, the International Municipal Investment Fund harnesses blended finance for investments in local infrastructure projects in emerging economies to support sustainable development and mobilise additional public resources (See Case study 19 in Annex A).

Guarantees

Guarantees are a credit enhancement instrument that can improve the willingness of finance providers to lend to subnational governments for infrastructure investments. Used appropriately, they are a powerful tool to mobilise finance for infrastructure investment in regions and cities. In many countries there may be significant scope for more and better use of guarantees (Garbacz, Vilalta and Moller, 2021[82]).

When lending to a subnational government, finance providers usually assess the governments 'creditworthiness' to understand if debts can be repaid (sometimes supported by credit rating agencies). Due to a variety of factors, many subnational governments are not considered to have a sufficient level of creditworthiness to access affordable finance, especially in developing and emerging economies. For example, in 2013, fewer than 20% of the 500 largest cities in developing countries were deemed creditworthy in local financial markets and less than 4% in international markets (World Bank, 2013[83]).

National governments, public financial institutions and multi-lateral development banks may provide guarantees to help mobilise finance for subnational infrastructure investment. When provided by a central government, guarantees might be defined a "sovereign obligation under a binding or potentially binding written document (such as a contract or comfort letter) to satisfy certain obligations of an underlying contract, or to protect the beneficiary from defined losses if specified conditions occur" (Lu, Chao and Sheppard, 2019[84]). This means that guarantees can help to protect a finance provider (i.e., the beneficiary of the guarantee) from risks that they have little control over or may be unwilling to bear which can make a providing finance more acceptable and financeable. Guarantees can cover many types of risks, with two large categories of guarantees being "**performance guarantees"** and "**financial guarantees"**.

Guarantees, however, create contingent liabilities that need to be carefully evaluated and managed. The best way to mitigate risk from issuing guarantees is to ensure that a project meets best practices in how it is selected, prepared, and structured (Lu, Chao and Sheppard, 2019[84]). Before a guarantee is leveraged, a project should be determined to be of a high-quality, value-for-money and meet other policy objectives. To manage the contingent risk of guarantees, specific public bodies may be established to evaluate and provide government guarantees to subnational governments. In Finland, in order to safeguard the joint financing of Finnish municipalities and reduce their borrowing costs, the Municipal Guarantee Board provides guarantees to accompany municipal borrowing (See Case study 20 in Annex A).

Featured tools:

Performance guarantees	Targeted guarantees aimed at covering key risks or government obligations for a project (e.g. political, foreign exchange, supply, purchase). Guarantees for PPP projects are almost always structured as performance guarantees to reinforce certain government undertakings or cover the risk of a guaranteed government counterparty's failure to perform targeted or specific risks or obligations linked to underlying PPP contracts or concessions (Lu, Chao and Sheppard, 2019[84]). This type of guarantee involves the government committing to meet certain contractual requirements under a project agreement.
Financial guarantees	A financial guarantee is a commitment to service the debt in case of a borrower default. This means that the guarantor will "step in" to the underlying loan agreement to make debt-service payments on behalf of the borrower (e.g., subnational government or SOE) in the case of default. Such guarantees are most common where a Ministry of Finance provides a guarantee to lenders for borrowing undertaken by a subnational government or SOE for a particular infrastructure project. They are rarely offered for PPP projects as they can facilitate unbalanced risk allocations. Financial guarantees are often structured and construed as "unconditional, irrevocable, and liquid (requiring timely payment)" meaning that the claim process is simple and straightforward (Lu, Chao and Sheppard, 2019[84]). If not used carefully, this type of guarantee has the potential to create large financial risk that could greatly impact budget and borrowing limits of the guarantor. In Finland, for example, the Municipal Guarantee Board (MGB) provides guarantees to support the lending of MuniFin (a municipal credit institution) to Finish municipalities (See Case study 20 in Annex A).

Approaches to harness funding and financing for subnational infrastructure investment

To deliver infrastructure investments, subnational governments can harness a range of different investment approaches. In this Policy Toolkit, the 'investment approach' refers to how funding and financing are leveraged by a subnational government to deliver public infrastructure.

Common investment approaches include traditional public procurement, infrastructure investment managed by a subnational state-owned enterprise (SOE) or investment through a subnational public-private partnership (PPP). These approaches are not mutually exclusive - a subnational state-owned enterprise may harness different procurement approaches or create a PPP.

While subnational governments may also consider procuring services rather than infrastructure (e.g., waste services), this approach is not detailed in this toolkit as a focus is placed on public infrastructure investment.

Public infrastructure approaches

Traditional Public Procurement	Subnational State-Owned Enterprises	Subnational Public Private Partnerships
A subnational government body might directly procure infrastructure from the private sector through 'traditional public procurement', where the funding and financing for the infrastructure is provided from a subnational governments balance sheet. Innovations relating to traditional subnational government procurement include the use of green public procurement and socially responsible procurement.	SOEs owned by subnational governments – such as municipally owned corporations or local public companies – have a key role in many cities and regions to procure or directly deliver infrastructure investments and operate infrastructure. These enterprises may be established by a subnational government under relevant legislation to be partially or completely independent from other government institutions. They typically provide a specific function, such as to operate public transport networks or deliver an infrastructure investment.	Public-private partnerships (PPPs) can be used by subnational governments to support a specific infrastructure project and operations of infrastructure. The broad definition of a PPP used in this report includes contracts for public services where the private sector has significant. A PPP can be funded and financed through a wide range of instruments, including a mix of grants, user charges, loans and equity.
Featured tools		
Green public procurement Socially responsible public procurement	Development authority Transport authorities Local utility companies Infrastructure delivery authorities	User-pays PPP Government-pays PPP
Case studies		
21. Green procurement system in Valladolid (Spain)	22. Supporting Green Municipal energy utility: The German Stadtwerke (Germany)	23. Umbulan Water Supply System PPP project (Indonesia)

Traditional and innovative public procurement

Traditional public procurement involves procuring the private sector to design and build public infrastructure on behalf of a subnational government or related entity. Traditional public procurement typically involves a build-only or design and build contract. For a build only contract, the design is completed by another organisation. Once construction is completed, the subnational government will assume responsibility for the infrastructure asset.

Subnational governments typically fund and finance traditional public procurement directly from their balance sheet as part of budgeting and public financial management processes. This means that funding and financing is not usually linked to a specific project but is considered at as part of general budgeting processes. In some cases, however, funding may be earmarked for a specific infrastructure (e.g., tax increment financing) and financing may be raised for a specific project (e.g., project financing).

To support effective public investment, contracts should be awarded based on a competitive and merit-based selection processes. Contracts typically include payments made at defined stages at a pre-determined price. After completion, responsibility for fixing defects may rest with the contractor for a defined period. Operational and maintenance tasks related to the infrastructure may be contracted out to another party under a separate agreement.

During procurement, subnational governments may seek to innovate by supporting other government priorities, including meeting green or social policy objectives. **Green public procurement** involves ensuring that contractors meet certain green requirements, such as standards relating to energy efficiency, carbon emissions or water use. **Socially-responsible public procurement** involves social objectives, such as supporting disabled workers. Green and social criteria may be included in tender documentation and used to assess bids. For example, the Municipality of Valladolid enacted a Municipal Ordinance in 2018 to promote social efficient procurement (See Case study 21 in Annex A).

Featured tools:

Green public procurement	Involves using the purchasing power of subnational governments to choose goods, services and works with a reduced environmental impact in order to contribute towards sustainability goals. Green public procurement can help align purchasing decisions with wider subnational government objectives. For example, in 2008, the Italian government approved the Green Public Procurement Law, which made public authorities at all levels of government maximise the diffusion of Green Public Procurement. (Direzione Generale Economia Circolare (EC), 2017[85])
Socially responsible public procurement	Involves seeking to use the purchasing power of subnational governments to choose goods, services and works with a positive social impact. This can involve inclusion of socially responsible criteria in public procurement processes. For example, in Valladolid in Spain, the municipal government enacted an ordinance to set out criteria for public procurement that is more socially inclusive and environmentally sustainable (See Case study 21 in Annex A).

Subnational State-Owned Enterprises

Subnational State-Owned Enterprises (SOEs) – such as municipally-owned corporations or local public companies – have a key role to invest and operate infrastructure on behalf of many subnational governments. SOEs can either directly design and construct infrastructure or they can procure private companies to deliver infrastructure. SOEs also often have direct responsibilities for raising funding and financing for investment.

While there has been a decline in state-ownership over recent decades, national and subnational government SOEs continue to account for about 20% of investment and 5% of employment globally (ADB, 2020[86]). In emerging markets and low-income developing countries, SOEs are responsible for 55% of infrastructure investment, as compared to 28% of investment by public entities (treasuries, ministries, local public companies) and 17% by the private sector (World Bank, 2017[87]). Local public companies owned by subnational governments also have important responsibilities in many developed countries. In Europe, for example, the number of local public enterprises doubled between 2008 and 2020, increasing to nearly 32 000, especially in Germany, Austria, France, Italy, and Spain.

SOEs are corporate entities recognised by law as an enterprise with government ownership. Policy reasons given by governments for establishing SOEs include supporting economic and strategic interests, supplying specific public goods or services where market failures exist, or maintaining a state-owned monopoly when market regulation is deemed infeasible or inefficient (OECD, 2018[88]). When properly managed, municipal SOEs may support the efficiency of infrastructure development through effective corporate governance, access to innovation and skills, and pooling of external financial resources. These organisations can often be flexible and responsive, while also upholding the general interest and community values (OECD, 2017[89]). Types of SOEs established by subnational governments to support or undertake infrastructure investment might include **development authorities**, **local utility companies** (i.e. water, sewerage, energy, waste, etc.), **transport authorities**, **infrastructure delivery authorities** and public financial institutions, among many other types of SOEs. In Germany, Stadtwerke – municipally owned energy utilities are main actors in the provision and management of energy services for citizens (See Case Study 22 in Annex A).

SOEs overseen by subnational governments are often directly responsible for accessing funding and financing to support infrastructure investment. They might directly raise funding through user charges (e.g., tolls, water and electricity rates, admission fees) or other funding sources (e.g., rental income, investment returns, etc.) or they may receive grant funding. Depending on the fiscal and regulatory framework, SOEs may also be able to access finance for investment, including by issuing bonds on capital markets.

Where they are established, governments at all levels should seek to ensure that SOEs operate effectively, avoid simply crowding-out private sector companies and ensure accountability and transparency. Better governance, capacity to manage local public companies and a stronger rational for public intervention can correlate with higher performance. (OECD, 2015[90]; IMF, 2020[91]).

Featured tools:

Development authority	Subnational governments may create a development authority to plan and oversee the development or redevelopment of land in a defined geographical area (i.e., an urban redevelopment authority). The organisation becomes responsible for coordinating land use, public investment and other public interventions. They may have defined objectives such as to maximise the value from investments or best leverage public land for economic development. For example, the Copenhagen City and Port Development Corporation (Denmark) is responsible for planning and facilitating the redevelopment of land in Copenhagen. (OECD, 2021[2])
Transport authorities	Subnational governments may create a SOE to oversee the transport network within a defined geographical area. Transport authorities may have a range of infrastructure responsibilities, including for planning, investment, operations and maintenance. They may be responsible for all or part of the transport network in the region, including for public transport and road infrastructure. For example, Tokyo Metro Co. Ltd. (Japan) is jointly owned by the national and municipal governments and is responsible for providing rapid transit in Tokyo (Tokyo Metro Co. Ltd., 2022[92]).
Local utility companies	Subnational governments may create a local utility company to oversee the provision of utility services within a defined geographical area where that utility service is not provided by the private sector. Utility companies may be responsible for all or part of the utility provision, including infrastructure planning, investment, operations, maintenance, and customer service. For example, in Germany, municipally-owned energy utilities, Stadtwerke, play an important role in the provision and management of energy infrastructure and related services (See Case study 22 in Annex A).
Infrastructure delivery authorities	Subnational governments may create SOEs to manage the delivery of major infrastructure projects or programmes. These may be created for a defined period of time and can have a specific mandate to deliver certain investments. They might hire specialist expertise to support delivery of the project during the project period. For example, the Major Transport Infrastructure Authority in Victoria (Australia) is responsible for the development and delivery of a AUD 90 billion transport infrastructure programme in Victoria (Victoria's Big Build, 2022[93]).

Subnational Public-Private Partnerships

Public-private partnerships (PPPs) are a common investment approach to harness funding and financing to support infrastructure investment, operations and maintenance. Across OECD countries, national and subnational PPPs represent around 5% of the total value of public sector infrastructure investment, although this is around 10% in some countries (OECD, 2018[94]; OECD, 2019[95]). Although PPPs represent a relatively small component of total public investment in many countries, they are an important investment approach for subnational governments in many countries. Although the average value of PPPs tends to be higher at a national level, subnational governments are responsible for a larger number of PPPs in OECD countries. In Australia and Germany, for example, approximately 90% and 80% of PPPs occur at the subnational level (OECD, 2018[94]).

A wide variety of different types of PPPs exist. A broad definition is that a PPP is "a long-term contract between a private party and a government entity, for providing a public asset or service, in which the private party bears significant risk and management responsibility, and remuneration is linked to performance" (World Bank Group et al., 2017[96]). This definition also includes public service contracts and concessions. A PPP is usually described by the type of asset involved (greenfield, brownfield), the role of the private party (design, build, finance, maintain, operate) and how the PPP is funded. A useful categorisation of PPPs models is through their funding model. A **user-pays PPP** is primarily funded by user charges, while a **government-pays PPP** is primarily funded through a defined payment scheme with funding ultimately provided from other government revenues (e.g., grants, taxes, property income, etc.). A PPP can also be funded by a mix of these two methods. In Indonesia, for example, the **Umbulan Water Supply System** is being delivered as a user-pays PPP with additional contributions from the national and provincial governments (see Case Study 23 in Annex A). This project is also being supported by a government guarantee.

Subnational government PPPs should identify robust funding sources to cover up-front capital costs, and operational and maintenance costs for infrastructure. This can follow a "hierarchy of possible revenue sources" beginning with maximising revenues from direct beneficiaries (i.e. User charges and fees), then exploring options to capture value from indirect beneficiaries (i.e. Land value capture) and then harnessing public money (e.g. Tax revenues, etc.) (World Bank, 2020[97]). Public funding (e.g. Grants and subsidies) and guarantees should be considered where the use of those funding sources represents value for money (World Bank, 2020[97]).

PPPs have significant benefits, costs and risks for subnational governments that need to be carefully assessed. PPPs are generally considered justified where they are affordable and produce greater value for money than would be provided by the delivery of public services or investment through traditional public procurement (OECD, 2018[94]; IADB, 2018[98]). The *OECD Principles for Public Governance of PPPs* outlines that when deciding whether to use a PPP, governments should "carefully investigate which investment method is likely to yield most value for money" and consider "key risk factors and characteristics of specific projects" (OECD, 2012[99]) Benefits, costs and risks of PPPs need to be considered against other infrastructure delivery models (OECD, 2019[42]).

Potential benefits of PPPs for subnational governments may include enhanced project selection due to private sector analysis and innovation, improved access to private sector expertise and better lifecycle management due to long-term incentives, among other areas (World Bank Group et al., 2017[96]; OECD, 2012[99]). For example, the private sector might better manage certain risks (e.g., construction, implementation of user charges, operations) and have a stronger incentive to minimise whole-of-life costs, which might result in higher quality up-front investment that lowers ongoing operational and maintenance costs. In some contexts, a PPP may also provide access to alternative funding sources and financing instruments (for example, where a private provider is better able to implement user charges than a subnational government).

Subnational governments should consider if gains from these factors outweigh the cost of private finance, and the risks associated with PPPs (OECD, 2012[99]). Risks relating to the use of PPPs include the need to anticipate future asset needs (e.g., where changes are required to an asset after contract award), contingent liabilities created through the use of guarantees (see section on Guarantees), stakeholder considerations related to the implementation of user fees or the role of the private-sector (see section on

Co-ordination, cooperation and stakeholder engagement) and asset handover at the end of the PPP period. To address these risks, there is a need to clearly articulate the scope of a PPP project in tender documents and allocate risk at the outset. Risks specific to subnational governments particularly relate to institutional capacity and fiscal and regulatory frameworks.

Substantial institutional capability is required for subnational governments to successfully harness PPP projects. This includes the capacity to properly assess the potential benefits, costs and risks of a potential PPP, and to manage the subsequent development, approval, procurement, award and contract management (OECD, 2018[94]). Institutional capacity can be developed through targeted technical assistance programs or dedicated national or subnational government PPP Units (see section on Institutional capacity). In some cases, public sector expertise may also be supplemented by specialist experienced PPP consultants and advisers.

Fiscal risks relating to the use of PPPs by subnational governments are critical to consider. In some cases, PPPs risk being improperly used to overcome public financial management controls, which can create long-term fiscal risks (contingent liabilities) for subnational and national governments (World Bank Group et al., 2017[96]). Bypassing fiscal constraints is not a valid reason to choose a PPP over traditional public procurement (IADB, 2018[98]), and can potentially come at the expense of sound project preparation and value for money, and also create an "affordability illusion" (Eurostat, 2016[100]). In some cases, off-budget financing has exacerbated the potential fiscal risks caused by PPPs, which can allow upfront private financing to obscure the reality of long-term public funding required to support investments (IADB, 2018[98]). Furthermore, even small PPP projects do not necessarily mean small liabilities, so consideration should also be given to the full extent of contingent liabilities created through guarantees to PPP projects (see section on Guarantees).

Featured tools:

User-pays PPP	Subnational governments might adopt a user-pays PPP to support a range of different types of infrastructure investment (e.g. toll roads, water facilities, etc.). A user-pays PPP is where the "private party provides a service to users and generates revenue by charging users for that service" (World Bank Group et al., 2017[96]). In some cases user charges and fees (or tariffs, or tolls) may be supplemented by government payments, including payments to cover construction costs or subsidise operations. In Indonesia, for example, the Umbulan Water Supply System is being delivered as a user-pays PPP with additional contributions from the national and provincial governments (see Case Study 23 in Annex A). This project is also being supported by a government guarantee.
Government-pays PPP	Subnational governments may support the creation of government-pays PPPs to support the delivery of specific infrastructure investments. A government-pays PPP is where "the government is the sole source of revenue for the private party" (World Bank Group et al., 2017[96]). For these PPPs, government payments may depend on the asset or service being available at a contractually-defined quality (availability payments). They could also be volume-based payments for services delivered to users or other performance-based payments. For example, in Western Australia, a government-pays PPP was used to complete the Joondalup Health Campus. (Department of Health, Government of Western Australia, 2013[101])

Annex A: Case studies

Case study 1: Ensuring Local Fiscal Discipline and Fiscal Sustainability: The Mexican Financial Discipline Law for Federal Entities and Municipalities

Category: Fiscal and regulatory frameworks

Background: Following the 2015 Constitutional Reform in Mexico, the national government aims to undertake policy measures to ensure that states and municipalities are more responsible for their public finances. With the constitutional modification, Mexico established in 2016 the Federal Financial Discipline Law for States and Municipalities (*Ley de Disciplina Financiera de las Entidades Federativas y los Municipios*). The law was created in the context that subnational debt had been growing considerably: between 2008 and 2013, the annual average growth rate of subnational debt was 14.5% % (Gobierno de México, 2016[1]); and in 2015, 12 out of 32 states had debt levels higher or equal than states debt average. This legislative and regulatory framework aims to ensure sustainable public finances of state and municipal governments, promote greater transparency and accountability in subnational public finance, as well as help lower costs in contracting debt. As the COVID-19 crisis has posed challenges on subnational public finances, the Federal government has made adjustments to the Law to offer flexibility for subnational governments to face the exceptional situations, without putting their fiscal sustainability at risk.

Approach: The law has a number of key elements.

First, the law establishes the obligation for all states and municipalities to maintain sustainable budget balances. Although this obligation already existed, the Law additionally establishes that earmarked revenues must be accounted for at the end of each fiscal year.

Second, clear rules and guidelines are established requiring subnational governments to go through a competitive process when contracting debt from financial institutions to ensure the lowest borrowing cost. They are also required to get the approval of amounts by local legislatures. This serves as a tool to facilitate responsible use of debt by states and municipalities and to strengthen their accountability and transparency. In relation to short-term debt obligations, the Law establishes the obligation of subnational governments to liquidate in the three months before the end of their administration, with the objective of delivering healthy finances to the next administration and avoiding the over-indebtedness.

Third, the law also introduces measures to help lower costs in contracting subnational debt. The central government grants credit guarantees to subnational governments' debt issuance that subscribe to a financial discipline agreement through the secured debt mechanism. The credit guarantee intends to reduce the financing costs of those who subscribe to the agreement. Fourth, a quarterly traffic light "alert system" was established, through which the Federal Ministry for Finance and Public Credit (*Secretaría de Hacienda y Crédito Público, SHCP*) will evaluate debt levels for each state and establish borrowing limits depending on the classification received. States with sustainable debt can borrow up to 15% of their freely available income; those with an alert level can borrow up to 5% of their freely available income; and states with high debt level are not able to borrow. Such a system places greater constraints on previously highly indebted states rather than adopting a "one-size-fits-all" cap on all subnational governments

Finally, as a measure of transparency and combatting corruption, a single public registry (*registro publico único, RPU*) was created. This registry contains details of all financial obligations of every state and municipality, including credit contracts through Public-Private Partnerships as well as factoring contracts (i.e. selling outstanding invoices to a third parties in exchange for upfront cash). Through this registry, subnational governments must publish their public resources and debt management, thus creating a unique record of subnational public debt. The SHCP could also benefit from the RPU to obtain information on subnational government finances through an electronic system that can be accessed using the Electronic Signature issued by the Tax Administration System (SAT). In addition, subnational governments also report the information required by the "alert system" through the RPU on a quarterly basis. In doing so, subnational officials may carry out these procedures from their headquarters, rather than travelling to the capital. The RPU also allows to show real time data, which facilitates the alignment of financial discipline objectives.

Impact: According to a World Bank quantitative study on the impact of the law, the law can benefit aggregate economic activity (GDP and employment) of some Mexican states. At the same time, the study pointed out the potential public spending cuts by states and municipalities following the law, which would need to be properly designed to avoid hurting the most vulnerable groups, such as the poor.

Following the COVID-19 pandemic, in order to secure and support subnational public spending for managing the crisis and the recovery, the Federal government introduced in 2020 a modification to the law to grant greater flexibility for subnational borrowing. The modification allows state governments to restructure financing (i.e. incur in a negative budget balance) without the need for authorisation from the local legislature in the event of extraordinary situations or health emergencies. To promote and keep track of infrastructure investment in the recovery period, a financial management tool was also established to consolidate information on state-level public finance management and, in particular, investment in infrastructure projects by the states.

Sources:

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Case study 2: An Innovative Approach to Infrastructure Financing: The New Zealand Infrastructure Funding and Financing Act, 2020

Category: Fiscal and regulatory frameworks

Background: New Zealand's cities are growing fast, with the population of urban areas such as Taurunga, Hamilton and Auckland growing by 32%, 24% and 19% respectively from 2006 to 2018. However, levels of housing supply are not matching new demand contributing to steep rises in housing prices. While there is often land available for development, local councils in high-growth areas can face borrowing constraints that may prevent them from providing underlying investments in water, roads, and community infrastructure that are essential to support housing developments. When faced with growth, councils typically must use their limited resources to pay for the upfront cost of new infrastructure, carrying the debt on their constrained balance sheets for years before having it repaid as new private housing developments start being built. There is also limited incentive for local councils to increase rates on current property owners to pay for these investments that will largely benefit future residents. As a result, infrastructure to support housing is often postponed.

Approach: In August 2020, New Zealand's government passed the Infrastructure Funding and Financing Act (IFF) 2020, establishing a new funding and financing model with a view to encourage private capital to support the provision of new infrastructure for housing and urban development. Through Special Purpose Vehicles (SPVs), local councils, Māori (comprised of entities representing different communities of indigenous peoples known also as Māori) and developers can collaborate to deliver infrastructure that is above the council's debt constraints or from charging high upfront costs to developers. SPVs raise finance for local infrastructure and then repay that finance through a levy charged to those who benefit from the new infrastructure, usually future homeowners. This infrastructure levy is paid annually for up to 50 years. Four different types of infrastructure can be funded by SPVs: three water infrastructure (i.e., storm water, drinking water and wastewater), transport infrastructure, community facilities, and environmental infrastructure for risk management and environmental restoration. The

proposer (a local council, developer or any other person) must develop a levy proposal with information on the future levy and the SPV. This law sought to replicate a previous successful experience in Auckland in 2018. There, a SPV funded the construction of the Milldale community, raising NZD 50 million for housing infrastructure and creating 9 000 homes. Auckland Council collects an annual contribution from landowners amounting to NZD 650 for an apartment or NZD 1 000 for a house over the next 30 years.

Throughout the process, optional assistance is provided by Crown Infrastructure Partners (CIPs), a Crown-owned company that assesses the feasibility of projects and helps in developing levy proposals. SPVs obtain their powers to charge a levy only once they have been authorised on a case-by-case basis following a recommendation of the Minister responsible for the Act. This levy is based on the future cost of the project, which must be agreed upon by the CIPs and the local council which can present a challenge. Apart from its affordability and efficiency, the SPV is only considered when a responsible infrastructure authority is deemed to meet the necessary operational and maintenance costs of the infrastructure. Once authorised, the SPV remains in charge during the financing and construction phases of the project, and when completed, the infrastructure is transferred to the corresponding local authorities, who ensure its operation and maintenance.

Impact: In June 2021, the national government established the Infrastructure Acceleration Fund to encourage critical infrastructure projects. This Fund requires co-funding, which could come from the SPVs. However, no SPV has yet come to fruition. It is thus recommended that barriers to SPV deals be identified and removed, and that city councils be further incentivised to accommodating growth, for instance by sharing local Goods and Services Tax receipts.

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Case study 3: The multilateral online infrastructure project preparation and management software: SOURCE

Category: Institutional capacity

Introduction: To support quality infrastructure investment in cities and regions, and secure financing, subnational governments need to prepare quality infrastructure projects. SOURCE the multilateral online infrastructure project preparation and management software for both traditional procurement and Public Private Partnerships (PPPs). It is a global platform to help prepare infrastructure projects and is free for emerging countries. The platform provides a comprehensive map of all aspects to prepare sustainable infrastructure projects, including governance, technical, economic, legal, financial, environmental and social. It is structured around a series of questions covering all areas of the project's lifecycle across 40 infrastructure sub-sectors.

The platform provides a flexible tool that adapts to the specific needs and requirements of the users, governments and public agencies around the world. It can be adapted to individual countries' regulations, languages and experiences. The platform is regularly updated with the latest international best practices and can be adapted to national regulatory contexts and be connected to existing country-specific IT systems. SOURCE is currently available in nine languages including Bahasa, English, French, Mandarin, Portuguese, Spanish, and so forth, with more languages to be added upon request.

SOURCE is led and funded by Multilateral Development Banks and implemented by the Sustainable Infrastructure Foundation (SIF). The platform seeks to facilitate private sector engagement by enabling all the infrastructure stakeholders – MDBs, development-financing institutions, infrastructure investors, contractors, lenders, governments, etc. - to collaborate with the common goal of bridging the project preparation and development requirements of the private and public sectors.

Implementation: At the moment, SIF has to respond to the interest of about 30 countries and seeks to mobilise additional financial resources to meet the growing demand for new integrations.

- In Uzbekistan, the integration of SOURCE as the project preparation and management system has been completed with the support of the Asian Development Bank and in collaboration with the PPP Development Agency.
- In Indonesia, SOURCE integration is underway to become the public PPP portal of the PPP Joint Office and, in the Philippines, SOURCE will be the Project Information Management System for the PPP Centre.
- In Azerbaijan, SOURCE is currently being integrated as the project preparation and management platform for the PPP Development Centre. In Kazakhstan, a similar approach has just been initiated in favour of the PPP Centre.
- In Ecuador, the integration of the platform was done in with the support of EUROCLIMA+ financed by the European Union in collaboration with the Ministry of Finance, the National PPP Secretariat and the Ministry of Environment, as the SOURCE templates have been adapted to the national framework in terms of regulation, processes and milestones. As a result, the use of SOURCE will be enshrined in law by August 2022.
- In Panama, with the support of the Inter-American Development Bank SOURCE is currently being integrated as the project preparation platform in collaboration with the Governmental Digitalisation Agency and the National PPP Secretariat.
- In South Africa, the integration of SOURCE has recently started with the support of the Agence Française de Développement in collaboration with Infrastructure South Africa (ISA), with the aim to assist the South African government in the preparation and management of infrastructure projects for both traditional procurement and PPPs.
- In Angola, SOURCE is intended to become the reference infrastructure project management system. To this end, the SOURCE software will be adapted to the country's regulatory context, with functionalities that specifically address operational approval requirements and processes
- In Senegal, the integration of SOURCE has started in collaboration with the Resource Mobilisation and Investment Attractiveness Institutional Support Project (PAIMRAI) and with the support of the African Development Bank.

Case study 4: Achieve higher creditworthiness of cities: The City Creditworthiness Initiative

Category: Institutional capacity

Challenges and Objective: Among the 500 largest cities in developing countries, only 4% were rated as creditworthy on the international scale and only 20% on the local scale, according to a World Bank 2019 study. Low creditworthiness and transparency severely constrict cities' capacity to finance investments in public infrastructure. Cities often face key challenges, such as insufficient revenue compared to high expenditure and investment needs, poor planning for the future, and poor management of resources, among others. To tackle these challenges, there is a need to build cities' creditworthy financial management capacity to access the financing required for critical infrastructure investment.

Approach: In 2014, the World Bank created the City Creditworthiness Initiative (CCI), co-funded by the Private Public Infrastructure Advisory Facility, the Korean Green Growth Partnership, and the Rockefeller Foundation. The Initiative aims to bolster the creditworthiness of cities by working to develop creditworthy financial practices and supportive institutional, legal and regulatory enabling environments. CCI engages via three primary methodologies: Creditworthiness Academies, Creditworthiness Implementation Programmes and Creditworthiness knowledge and research products. The academies are learning platforms that teach city leaders the fundamentals of creditworthiness enhancement, including revenue management and enhancement, expenditure control and asset maintenance, capital investment planning, and debt management. The academies also use a self-assessment toolkit (see below) in order to create a preliminary creditworthiness action plan. The Implementation Programmes on the other hand are multi-year, customised technical assistance programmes that help cities prepare for, structure, and close market-based financing transactions.

Through the City Creditworthiness Initiative, the team developed an online City Creditworthiness Self-assessment and Planning Toolkit. Participating local authorities complete a questionnaire and the Toolkit will identify key challenges for creditworthiness based on the questionnaire results. Local authorities rank these challenges based on their local priorities. The Toolkit

then guides the local authorities through various options to address these challenges, and an assessment report and a preliminary action plan will be generated. Finally, local authorities can refine and implement the action plan.

CCI also seeks to address the knowledge gap that exists in the area of sub-national borrowing, in particular in understanding the legal & regulatory environments and types/levels of borrowing engaged in by local governments in developing countries. In 2022, CCI will launch a new database that investigates local government borrowing in developing countries. The CCI-Local Government Borrowing Database (CCI-LGBD) comprises a mixture of qualitative and quantitative data that presents a comprehensive picture of local government borrowing in researched countries. The database compiles its data from official public sources from researched countries. Together with the data, the CCI-LGBD will also introduce written snapshots of the borrowing enabling environment and experience of local governments in researched countries (country profiles).

Implementation: Since its creation, the City Creditworthiness Initiative has served over 300 cities from 30 countries with follow-up technical assistance programmes launched in over ten countries. Participant city administrations have gone on to complete enhancements in creditworthy financial management, including the completion of revenue enhancement strategies, participatory capital investment plans as well as credit ratings and debt financing options studies. A recent example is the Kenyan County of Laikipia, which in 2020 completed a CCI self-assessment and action plan as part of an academy. In 2022 Laikipia County was the first Kenyan county to be approved by the government for a bond issuance of KSH 1.16 billion for infrastructure investment.

For more information visit https://www.worldbank.org/en/topic/urbandevelopment/brief/city-creditworthiness-initiative.

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Case study 5: Inter-governmental contract to support bottom-up projects: The Korean Regional Development Investment Agreement

Category: Co-ordination, cooperation and stakeholder engagement

Background: While economic disparities across regions in Korea are among the lowest of OECD countries, important differences remain between regional areas of the country. Between 2018 and 2019, for example, the fastest growing region achieved a 5.2% growth rate, as compared to a 0.4% growth rate in the lowest growth region. Some regions also suffer from lower levels of research and development investment and difficulties funding large-scale infrastructure projects. Without funding and investment in infrastructure, the capacity of regions as growth engines can be undermined and an outflow of young people from lagging regions may continue.

Approach: To promote large-scale projects in regions, in 2019 the central government introduced the balanced national development project, which includes a Regional Development Investment Agreement (RDIA) to enhance coordination and cooperation across levels of government. These agreements help local governments – including municipalities and metropolitan authorities – establish multi-year regional development plans with corresponding financial support. RDIAs are based on four principles: "the principle of cooperation stipulates that all parties maintain a cooperative relationship; the principle of autonomy guarantees local governments maximum autonomy to choose projects; the principle of strategy ensures all parties agree that the project is strategic; and the principle of specificity means that the size, cost, duration, and method of financing are all specified".

These projects are jointly promoted and funded by all levels of governments for specific regions. The ratio of co-funding by local governments varies depending on their financial situation. Additionally, the Balanced Committee – which includes representatives from ministries, the consultation body of the Local Autonomy Act, and a central administrative agency — and the Ministry

of Land, Infrastructure and Transport may operate a support team if requested by the relevant ministries and local governments. Research on institutional improvement may also be provided.

Impact: In 2019, 11 pilot project agreements were signed with a KRW 100 billion contribution from the central government. As an example, one of the pilot projects, 'Only One Go Gunsan,' aims to revitalise the fishing economy of City of Gunsan by focusing on tourism infrastructure investment. This project is receiving KRW 19.5 billion, with 9.8 billion (50.2%) coming from the state budget, 3 billion (15.4%) from the province, and 6.8 billion (34.4%) from the city. These investments are aimed at expanding essential infrastructure, such as introducing high-tech transportation and autonomous vehicles to alleviate traffic problems. Another pilot project took place in the District of Gwangsan-gu in the City of Gwangju. This KRW 18.2 billion project focused on outdoor air quality control technology, supporting the establishment and operation of a demonstration complex with relevant technology companies. Through this programme, 180 portable fine dust measuring instruments were installed, ten bus platforms were equipped with clean ventilation systems and a Regional Economic Revitalisation Centre was launched that will serve as a base for the development of the air industry. Following the success of the pilot project, 17 new Regional Development Investment Agreements have been signed with regional governments and various ministries.

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Case study 6: Collective risk pooling for city disaster risk reduction and management: The City Disaster Insurance Pool in the Philippines

Category: Co-ordination, cooperation and stakeholder engagement

Background: The Philippines is located in one of the world's most disaster-prone regions in the world. The country is exposed to earthquakes, volcanic eruptions, typhoons as well as floods, droughts, and landslides. Although the risk of each of these natural disasters varies across the country, cities typically face particularly high disaster risk due to their density of people and infrastructure. Cities are obliged by law to budget for disaster risk management, which allows them to later access funding from the Local Disaster Risk Reduction and Management Funds in the event of a disaster to repair or rebuild essential infrastructure. Nonetheless, securing adequate resources for post-disaster recovery actions is not always simple. Cities often confront delays when seeking to access to funding to support early recovery measures. This can increase the negative impact of disasters on local economies as well as on the welfare of those affected.

Approach: With the technical assistance of the ADB, the Philippine Department of Finance developed the Philippine City Disaster Insurance Pool (PCDIP) to provide rapid post-disaster access to pay-outs for local tiers of government under the government's 2015 Disaster Risk Financing and Insurance Strategy. Its primary objective is to create a structure under which city governments can jointly buy insurance through a single platform, thereby reducing the price of premiums and increasing the speed of payment disbursements. The PCDIP was created as a Special Purpose Vehicle (SPV) within the Government Service Insurance System in Philippine. The PCDIP assets will be ring-fenced from GSIS's assets. The management board of PCDIP is composed of representatives of cities and national government agencies. The initial pool capital is to come from a sovereign loan from ADB secured by the national government. The PCDIP's design has taken into account the different needs and fiscal capacities of city governments so that the pool is ultimately able to honour pay-outs in a timely and financially sustainable way in the long run.

As a pilot project, ten cities were selected on the basis of disaster risk incidence, demographic factors, and socio-economic indicators to collectively participate in the design of the pool. The insurance under the pool works as follows:

- Risk modelling services will be provided by an external provider to set premium levels for individual cities;
- City governments buy parametric insurance from GSIS based on the type of natural hazards they perceive as a threat, and select the frequency and size of pay-outs they would like to receive, as well as the funding available for premium payments. Parametric insurance pay-outs are determined based on the physical features of a natural hazard event (e.g. wind speed of typhoons), rather than on the actual losses suffered by a policyholder.
- GSIS will pass the premium through to the PCDIP and GSIS will take a small fee (known as a fronting fee) to perform the service of providing the city insurance policies and handling pay-outs, and the PCDIP will reinsure with reinsurance markets.
- Once a disaster strikes, an independent scientific agency verifies the parameters driving pay-outs. Since the PCDIP bypasses the lengthy loss assessment required by traditional insurance, pay-outs can thus be expected in no more than 15 business days of qualifying disaster events.

Impact: The pilot scheme is still underway and will be unique in the Southeast Asia region. Its design as a collective risk pooling arrangement is expected to reduce the price of premiums via numerous mechanisms. First, it combines risk across multiple city governments to reduce the volatility of potential total losses by the group, thereby providing increased stability in the group's funding requirements, as well as diminished capitalisation and reinsurance costs. Second, cities are expected to benefit from economies of scale by sharing inherent setting-up costs of any insurance products. Third, city governments can retain profits made by the pool during periods when disasters happen less frequently, as compared to paying them to insurance companies. Finally, a collective risk pool constitutes a platform to enhance disaster risk management knowledge and capacity, share experiences, and conduct capacity-building activities. Overall, given that the size of pay-outs should become easier to predict, it is expected that the PCDIP will bolster the fiscal resilience of cities and create room to resolve the gap between available funding and post-disaster response costs for extreme events.

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Case study 7: State assistance for municipal capital market finance: The Minas Gerais Development Bank in Brazil

Category: Access to financial markets

Background: Minas Gerais is the second most populous state in Brazil, with 21.4 million people in 2021. It has a remarkably diversified economy: the service sector, which has been growing over the last decade, represented half of the region's GDP in 2019, followed by the mining industry (28%) and agriculture (6%). Nevertheless, Minas Gerais is home to significant intraregional differences. As of 2021, the population is unevenly distributed among municipalities, with the 50 largest ones agglomerating 53% of the state's population. Some municipalities may find it difficult to access financing flows and capital markets to fund essential infrastructure investments.

Approach: With almost 60 years of existence, the Minas Gerais Development Bank (Banco de Desenvolvimento de Minas Gerais, BDMG), a public company controlled directly by the State of Minas Gerais, has become a key actor in providing finance to municipalities with the main purpose of supporting the balanced socio-economic and sustainable development of all municipalities of the state. To this end, BDMG particularly supports infrastructure investments in less developed municipalities in the state. It provides credit to city halls and municipal public service concessionaires at competitive rates and maturities, offers special conditions at lower rates for municipalities whose Human Development Index (HDI) score lower than the

regional average. This contributes to redressing the uneven development paths of municipalities in Minas Gerais.

In addition, BDMG follows green finance standards to ensure all funded infrastructure investments contribute to the green transition. The Bank also provides technical assistance for project preparation to structure streams of bankable projects. Technical workshops also raise awareness about the importance of the projects' environmental and social dimensions, support the setting-up of an in-house CSR policy, and help to establish an inventory of BDMG's greenhouse gas emissions.

BDMG follows an impact-focused strategy by financing urban infrastructure, water and sewerage supply, solid waste management, urban mobility, as well as health and education projects. To align with SDGs, the Bank's funding actions are guided by its Social-Environmental Responsibility Policy, which ensures that its role is aligned with state and national environmental policy, that that its financing is not granted to projects that are to have a highly damaging environmental and social impact. Accordingly, the eligible projects must generate social and environmental benefits by optimising natural resource use, enhancing waste management processes, improving electric power generation, urban mobility, biofuels use, and promoting energy efficiency, among others. For example, in the domain of SDG 7 on affordable and clean energy, the Bank has invested BRL 124.6 million in clean energy projects across 27 municipalities. These projects are estimated to provide energy to over 21 000 Brazilian households of four people and to avoid more than 4 700 tons of greenhouse carbon emissions per year. Latest projects include a new Public Notice making BRL 387 million available in four areas (urban infrastructure, clean energy, water sanitation, and machinery and vehicles) for 261 municipalities, out of which 145 had a lower-than-average HDI. The Bank also finances projects through green bond proceeds, which enables the bank to diversify its sources of funds to finance projects that promote sustainable development.

Impact/Next steps: In 2021, the BDMG has a public sector lending portfolio consisting of over 650 loans and a municipal advisory service aiming to structure infrastructure concessions and privatisations. BDMG loans disbursed reached 526 of the 853 municipalities in Minas Gerais, 82% of them with an HDI below the Brazilian average. The Bank is estimated to have increased output production by BRL 1 944 million and supported the creation of 21 900 jobs. Its performance has been recognised in recent S&P ratings, with constant improvements since 2016 up until today's B issuer credit rating on long-term global scale. BDMG has also worked intensively to strengthen its partnerships with multilateral agencies and has thus diversified its funding sources, gradually lowering its high share of BNDES' funding (from 54% in 2018 to 26% in 2021). The Bank provides plans to expand its activities into neighbouring states (currently accounting 11% of its portfolio), which could boost credit portfolio diversification.

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Case study 8: Facilitate regional government access to finance: The Federal Fiduciary Fund for Regional Infrastructure in Argentina

Category: Access to financial markets

Background: In Argentina, provincial governments are important infrastructure investors, responsible for 56% of total public investment. However, not all provinces have sufficient access to financing to meet infrastructure needs.

Approach: The Federal Regional Infrastructure Trust Fund (*Fondo Fiduciario Federal de Infraestructura Regional*) was created in 1997 by Law No. 24855, enacted by Decree P.E.N 924)97 and is overseen by the Ministry of Interior. The main objectives of the Fund are to financially assist the National State and Argentinian provinces, including the Autonomous City of Buenos Aires, providing financing for economic and social infrastructure that promote the use of labour, national integration, the reduction of socioeconomic imbalances, regional development and commercial exchange across regions within the

country. The Fund lends directly to provincial governments. The fund finances six types of subnational infrastructure projects: transport, public buildings, energy, hydraulic infrastructure, water and sanitation. In practice, the Fund has been financing relatively small infrastructure projects with high impact on local communities, such as street paving, intra-urban roads, school construction, water treatment plants, and small energy transmission units. However, it has initiated a process of capitalisation through the national government from MDBs (e.g. the Andean Development Commission, Financial Fund for the Development of the La Plata Basin, and the Inter-American Development Bank), which will make it possible to finance medium-sized projects, such as the construction of hospitals, tunnel projects, water treatment plants, among others, some of them already at an advanced stage of implementation. The Fund grants loans directly to provincial governments, which guarantee their repayment with the resources they receive from the federal co-participation of taxes (resources collected from federal taxes that are distributed directly to the provinces). It is financially independent from the public budget process but can receive capital contributions from the National State either directly or through the management of loans with Multilateral Development Banks. It achieves full recovery of the loans by charging market-based interest rates and a fee for technical assistance. The loans have a ten-year repayment term with a grace period of between one and two years depending on the size of the work. Financing to the provinces is distributed in instalments that are allocated according to the percentages they receive from the federal co-participation of taxes in accordance with the regulations in force.

Impact: Among the most notable projects, the Fund is providing financing for infrastructure projects that improve the well-being of the population in different provinces, prioritising projects that are labour-intensive and reduce socio-economic and regional imbalances. This includes – for example – projects that improve connectivity and transport logistics (rehabilitation of roads, access to ports and tunnels that improve connectivity); the construction of technology parks (creating an enabling environment for the development of the knowledge economy sector, promoting new technologies, fostering quality employment, facilitating the development of SMEs and increasing exports of companies engaged in technological development); and the construction of infrastructure in the health sector, to maximise the care of the population of the region where the project is developed. It is important to note that the Fund has an Environmental and Social Management Framework that reflects the Fund's commitment to the objectives of sustainable development, aiming at poverty reduction and environmental and social sustainability of projects, making effective the rights and obligations contained in the International Declarations and Conventions ratified by the Government of Argentina.

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Case study 9: Supporting mid-size municipalities to access to finance: The INCA Municipal Debt Fund in South Africa

Category: Access to financial markets

Background: Over 60% of South African population live in urban areas and this figure is expected to increase by 10% by 2030. Many “secondary cities” or mid-sized municipalities in the country face significant barriers in accessing financing due to their poor creditworthiness. Over 80% of municipal financing is directed towards eight large metropolitan municipalities out of over 200 municipalities. The COVID-19 crisis has posed further challenges on municipal investment and finance – private sector lending to municipalities in South Africa declined sharply during the 2020/21 financial year. At the same time, many long-term investors have financing available looking for suitable long-term investments.

Approach: In July 2021, the INCA Portfolio Managers, Agence Française de Développement (AFD), and the Swiss State Secretariat of Economic Affairs (SECO) launched the INCA Municipal Debt Fund (IMDF) to facilitate access primarily by intermediary cities to financing for their capital investment needs. The Fund will bridge the gap between investment needs and financiers looking

for investments that deliver long-term annuity income. The Fund seeks to leverage resources from Development Finance Institutions to crowd-in financing from local private investors (e.g. pension funds, institutional investors in South Africa) for municipal infrastructure investments. AFD will provide ZAR 500 million to the Fund. SECO will provide credit enhancement through a cash backed First Loss Facility, which will cover up to 5% of the financing by investors. The INCA Portfolio Managers brings experience in municipal lending, municipality credit assessment, and municipal public finance capacity building in South Africa. The intention is to make it possible for local institutional investors to invest in much needed municipal infrastructure within an acceptable risk framework and with the involvement of a well-known group of municipal experts involved.

The structure and creation of the Fund considered national-scale municipal assessments and ratings for South Africa. Compared to an international-scale assessment, this approach gives an indication of the relative credit risk only within a specific country but not comparable across other countries. It provides a useful risk management tool for domestic lenders seeking to understand varying levels of risk across municipalities, utilities, or other subnational entities in a country. These assessments were critical to structure the lending operation of the Fund and were also used by AFD and SECO as part of their due diligence for investment in the IMDF.

Based on the credit assessments and ratings, the IMDF will provide loans to creditworthy municipalities of intermediate size for the financing of urban infrastructure and services (water, sanitation, waste, electricity, transport). Lending will be complemented by technical assistance by INCA Portfolio Managers to enhance the long-term financial planning and budgeting capacity of recipient municipalities. The INCA Portfolio Managers will assess municipalities against specific criteria of good governance, financial prudency and long-term credit rating, and the IMDF will only lend to qualified municipalities.

Impact: Within the near future, the IMDF loan portfolio aims to create a sizable portfolio of long-term municipal loans worth between ZAR 3 billion and ZAR 7 billion.

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Case study 10: Support the green transition at the local level: The On-Street Residential Chargepoint Funding Scheme in the United Kingdom

Category: Grants and subsidies

Background: In 2020, the United Kingdom (UK) government announced that the sale of new petrol and diesel cars and vans in the UK will cease by 2030. By 2035, all new cars and vans will be fully zero emission at the tailpipe. Additionally, in April 2021, the government enshrined into law a target of a 78% decrease in carbon emissions by 2035 compared to 1990 levels. The transition to electric vehicles to reduce carbon emissions will require large scale transformations in local communities to support the roll-out of electric and low emissions vehicles, including charging infrastructure adapted to local conditions.

Approach: In March 2022, the UK government launched the On-Street Residential Chargepoint Scheme (ORCS) to help fund chargepoint installation at the local level. The ORCS provides funding towards the capital costs of installing public charging for residents without private parking. For the 2022/2023 fiscal year, GBP 20 million has been allocated to ORCS. Funding is available for up to 60% of eligible capital costs; however, it is expected that most projects will require less than 60%, particularly in areas of high EV uptake, where private investment is more viable. Total funding is limited to GBP 7 500 per chargepoint, and GBP 13 000 where electrical connection costs are exceptionally high.

ORCS is demand-led, and applications are prioritised in areas with air quality challenges and where the applicant has not previously received funding through the other similar scheme (i.e. the 'Go Ultra Low Cities Scheme'). The scheme takes into account the special condition in rural areas, where community-owned land (for example, a village hall car park) is often well suited to providing charging infrastructure. The scheme thus may also fund chargepoints installed on land not owned by a local authority on a discretionary basis.

To help overcome barriers to a successful rollout of EV charging infrastructure, the UK government is also providing capacity building and support to local authorities. Support includes knowledge sharing and skills enhancement, as well advice and guidance for the preparation of applications.

The ORCS is part of the GBP 2.5 billion funding programme to support local authorities with the installation of electric vehicle infrastructure and other measures to support the transition to zero emission vehicles. Other funding schemes under this programme include the Local EV Infrastructure Fund that funds projects that mobilise private investment (currently being piloted in England); and the Workplace Charging Scheme that helps local authorities to electrify their own vehicle fleets.

Impact: Even before the introduction of the ORCS, the number of public electric vehicle charging devices available in the UK increased from 22,790 to 30,290 between April 2021 and April 2022, or an increase of 33%. The new raft of measures is expected to accelerate the growth of electric vehicle chargepoints further and support local governments to install the necessary infrastructure to meet the objective.

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Case study 11: Competitive Grant Financing of Urban Infrastructure in Switzerland: The Swiss Federal Agglomeration Programmes

Category: Grants and subsidies

Background: Agglomeration areas in Switzerland have seen increased development that has driven up infrastructure and transport funding needs. Often funding for new transport infrastructure is needed in a jurisdiction where new developments are taking place. Simultaneously, many agglomerations have faced increasing demand to address congestion on local roads and to create and enhance recreational and green space. These rising infrastructure investment needs create a funding burden on local authorities and call for coherent transport and settlement planning within agglomerations.

Approach: The Swiss Federal Agglomeration Programmes, funded and administered through the Federal Road and Agglomeration Traffic Fund, provide competitive grants for public and individual transport infrastructure in agglomerations. The Federal Fund contributes 30% to 50% funding to the selected investment projects and the higher quality projects can receive a higher share of grants. Sustainability, cost-benefit analysis, and whether the projects help address local and regional traffic challenges, are some of the evaluation criteria.

The funding Programme is designed to incentivise coordination and cooperation among local authorities. As a condition to access the grants, local authorities need to plan and implement projects in a coordinated way to address local needs. They need to harmonise their transportation, urban development and land-use plans and develop their agglomeration programmes jointly across administrative units. Local authorities also need to prove that all future maintenance costs can be met.

Some local authorities developed model projects precisely to construct collaborations and create an agglomeration programme to access the Fund.

In 2015, the canton of Uri and eight municipalities of the Lower Reuss Valley jointly developed an agglomeration plan for the Federal programme. The plan outlined the goals and strategies in the context of the Lower Reuss Valley's future development, in particular with respect to housing, landscape, and transportation.

Impact: Around 40 agglomerations throughout the country have participated in this Programme. Many local authorities are currently developing the fourth generation of their programmes: the Schaffhausen area focuses on promoting pedestrian and bicycle traffic and enhancing the settlements' street spaces. The municipal authorities of Brig-Glis, Visp and Naters devote to improving traffic safety, establishing transportation-system access and lowering traffic volume in residential areas. The cross-cantonal association of Agglo Obersee targets investments that harmonise settlement and transportation development. The cantons of Graubünden, Uri, and Valais, located in the alpine agglomeration, developed a programme that reflects their special needs for transport infrastructure in mountainous area.

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Case study 12: Tax on companies to support public transport and mobility: The Versement Mobilité in France

Category: Tax revenues

Background: The just transition will require supporting a transition away from high-carbon emissions activities, while ensuring that alternative low-carbon solutions are equitably available to citizens. In France, the transportation sector accounts for 30% of the greenhouse gas emissions and more than 75% of employees in the country use cars to commute. This is particularly true in rural areas with a high dependency on cars, partly due to the limited public transport networks. Introducing policies and measures to develop public transport infrastructure in order to limit the dependency on private cars and reduce emissions in the transport sector is critical for the green transition, but it also needs to take into account affordability and equity.

Approach: To address the mobility challenges and make everyday transport more accessible, better adapted to the diversity of needs and cleaner, France passed a Mobility Orientation Law (*Loi d'orientation des mobilités*, LOM) in December 2019. The Law aims to reduce the dependence on individual cars, promote alternative mobility solutions, reduce greenhouse gas emissions and enhance transport infrastructure planning.

The Law replaced the transport payment tax (*versement transport*) with a mobility payment tax (*versement mobilité*). Similar to the previous transport payment tax, the mobility payment tax is levied on public and private employers with more than 11 employees, charged on the total gross salaries of all employees in a company or institution. This 11-employee threshold was chosen to exclude the smallest businesses deemed economically fragile. Such a tax underpins the idea that transport networks should not only be funded by users, but also by employers (enterprises and administrative services) who directly or indirectly benefit from the transport network, which also allows the employers to increase their recruiting opportunities and connections with employees and customers. Revenue from the mobility payment funds mobility services and part of the associated infrastructure (e.g. building new tram lines, replacing rolling stock, etc.), as well as actions contributing to the development of active or collective mobility (e.g., cycle paths, carpooling areas, carpooling platform, etc.).

Mobility payment tax revenue funds authorities who organise mobility (*Autorité Organisatrice de la Mobilité,* AOMs) in France to help them undertake investment and/or operation and maintenance of public transport services within their territorial scope. AOMs are entities responsible for organising at least one regular public transport and mobility services in territories (for example, a bus or metro line). In the majority of cases, it is the agglomeration communities, urban communities and metropolises that exercise the role of AOM in their territories. The Île-de-France region with Île-de-France Mobilités

is the exception, exercising the role of regional transport organizing authority and also the role of AOM for urban transportation. AOMs can decide the tax rates in their territory and can adjust it twice a year, within the ceilings set by the Law. The level of tax rate usually takes into consideration the population and level of urbanisation. Outside Île-de-France, the mobility payment rate is between 0% and 2.5% (depending on the size of the territory comprised by an AOM). In Île-de-France, the rate is between 1.6% and 2.95%. The rates are reassessed twice a year: (i) on January 1st and (ii) on July 1st. In practice, this tax is collected by the Unions for the Collection of Social Security Contributions and Family Allowances (URSSAF) and the *Caisses de la Mutualité Sociale Agricole* (CMSA), on behalf of AOMs.

Success / Impact: This type of tax was first established in the Paris metropolitan region, financing the Île-de-France public transportation infrastructure. The tax was then gradually extended to smaller municipalities across the rest of the country to support increased transport investment. In 2017, EUR 4.3 billion euros was collected in regions other than Paris metropolitan region, which represented up to 47% to their public funding for transport (investment and operations). In 2020, over 250 AOMs in France had set up the mobility payment tax within their geographical boundaries. As of today, the mobility payment represents more than 60% of the Île-de-France Mobilités (the AOM for Paris metropolitan region) budget.

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Case study 13: Earmarked tax for climate-related projects: Climate Action Taxes in Boulder, Colorado, United States

Category: Tax revenues

Background: The City of Boulder in Colorado, United States, with a population of around 100 thousand, recently adopted a goal to achieve net carbon neutrality by 2035 and reduce greenhouse gas emissions at least 80% by 2050. Such objectives will require that the city fund and finance climate investments. The City has previously introduced two climate-related taxes since 2006, with revenue earmarked for related investments; however, the two taxes are set to expire in 2023 and 2025 respectively. In addition, the city is reflecting on how better to balance the weight of the current climate taxes between residents and businesses: Boulder's commercial and industrial sectors are responsible for more than 75% of the community's energy-related emissions, yet they contribute less than 37% of the current Climate Action Plan (CAP) tax revenue. The CAP tax rates are USD 0.0049/kWh, USD 0.0009/kWh, and USD 0.0003/kWh for residential, commercial, and industrial respectively as of 2009.

Approach: The City of Boulder has proposed adopting a New Climate Tax to be valid until 2040, as an effort to consolidate and enhance its existing climate taxes. The New Climate Tax aims to combine the two current taxes together: The current CAP Tax, a tax on electricity designed to address the city's emissions while providing increased levels of funding for green investment; and the Utility Occupation Tax (UOT), which funds the partnership between Boulder and the local utility provider, Xcel Energy. The New Climate Tax would be collected as per the current UOT and applied to residential and commercial electric and gas utility bills. The New Climate Tax proposes to address inequities by decreasing rates for residential customers who produce approximately 20% of electricity related emissions while increasing rates for commercial and industrial clients who contribute more than 75% of the electricity related emissions. The estimated annual cost is approximately USD 38 for a residential household, down from USD 43 of the current CAP tax, USD 374 for a commercial business up from USD 241, and USD 1 389 for an industrial business, almost double the historic USD 705.

Under the proposal, revenue will continue to be earmarked to fund climate-related projects, as the existing CAP tax and UOT tax. The existing CAP Tax generated USD 22 million between 2007 and 2022. The proceeds are earmarked for climate-related projects (e.g. development of solar projects, the expansion and electrification of city transport), as well as direct cash transfers to improve energy efficiency and policy and regulatory reforms. Revenue from the New Climate Tax will fund, beyond the existing projects, micro-grid and energy storage projects, renewable energy development and building electrification.

There are also several proposals to address the equity consideration in the New Climate Tax, especially considering the impact of COVID-19 crisis on businesses, industries and citizens. It is proposed that some of the New Climate Tax revenues would support businesses through direct cash assistance programmes to help pay for energy efficiency upgrades, which could save the costs for businesses moving forward. The tax revenues would also be leveraged with other funds, including federal funds in order to help the with the resilience plan. It also plans to include a rebate program for qualifying low-income residents and possibly certain types of businesses who cannot be directly excluded from paying the New Climate Tax to address equity considerations. The City also plans to fund projects that will address inequities caused by climate change, such as low-to-no-cost solar for households struggling with high energy costs.

Impact: The City has recently conducted a survey out to residents collecting feedback and comments on the New Climate Tax and 72% of the survey respondents indicated that they would approve the New Climate Tax. If the New Climate Tax is eventually approved through the referendum, it is expected to contribute USD 5 million annually to the city's budget, an increase of approximately 25% compared to the existing revenue. The new tax may also give the city the flexibility to issue up to USD 40 million in bonds to invest in more impactful projects such as developing large-scale renewable energy projects, electrifying buildings, and increasing electric vehicle charging infrastructure.

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Case study 14: Innovative Road/Congestion Pricing: Pico y Placa Solidario Programme and on-street parking charges in the City of Bogotá

Category: User charges and fees

Background: Traffic congestion has been one of the main problems in the City of Bogota, which is one of the most densely populated cities in the world (4 907 inh/km2). The 2019, INRIX Global Traffic Scorecard ranked Bogota as the most congested city in the world, with 192 hours per capita lost in heavy traffic. This has been a long-lasting challenge for the City. To mitigate it this challenge, the City of Bogota previously implemented a rationing scheme called *Pico y Placa* ("peak hour and license plate"), which allows most drivers to use their vehicles only every other day of the week (except for weekends), following an odd-even schedule based on the last digit of the vehicle's license plate. However, studies show that these types of schemes may create incentives for drivers to buy additional cars, which are often older, potentially resulting in more congestion and pollution. Particular studies on the *Pico y Placa* programme showed no evidence of improvement in air quality nor in the reduction of car use. Furthermore, private car trips only apply to a minority of the population in Bogota, where private cars only make for 15% of trips in the city, most of which belong to high-income groups.

Approach: In September 2020, the City of Bogota transformed the *Pico y Placa* from a rationing scheme into a road-pricing scheme by introducing a pay-to-opt-out of driving restrictions option, naming the new programme *Pico y Placa Solidario*. The main objectives were to contain the rise of the vehicle fleet and to raise extra funds to pay for the operating subsidies for TransMilenio — Bogota's Public Transport System. Car owners can now buy daily, monthly, semestral or even annual/biannual restriction exemptions (i.e. to pay a "circulation fee"). In the first year of *Pico y Placa Solidario*, the circulation fees were set the same for all vehicles: USD 13 per day; USD 104 per month (equivalent to approx. USD 5 per day); and USD 523 per semester (equivalent to approx. USD 4 per day), which represents a 62% monthly discount and a 69% semestral discount. Alternatively, car owners can register their car in a pooling platform, permitting drivers to skip *Pico y Placa* restrictions if driving with three or more passengers (including the driver). The only exemption from the circulation fees was for electric or hybrid vehicles, medical services or health personnel vehicles. All revenue generated by the circulation fees is earmarked by law to pay for TransMilenio's operating subsidies.

Later on, the Bogota authority enhanced the calculation of the circulation fees. As of August 2021, circulation fees will vary depending on the emissions generated by the vehicle, the vehicle's commercial value, and if the vehicle is registered in Bogota or in another municipality. Based on these criteria, cars with high commercial value, high carbon emissions and registered outside of Bogota will pay higher fees: cars registered outside of Bogota have a 5% price premium on top of the base price; medium emission vehicles have a 10% price premium and high emission cars have a 20% price premium; vehicles of average commercial value have a 25% price premium and high commercial value cars have to pay a 50% price premium. Price premiums can be cumulated. With this change, the programme has an equity element by making car users (mostly high-income groups) pay a higher share for the TransMilenio, which benefits mostly low-income groups. It can also further discourage the use of private vehicles by high-income groups and promote the use of public transportation.

Additionally, since 2021, Bogota decided, in parallel with *Pico y Placa Solidario*, to charge for on-street parking. Bogota expects that charging for on-street parking will enhance economic activity by increasing parking rotation, improving footfall for local businesses, and allowing better managing curb space for deliveries and pick up services. The revenues of this initiative will initially fund the expansion of the new on-street parking networks (signage, electronic payments, enforcement and trained facilitators), and surpluses will gradually be directed towards TransMilenio's operating subsidy fund.

Impact: According to the INRIX Global Traffic Scorecard, in 2021, hours lost in traffic in Bogota decreased 51% compared to the pre-COVID situation and Bogota is now ranked 8th among the most congested cities in the world. Additionally, according to the Bogota authority, the Pico y Placa Solidario carpooling system saves around 191 thousand vehicle trips per week, compared to the pre-reform situation. Bogota's transport department (SDM) expects that by 2023, when the 13 new on-street parking areas will be fully operational and the road pricing scheme will be completely implemented, these measures could bring in around USD 49 million in additional revenue. That number is expected grow steadily up to USD 247 million annually by 2032. Revenues from both policies will be directly reinvested into the public transport system, supporting fleet replacement, infrastructure maintenance and quality of service projects.

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Case study 15: Diversifying revenue sources for urban rail infrastructure: The "rail plus property" model of the Shenzhen metro in People's Republic of China

Categories: Asset revenues, Land value capture

Background: The People's Republic of China (hereinafter 'China') is experiencing rapid urbanisation. By 2030, 70% of the country's population will be living in cities, creating significant demand for housing and transport, especially for urban transit. Cities, however, face significant challenges in financing the growth of urban transit infrastructure, as well as its operations and maintenance. The construction of urban rail transit entails large-scale investments, high operational costs, long return cycle and large capital needs, making whole-of-life balanced financial planning and sustainable development a challenge in all countries. Furthermore, in consideration of residents' ability and willingness to pay and the value provided, subway ticket prices in Chinese mainland cities are generally low and most subway lines find it difficult to breakeven by only relying on ticket revenue.

In the City of Shenzhen there are in total 431 kilometres of urban rail transit, among which 419 kilometres are metro lines (the rest being tramway). In 2021, the passenger volume of the 11 metro lines in Shenzhen reached on average 5.5 million per day. This creates a significant funding need for investment in infrastructure and supporting operations and maintenance.

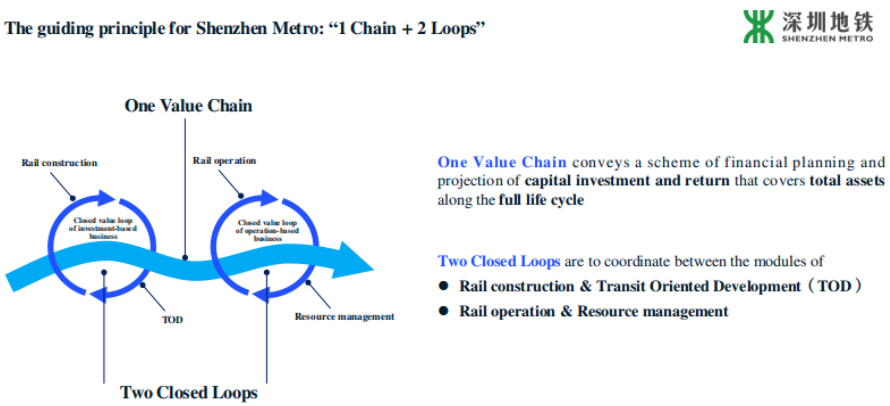
Approach: Shenzhen Metro Group Co., Ltd., was founded in 1998 as a large-scale sole proprietorship state-owned enterprise (SOE) under the direct control of the Shenzhen Municipal Government. It assumes the main responsibility for construction and operation of the rail transit system in the city. It is responsible for over 90% of the whole transit system (388 kilometres of metro lines out of the total 419 kilometres, and the 12 kilometres of tramway). Its business scope includes preliminary research, design and construction of the metro project, as well as metro operation, resource business operation, property development and management, finance and fundraising in association with metro transportation.

In order to support the construction and operation of metro lines, the Shenzhen Metro Group Co., Ltd. has harnessed the model of "rail + property (R+P)". This involves developing and utilising the metro station space and lineside property to capture the value created from metro projects, which can be used to help fund the construction and operations of metro lines. This model can partly or fully fill the funding gaps of costly metro projects. The need to maximise land-value increments around transit stations ensures the dense concentration of housing, employment, business and advertising opportunities in these areas. This dense development further boosts transit ridership and increases transit's farebox revenues (i.e., revenues collected from fare paying passengers either in the form of cash or pass sales revenue), thereby strengthening the financial performance of transit projects. In 2021, farebox revenues were around RMB 4.6 billion (before tax), accounting for 28% of the company's total operational income.

At the same time, Shenzhen Metro Group Co., Ltd. operates advertisement resources, station commerce and trade, and communication resources along the rail transit lines. It also manages various properties along the metro lines, at rail transit hubs and in the metro superstructure. Business operation on ancillary resources represents the important part of ''metro'' in the ''metro plus property'' profit model. It mainly consists of four categories of resources: media and cultural resources, commercial resources affiliated with metro stations, telecommunication information resources and various other resources. Advertisements at stations constitute the main operating resource. Station advertisement includes print ads in trains, with media forms covering station lamp house, wall adhesive advertising, stair billboard, shield door adhesive advertising, billboard in trains, as well as advertisement on train handles, among other adhesive advertisements. Commercial resources affiliated with metro stations include commercial leasing at the station banks and the shops in the halls of the metro lines. According to the 2021 annual report of Shenzhen Metro Group Co., Ltd., the revenue generated from resource management was over RMB 1 billion, accounting for 6.3% of the Group's total revenue, of which 24% was generated from media and cultural resources (RMB 246 million). Besides traditional metro resources such as advertisement, media, communication and commerce in station, the industrial chain of Shenzhen Metro Group Co., Ltd. has been extended to include design consulting, construction materials, hotel management, logistics, digital technology and other fields.

Shenzhen Metro Group Co., Ltd. has further developed an innovative "1 Chain + 2 Loops" model in recent years to promote the whole-of-life balanced financial planning of urban rail transit, to achieve predictable costs, affordable financing and support sustainable operations (Figure 5). "1 Chain" refers to the whole life-cycle value chain from preliminary works to continuing operations, as well as full-cycle management and promotion of integration. "2 Loops" is based on the principle of duration and risk matching. First, during the investment and construction period, comprehensive transit-oriented design (TOD) is implemented in metro stations and along rail lines. Revenue from immediate property sales is used to support the metro construction, and sufficient and stable funds are secured to form a closed value loop of investment businesses. Second, during the period of continuous operation, operating income from holding businesses is employed to fund metro operations, and a closed value loop of operational businesses are formed by taking advantage of the passenger flow and the presence of high-quality business that increase the value of property along metro stations.

Figure 5. Shenzhen Metro "1 Chain + 2 Loops"



Source: Shenzhen Metro Group Co., Ltd.

Under this model, the local government formulates relevant policies, leads the full life-cycle financial evaluation of projects, prepares plans regarding investment, financing and resources, implements financial support policies and ensures sufficient fiscal support. It also allocates land resources to match rail transit financing. Local government provides support and help rail transit enterprises to make active use of policy-based financial instruments to raise low-cost funds. As of now, over RMB 40 billion local government special bonds and RMB 10 billion policy-based financial instruments have been issued.

Along with providing high-quality public services, rail transit enterprises are required to have the capability of integrated construction and resource management, cost management and control, operational excellence and financing. The Shenzhen Metro Group Co., Ltd. plans the whole life-cycle capital needs, diversifies and expands financing channels, optimises debt structure and strictly controls debt risks. Over the past three years (2019-2021), Shenzhen Metro Group Co., Ltd. has utilised various financing methods and its cumulative financing has exceeded RMB 150 billion. At the same time, it has actively mobilised RMB 25.6 billion from the private sector through PPP or other models.

Impact: R+P provides a solution for densely populated and transit-dependent cities to support metro construction and operations. In the case of the Shenzhen Metro Group Co., Ltd., it has managed to generate sufficient revenue to support the expansion and operations of metro infrastructure projects. Total operational income in 2021 reached RMB 16 billion and 235 kilometres of new metro lines and sections are under construction. In 2021, the metro carried more than 60% of local traffic in Shenzhen City. Since 2019, the major financial indicators of Shenzhen Metro Group Co., Ltd. such as asset scale, revenue, and profit have ranked among top three in the industry, among which the profit indicator has consistently ranked first in the industry for many years, and asset-liability ratio (below 50%) remains at a low level among industry peers, forming a sound operation mechanism with self-support function.

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Case study 16: Reducing land acquisition costs for infrastructure projects: The use of Transferable Development Rights in Hyderabad, India

Category: Land value capture

Background: In 2015, the Greater Hyderabad Municipal Corporation (GHMC) with a population of 10.5 million, announced the first phase of the Strategic Road Development Plan. One of the key projects in the Plan are highway corridor developments (road widening) and nala (a type of drain) widening, which required over 300 properties to be acquired. The cost of property acquisition was estimated at USD 252 million by 2017, which would have represented a large portion of the overall budget for the Development Plan.

Approach: To reduce the land acquisition costs, the GHMC adopted the use of Transferable Development Rights (TDRs). Through the issuance of Development Right Certificates (DRCs), the owner of land in a defined area is compensated for every square metre surrendered to an Urban Local Body (ULB) or other relevant authority. In compensation, DRCs are provided based on a percentage defined by the amount and type of land surrendered. DRCs can then be used to build in other 'receiving' areas beyond what would otherwise be permitted. While areas granted DRCs usually have environmental or heritage values, receiving areas ("buyer" or recipient of the TDR) are generally more suited for higher density developments.

In Hyderabad, land transferred for road widening was compensated by providing an extra 150% worth of development rights. In other words, for every square metre lost, 2.5 metres were made available to build elsewhere. Later on, in order to make the TDR contracts more attractive and support land acquisition, the GHMC increased the percentages – and the compensation for road widening was increased to 400%, 200% for lakes and water bodies, and 100% for heritage buildings.

The GHMC has also created an online 'TDR bank' so that buyers and sellers can more easily and transparently exchange their development rights. This innovation has been recognised by the Central Government as one of the best practices in the country.

Impact: By April 2021, the total number of TDRs issued by the GHMC reached 807 with a total value of USD 143.5 million. This has resulted in savings of USD 190 million as compared to traditional land acquisition framework. In 2017, the federal Ministry of Housing and Urban Affairs announced a 'Value Capture Finance Policy Framework', recognising TDR as one of the ten methods which can be adopted by the federal government, states and ULBs. This method is also being used in Mumbai, Ahmedabad, and other cities in India for various purposes including heritage conservation, lake and water body conservation, slum improvement, development of public housing and road widening.

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Case study 17: Low-cost loans to support local government infrastructure investment in Australian states

Category: Loans

Background: Many local governments in Australia have significant infrastructure investment needs due to high levels of population growth. Accommodating this growth requires that local councils invest in basic infrastructure, including local roads, waste, water networks and parks, among other areas. Given that future residents only pay council rates after infrastructure is constructed (once they have moved into the area), accessing affordable financing is critical to support investment and growth.

Approach: To help local governments finance the construction of infrastructure, most state governments enable state borrowing agencies to lend to local governments. These organisations issue bonds on capital markets backed by state finances, and on-lend to local governments at a more affordable rate than would be otherwise available. Affordable financing is partly achieved by pooling the borrowing needs of different public bodies to achieve economies of scale. Examples of borrowing agencies include TCorp in New South Wales (NSW), the Treasury Corporation of Victoria, the Local Government Finance Authority in South Australia and the Queensland Treasury Corporation (QTC). Borrowing agencies also lend to state public authorities and support state government investments.

Beyond harnessing borrowing agencies to improve the access of local governments to affordable finance, state governments also provide funding support to lower the cost of financing for local governments. For example, the NSW State Government created the Low Cost Loans Initiative, which funds 50% of the interest paid on borrowings related to infrastructure from TCorp. This initiative aims to helping councils bring forward the delivery of infrastructure that enables new housing supply. Similarly, the State Government of Victoria has a Community Infrastructure Loans Scheme, which provides subsidised loans to local councils in Victoria, with a discount of 50 per cent of the applicable interest rate, up to a maximum of 150 basis points.

The state borrowing agencies also develop education programmes or other tools to support local governments in taking out concessional loans, particularly around key financial and strategic issues such as long-term asset management and planning. These programmes and tools are usually in the form of seminars (in-person and online) or fact sheets on relevant topics, tailored workshop upon the request of the local government, or the agencies acting as a standing observer at local government committees. For example, the QTC developed a long-term financial forecasting model for local government to assist with capital and operational management (i.e. building local government ability to generate surplus). The QTC staff also provide in-person trainings to local governments to use this model.

Impact: Borrowing agencies have helped to reduce the cost of borrowing for local governments. For example, since its inception in 2015, TCorp has provided AUD 678 million in low-cost finance to local councils across NSW. Forty-three councils have accessed TCorp low interest loans to fund a wide range of new or upgraded infrastructure such as aged care facilities, airports, art galleries, parks, roads, bridges, footpaths, drainage, carparks, sporting ovals, pools, and water and sewerage. According to TCorp, the infrastructure backlog across the NSW local government sector has been reduced from AUD 7.5 billion in 2010-11 to AUD 3.4 billion in 2018-19.

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Case study 18: Pooling to attract institutional investors: Viveracqua hydrobond in Veneto, Italy

Category: Bonds

Background: Following the 2008 financial crisis, and the subsequent impacts on the banking sector, many water municipalities in Italy faced high investment financing costs. In the Veneto region of Italy, many small and medium size municipal companies who traditionally relied on bank loans for finance sought to identify a new financing opportunity for undertaking needed investments.

Approach: In 2014, eight local municipal water utilities in the Veneto region in Italy joined together to raise finance through a 'hydrobond'. To achieve this, the municipal companies pooled mini bonds into a Special Purpose Vehicle (SPV) and jointly issued a EUR 150 million bond on the capital market. This has financed 728 individual infrastructure investments in the region's integrated water system from 2014 to 2017 (with an estimated value of EUR 300 million). These investments included new water mains and sewer pipes, upgrading facilities and network maintenance.

The bond issuance went through the following process. First, each of the eight utilities issued a mini bond with a maturity of 20 years and a fixed annual coupon rate of 4.2%. These mini bonds varied between EUR 5 to 30 million across the utility companies. Then, all mini bonds were purchased by an SPV for securitisation, named Viveracqua Hydrobond 1. The SPV subscribed the mini-bonds and used them as underlying collateral for EUR 150 million worth of notes to be issued on the capital markets (i.e., as Asset Backed Securities, ABSs). These had a fixed coupon rate of 3.9%, and a longer maturity than the mini bonds (i.e., until July 2034) in order to take into account possible delays in the mini bonds' repayment schedule. Viveracqua Hydrobond 1 received interest (4.2% annually) and capital reimbursements from the mini bonds; the SPV paid back interest (3.9%) and capital to the ABS investors.

Credit enhancement to Viveracqua Hydrobond 1 was provided by Veneto Sviluppo S.p.A, the financial agency of the Veneto Region, and the eight water utilities. Veneto Sviluppo offered EUR 6 million cash reserve (4% of total bond value) at the first-loss position and eight utilities jointly provided EUR 24 million (16%) at the second-loss position.

It took nine months to structure the deal. Coordination among the eight water utilities was considered one of the most challenging tasks. The utilities needed to agree on how the credit enhancement facility would be used and to reach consensus on paying for another's default. The Finanziaria Internazionale Securitization Group S.p.A. (Finint), who helped structure the transaction, brought together managers and numerous shareholders with very different political orientations and views to discuss the deal across dozens of municipalities. Eventually, each water utility agreed to set aside 16% of the proceeds raised through the mini bonds for the credit enhancement facility. Viveracqua Hydrobond 1 was then subscribed by the European Investment Bank (EUR 145.8 million), as well as two other banks and a pension fund (EUR 4.2 million in total).

Impact: This case represented the first example of self-financing by subnational state-owned enterprise (SOE) in the capital markets through securitisation – without the help of a bank as an intermediary. The securitised bond had better credit standing that any of the mini bonds would have individually due to risk-diversification and the credit enhancement facility. This helped to mitigate the risk in case of default of one or more utility and reduced the risk of information asymmetry that investors face when analysing small companies. In the following years, the SPV issued three more securitised bonds – EUR 77 million in 2016, EUR 248 million in 2020, and the latest bond issuance of EUR 148.5 million, concluded in March 2022, to support the upgrading and efficiency of the Veneto water network.

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Case study 19: Blended finance: The International Municipal Investment Fund

Tool/category: Loans, Equity, Blended finance

Background: Local governments play a key role in the implementation of the Sustainable Development Goals (SDGs), meaning that strengthening municipal finance is keyway to support the delivery of the SDGs. In April 2018, the United Nations Capital Development Fund (UNCDF) and the United Cities and Local Governments (UCLG) in collaboration with their technical partner the *Fonds Mondial de Développement des Villes* (FMDV) established the Global Coalition for Municipal Finance in Malaga, Spain (known as the Malaga Coalition) with a goal to expand subnational finance and create "a global financial ecosystem that works for cities and local governments".

Approach: To achieve this goal, in October 2019 the UNCDF launched the International Municipal Investment Fund (IMIF) to serve as an instrument of the Malaga Coalition, to support local SDG-oriented projects in developing

countries. The IMIF is a unique, bespoke investment fund that raised over 350 million EUR to help exclusively cities and local governments leverage concessional and commercial capital in domestic and international markets. The Fund will finance urban resilient and sustainable infrastructure projects by investing in equity and quasi-equity securities to accelerate the achievement of the SDG11, SDG13, and other related SDGs, as well as the Paris Agreement. In November 2019, UNCDF appointed Meridiam, a private infrastructure investment and global asset manager, to manage the IMIF after an RfP process.

In terms of project selection and preparation, at the beginning in 2019, UNCDF and UCLG identified 14 cities through a call for proposals to benefit from a pilot phase of the Fund. The investments in the pilot phase focused on, for example, pioneering a new financial structure, testing a new type of PPP with local governments, contributing to a nascent municipal bond market, among others. Despite the COVID-19 global lockdown, UNCDF has provided technical assistance using a blended online and person approach where possible to the projects. In 2020, the Fund's Technical Assistance Facility (IMIF-TAF) was created, managed by UNCDF. Currently, it organises calls for proposals and selects eligible investment projects which will then be presented to Meridiam to go through their independent investment process for a final decision. For projects under USD 25 million, the IMIF-TAF helps local governments finalise investment projects and, if necessary, strengthen their capacity to access credit. IMIF-TAF also supports policy and regulatory reforms at the national level that open up domestic capital markets for subnational governments, to support cities to access IMIF funding. Local governments with selected projects above USD 25 million can be supported directly by Meridiam to structure their project file and be able to present it to the Fund's Investment Committee.

Regarding the criteria, for example, the latest open-ended call for proposal launched in 2022 calls for commercially viable Public-Private Partnership (PPP) local government projects seeking to raise equity financing, mainly in developing and emerging economies. Support is set to be targeted in particular sectors including solid waste, water management and sewerage, urban development, transportation, and energy (renewable source and efficiency). Each local government can submit one to three projects. The submitted proposals need to fulfil certain eligibility requirements at the country, city and project levels. For example, local government applicants need to showcase the awareness and/or approval from the central government regarding the submitted projects. They are also requested to define the regulatory reforms needed to make the projects successful (e.g., tariff reforms). Feasibility studies and clearly identifying which SDGs that the projects can contribute to, and how, are also required. In particular, local government applicants need to provide information on the profiles of the project implementation team to demonstrate their capacity to implement the PPP projects. The IMIF-TAF, using the Dual Key analysis approach developed by the UNCDF, will also assess whether the financial and technical aspects of the investment projects as well as their expected impact. This means they will examine whether an investment will be able to generate revenue, technically feasible and whether it will deliver impact on local economic development or any other relevant aspects, to ensure the projects responsive to its development objectives and the SDGs.

Implementation: For 2020/2021, over 15 municipal investments have been selected in the pipeline through calls for proposals and are under further assessment, with financing needs of approximately USD 100 million. UNCDF has provided technical assistance and granted funding for the selected projects through IMIF-TAF.

One such project is the Bus Rapid Transit (BRT) system to address congestion in Kumasi, Ghana. Kumasi is the second largest city in Ghana, with over 2 million residents, and the over-concentration of investments in the city centre, segregation of land uses, and urban sprawl among others are causing the core areas to become congested, especially during peak hours. This has been compounded by the absence of an efficient and scheduled public transport system, increased car ownership, and overreliance on low occupancy vehicles. Therefore, Kumasi Metropolitan Assembly (KMA) submitted a proposal for the introduction of a seamless system that integrates a localized BRT system with the current operations of the privately operated Trotro system at designated locations in the city. The total project cost is approximately US$125 million via equity and debt. After the project passed the initial eligibility screening, UNCDF has been providing technical assistance. For its pre-investment phase, such as business case

development, assessment of the development impact and financial impact additionality and sustainability through the Dual Key system as well as project structuring and de-risking. This project is not only financially sustainable, but will also contribute to improved access to safe, environmentally responsive, affordable, accessible and sustainable transport systems for all. Following the pre-investment support, UNCDF will also assist KMA with the investment process, post-investment business development, and monitoring and reporting of SDG-responsive impact and results. Successful financing and implementation of this project will achieve multiple anticipated benefits, such as an environmentally responsible, reliable and affordable transport system that enhances physical accessibility and connectivity intra-city and inter-city, enhanced road safety and reduced congestion, as well as improved quality of life and environment.

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Case study 20: Facilitating municipal access to credit: The Municipal Guarantee Board in Finland

Category: Guarantees

Background: The Municipal Guarantee Board (MGB) is a public law body established by the MGB Act in 1996. Its main purpose under the law is to safeguard and develop the joint financing of Finnish municipalities, particularly to ensure the availability of loan financing in all circumstances and to reduce the cost of municipal financing.

Approach: To do so, the MGB guarantees debt issuances for financing municipalities through MuniFin.

MuniFin is Finland's largest credit institution that specialises in the financing and financial risk management of the municipal sector and non-profit housing sector. Essentially, MuniFin is an inter municipal cooperative body to acquire funds from the domestic and international financial markets, and then lend these funds to the individual municipalities. A significant portion of MuniFin's lending is used for projects such as building hospitals, healthcare centres, schools, day care centres, social housing, land use planning and infrastructure as roads and water supply and social housing. The MGB Act also sets out the terms and conditions as well as the specific requirements for the permissible use of the funds raised by MuniFin with the support of the MGB's guarantee. Importantly, the MGB only guarantees MuniFin's loans and/or bonds, not municipalities' individual loans. MGB has a right to inject capital into MuniFin if needed.

The MGB guarantees loans issued by MuniFin for lending to (i) municipalities, (ii) entities under their control and (iii) government guaranteed social housing programmes. Municipalities are jointly responsible for the funding, expenses and commitment of MGB, in proportion to their population figures at the preceding year-end. This said, if one municipality fails to meet its obligations to the MGB, then all peers are required to cover the shortfall on a joint basis based on population size. The MGB has 293 member municipalities, representing almost all Finish municipalities, except for the island of Åland, because of its self-governing status. The Ministry of Finance appoints MGB's council of 10-15 members at the recommendation of the Association of Finnish Local and Regional Authorities. The Council appoints a board of seven members and the board in turn appoints the managing director of the MGB. The MGB has its own auditor as well as one appointed by the Ministry of Finance.

Impact: The MGB's latest credit profile is rated Aa1 (Moody's) and AA+ (Standard & Poor's). Throughout its period of operation, the MGB has not received any claims for the payment of guarantee fees.

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Case study 21: Promoting Social Efficient Procurement: Green procurement system in Valladolid, Spain

Category: Traditional and innovative public procurement

Background: Spanish SMEs accounted for 61.3% of gross value added and 72% of total employment in the country in 2020. They can play a critical role in construction industry and public infrastructure projects. However, SMEs and other social economy entities often find it difficult to know of, or apply for, government call for tenders due to the burden of overcomplicated bureaucratic procedures or to the lack of transparency. This can constitute a drag on social inclusion and social innovation as it may deter marginalised groups to engage in public procurement calls.

Approach: In 2018, the Municipality of Valladolid enacted the Municipal Ordinance 1/2018 to Promote Social Efficient Procurement: Strategic, Honest and Sustainable. This ordinance represents an attempt to design a new public procurement system that simplifies administrative procedures and uses public procurement practices more strategically to promote access to public procurements by SMEs and social economy enterprises. Importantly, the ordinance lays out several criteria for public procurement calls to be more socially inclusive and environmentally sustainable. For example, the ordinance requires that the subject and pricing of municipal contracts consider life-cycle criteria or the most innovative, efficient and sustainable solutions. The ordinance also bans the acquisition of goods and services produced without guarantees of compliance with international conventions on environmental matters. In addition, the municipality has incorporated environmental standards into the tenders to offer public land for private investment. In the assessment of contracts, the awarding criteria refer to the circular economy explicitly, in terms of use of raw materials, sustainable products, life cycle analysis, useful life, energy efficiency, less maintenance and more sustainable packaging.

Impact: the ordinance has made it possible to increase access to public procurement calls for SMEs and social economy enterprises, as well as to foster social inclusion and environmental sustainability. In 2019, the number of contracted SMEs in public procurement procedures went up to 81% of all awarded bidders, i.e. 51% of the municipality's procurement budget. Between 8% and 10% of all contracts are reserved to sheltered workshops (composed by law of at least 70% of people with disabilities) as well as to work integration enterprises. As for environmental outcomes, the ordinance is expected to reduce air pollution, prioritise the use of recycled materials, or favour the installation of water and heating systems with lower energy consumption.

Sources:
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Case study 22: Municipal-owned energy utilities promoting renewable energy: "Stadtwerke" in Germany

Category: Subnational State-Owned Enterprises

Background: Germany has set renewable energy targets to cover 80% of the domestic electricity supply by 2030, in line with its energy transition (*Energiewende*) policy. Local governments have a key role in this agenda. Transforming the local energy sector and promoting renewable energy investment is high on many municipalities' priorities. When considering options to support renewable energy investment, these local governments

often seek innovative ways to increase resilience and affordability energy provision, and to align with local community expectations for social responsibility. In Germany, municipal-owned corporations "Stadtwerke" have a significant presence in the power retail and distribution market and play a key role in implementing *Energiewende* at the local level.

Approach: *Stadtwerke* are often mobilised to invest and promote the energy transition at a local level. These municipal-owned energy utilities can flexibly seek to exploit new financial instruments and business models to provide electricity in line with local community priorities.

A Stadtwerke in the City of Speyer, for example, collaborated with GEWO, a public housing corporation, to jointly establish a joint venture called TDG (Technical Services Company in English) to provide power and heat supply services for houses and buildings using renewable energy. Stadtwerke Speyer has also explored new technology and business models to improve the self-consumption rate of solar power generated electricity (i.e. buildings using solar power electricity for own electrical needs). Under this technology and model, Stadtwerke Speyer covers the cost of purchasing and installing the equipment in apartment buildings, and seeks to optimise profit based on data analysis and by selling extra power to transmission companies.

An advantage of local energy utilities is their close relationship with local industries, market partners and citizens. This relationship can allow them to develop and use local supply chains, and identify specific investment opportunities in a municipality in line with a city's environmental policy.

Implementation: As of 2019, there are more than 1,400 *Stadtwerke* in Germany, which include some of the largest electricity distributors for their local energy market. In 2020, EUR 12.2 billion was invested collectively by the municipal utilities in Germany, with the majority in the energy industry. Out of the 152 newly established Stadtwerke between 2005 and 2016, 82 (54%) were majority owned by local authorities. In practice, the size and ownership structure of this *Stadtwerke* can be flexible – this means that they can be adapted based on the local context as larger cities require different solutions to rural communes.

Sources:

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Case study 23: PPP with viability gap funding support from national government: The Umbulan Water Supply System Project in East Java, Indonesia

Category: Subnational Public-Private Partnerships

Background: Only 75% of the 1.3 million population in East Java is served by a water supply system. To improve access to clean water, the East Java Provincial Government has planned to construct a water supply system to transmit water from a remote spring located in Umbulan to five districts/cities in the region. Such a system required building nearly 100 kilometres of freshwater pipelines, with a delivery capacity of 4 000 litres per second and expected to serve 1.3 million population. After the concept was initiated in the 1980s, several studies and tendering processes were carried out that eventually led to the adoption of a public-private partnership (PPP) model. The project was estimated to cost USD 143 million; however, private investment and a contribution from the East Java provincial government could only cover 65% of the project financing cost and there was a need to make the project financially viable to attract private investors.

Approach: After a reform of Indonesia's PPP policies in 2015 (later refined in 2018), the Indonesian national government sought to support the Umbulan Water Supply System as a PPP Project. The reform established that the Ministry of Finance can provide support to subnational governments for PPP projects, especially to address obstacles that cannot be resolved by subnational governments themselves. Following the reforms, the Ministry of Finance established the Project Development Facility (Facility) to facilitate

subnational governments to prepare and conduct PPP transactions. For selected projects, the Ministry of Finance can appoint a Facility implementer to assist the subnational government.

PT Sarana Multi Infrastruktur (PT SMI), a national government infrastructure project preparation and financing body, was appointed to assist the East Java Provincial Government during project preparation and the transactions. PT SMI and the East Java Provincial Government signed an agreement regarding the details of the technical, financial and legal consultancy services, which included analysis and identification of the PPP structure, risk-sharing arrangements, transparent procurement process, and the guarantee application. The East Java Provincial Government also signed a separate agreement with the Ministry of Finance, which stipulated that the government should create an ad-hoc team dedicated to this project to closely cooperate and coordinate with PT SMI. Under these agreements, the East Java Provincial Government created the Umbulan Water Supply Committee.

In 2016, the Umbulan Water Supply System Project was registered as a National Strategic Project and Priority Project. The East Java Provincial Government provided USD 22 million through the 2016-2017 state budget to support the project. The Ministry of Finance provided USD 57 million through a viability gap funding scheme. The remaining up-front investment cost was covered by a private partner, PT Meta Adhya Tirta Umbulan, who in turn received a 25-year concession and took on responsibilities for design, construction, operations, facility maintenance and the water distribution network (i.e., a BOT model). Revenue for the PPP will come from user fees through local water companies in five districts/municipalities, who will purchase bulk water from the PPP company. The Indonesia Infrastructure Guarantee Fund provided a 15-year guarantee that covers approximately USD 176 million.

Impact: In 2017, the construction of Umbulan Water Supply System Project was launched. By March 2022, construction was 98% complete and the operation is expected to start operations shortly. Freshwater pipelines are anticipated to reach approximately 320 000 households in the region.

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Annex B: Resources to support subnational government infrastructure investment

This table provides a list of potential additional resources that may be relevant to infrastructure investment by subnational governments.

AUTHOR	YEAR	NAME	DESCRIPTION	LINK
ABD	2019	Improving Subnational Government Development Finance in Emerging and Developing Economies: Toward a Strategic Approach	Review of the rationale and potential for improving subnational development finance, outline the overall landscape of institutional arrangements available for this purpose, and consider broad challenges involved	https://www.adb.org/publications/improving-subnational-government-development-finance-emerging-developing-economies
ADB	2019	Improving Subnational Government Development Finance in Emerging and Developing Economies: Toward a Strategic Approach	This paper reviews the rationale and potential for improving subnational development finance, outline the overall landscape of institutional arrangements available for this purpose, and consider broad challenges involved. Based on a review of global practice and experience in selected Asian developing countries with a range of special entities and innovations to enhance subnational investment, we propose a more integrated, strategic approach to building subnational development finance.	https://www.adb.org/publications/improving-subnational-government-development-finance-emerging-developing-economies
ADB	2019	Good Practices for Developing a Local Currency Bond Market: Lessons from the ASEAN+3 Asian Bond Markets Initiative	Local currency bond markets in ASEAN+3 play an important role in diversifying financial intermediary channels and mitigating the impacts of financial crises. They also have the potential to help mobilize developing Asia's significant savings to meet the region's enormous infrastructure investment needs. Drawing extensively on knowledge generated by the ASEAN+3 Bond Market Forum, the publication looks at the essential building blocks and the enabling environment for these markets, as well as the roles of government, relevant authorities, and market participants.	https://www.adb.org/publications/developing-local-currency-bond-market
ADB	2021	Creating Liveable Asian Cities	The book's 19 articles unwrap the challenges of poor planning, a lack of affordable housing, inequalities, pollution, climate vulnerabilities, and urban infrastructure deficits and present solutions focusing on smart and inclusive planning, sustainable transport and energy, innovative financing, and resilience and rejuvenation.	https://www.adb.org/publications/creating-livable-asian-cities
ADB	2022	Asia Pacific Tax Hub	The Asia Pacific Tax Hub is dedicated to maximizing international and regional resources of knowledge, expertise, and finance on domestic resource mobilization and international tax cooperation through close collaboration among finance and tax authorities.	https://www.adb.org/what-we-do/asia-pacific-tax-hub/about
ADB	2022	Strengthening Domestic Resource Mobilization in Southeast Asia	The second in a four-part series, it considers the impact of the pandemic on countries including Cambodia and Thailand to lay out steps policymakers can take to create healthier fiscal spaces. It illustrates the challenges around informality, collection, and progressivity, and details quick-fix measures designed to increase revenues. It emphasizes how preventing fraud, taxing wealth, and introducing environmental levies can help reduce poverty, tackle inequality, and contribute toward more sustainable growth.	https://www.adb.org/publications/strengthening-domestic-resource-mobilization-southeast-asia
ADB	2022	Creating Investable Cities initiative	Creating Investable Cities provides direct advisory support to help cities across Asia-Pacific meet their climate resilience goals. The initiative further extends ADB's knowledge, finance, and partnership support to cities. Leveraging G20 QII Principles and ADB's urban, public finance, and private sector expertise, the initiative takes a three-pronged approach to: 1. Mainstream Resilience: ADB will advise on opportunities for mainstreaming resilience – climate, social, physical, and ecological - into a city's plans, policies, and pipelines to help them on their path to net zero. 2. Improve Local Revenue Mobilization: ADB will, advise on city budgets and asset management plans and support them in developing strategies to increase own-source revenues, including through local tax and fee collection and land value capture, and financial resilience. 3. Increase Access to Private Sector and Climate Finance: ADB will provide advisory support to the city to identify opportunities for increasing access to private sector and climate finance, including through PPPs,	https://www.adb.org/news/adb-launches-initiative-help-asian-cities-tap-private-sector-finance-meet-climate-resilience

AUTHOR	YEAR	NAME	DESCRIPTION	LINK
			to meet investment needs and implement its pipeline. A significant feature of Creating Investable Cities is its sustained and hands-on capacity building support to city staff. ADB is building intuitive tools in areas of resilience, prioritization, and municipal finance to help city staff more closely tie the key city functions of planning, funding and financing. The use and application of these tools will be streamlined into the assistance. Partner cities will be provided sustained assistance through the initiative's Creditworthiness Hub and its close linkages to the Asia-Pacific Tax Hub.	
C40	2015	How to issue a Green Muni Bond: The Green Muni Bonds Playbook	This Green Muni Bonds Playbook provides guidance for cities and other public entities that issue municipal bonds to pay for infrastructure such as energy, water and transport.	https://www.c40knowledgehub.org/s/article/How-to-issue-a-Green-Muni-Bond-The-Green-Muni-Bonds-Playbook?language=en_US
CBI	2022	Climate Bonds Initiative	Climate Bonds Initiatives an international organization working to mobilise global capital for climate action. They achieve this through the development of the Climate Bonds Standard and Certification Scheme, Policy Engagement and Market Intelligence work. They empower our Partner organisations with the tools and knowledge needed to navigate, influence and instigate change.	https://www.climatebonds.net/
EU	2021	Buying Social – a guide to taking account of social considerations in public procurement (2nd edition)	This Guide has been produced for public buyers, but also in the hope that it inspires others involved in procurement, whether as suppliers or service providers, private buyers, social economy players including social enterprises, or NGOs.	https://ec.europa.eu/docsroom/documents/45767
GFOA	2022	Establishing Government Charges and Fees	This webpage describes the main questions that should be asked when setting user charges and fees, while also identifying various recommendations.	https://www.gfoa.org/materials/establishing-government-charges-and-fees
IADB	2018	Bringing PPPs into the Sunlight: Synergies Now and Pitfalls Later?	This publication covers PPPs with a focus on the implications for public finances in developing economies.	https://publications.iadb.org/en/bringing-ppps-sunlight-synergies-now-and-pitfalls-later
IADB	2019	Fixing State-Owned Enterprises: New Policy Solutions to Old Problems	Each chapter of this book provides a practical way to solve either asymmetry of information problems in the monitoring of SOEs or solutions to reduce the discretionary nature of the fiscal governance of SOEs.	https://publications.iadb.org/en/fixing-state-owned-enterprises-new-policy-solutions-old-problems
IADB	2021	Pooled Finance: Brazil's Opportunity to Finance Subnational Sustainable Infrastructure	This Policy Brief provides an overview on how subnational governments can access pooled funding mechanisms to finance climate resilient municipal infrastructure. It highlights Brazil's consortia model, legal framework, international experiences and models, and provides alternatives for the execution of local infrastructure projects. It also includes examples of subnational pooled financing mechanisms from other countries.	https://publications.iadb.org/publications/english/document/Pooled-Finance-Brazils-Opportunity-to-Finance-Subnational-Sustainable-Infrastructure.pdf
IADB	2021	Our Untapped Wealth	This publication, which is based on experiences of international experts, practitioners, and the IDB seeks to contribute to the efficient use of public assets as an important instrument to help governments meet their fiscal and public policy objectives.	https://publications.iadb.org/publications/english/document/Our-Untapped-Wealth-Toward-Modern-Management-of-Public-Assets.pdf
ICMA	2022	Social bond principals	Describes what social bonds are and how to raise capital using them.	https://www.icmagroup.org/sustainable-finance/the-principles-guidelines-and-handbooks/social-bond-principles-sbp/
ICMA	2022	Green bond principals	Describes what green bonds are and how to raise capital using them.	https://www.icmagroup.org/sustainable-finance/the-principles-guidelines-and-handbooks/green-bond-principles-gbp/
ICMA	2022	Social bond principals	Describes what social bonds are and how to raise capital using them.	https://www.icmagroup.org/sustainable-

AUTHOR	YEAR	NAME	DESCRIPTION	LINK
				finance/the-principles-guidelines-and-handbooks/sustainability-linked-bond-principles-slbp/
Lincoln Institute	2018	Land Value Capture Tools to Finance our Urban Future	This policy brief outlines the different land value capture mechanisms and how they can help governments advance positive fiscal, social, and environmental outcomes.	https://www.lincolninst.edu/sites/default/files/pubfiles/land-value-capture-policy-brief.pdf
Lincoln Institute/OECD	2022	Global Compendium of Land Value Capture Policies	The Global Compendium of Land Value Capture is, a joint project by the OECD and the Lincoln Institute of Land Policy, is an ambitious undertaking to understand the full landscape of land value capture (LVC) instruments, how they are configured and deployed across the globe in OECD countries and non-OECD economies, and what it would take to unleash their full potential as a sustainable revenue source.	https://www.oecd-ilibrary.org/urban-rural-and-regional-development/global-compendium-of-land-value-capture-policies_4f9559ee-en
New Cities Foundation	2016	Handbook on Urban Infrastructure Finance	This handbook focuses on financing at the local and sub-sovereign level. It explains the basic underlying concepts of a myriad of financing vehicles and is aimed to serve as a "how-to" guide.	https://newcities.org/wp-content/uploads/2016/03/PDF-Handbook-on-Urban-Infrastructure-Finance-Julie-Kim.pdf
OECD	2012	Recommendation of the Council on Principles for Public Governance of Public-Private Partnerships	The OECD Principles for Public Governance of Public-Private Partnerships provide concrete guidance to policy makers on how to make sure that Public-Private Partnerships (PPP) represent value for money for the public sector. In concrete terms, the Principles help ensure new projects add value and stop bad projects going forward. They provide guidance on when a PPP is relevant – e.g., not for projects with rapidly changing technology such as IT, but possibly for well-known generic technology such as roads. They focus on how you need to get public sector areas aligned for this to work: institutional design, regulation, competition, budgetary transparency, fiscal policy and integrity at all levels of government.	https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0392
OECD	2014	Recommendation of the Council on Effective Public Investment Across Levels of Government	The Principles on Effective Public Investment will help governments assess the strengths and weaknesses of their public investment capacity and set priorities for improvement. The Principles group 12 recommendations into 3 pillars representing systemic multi-level governance challenges for public investment.	https://www.oecd.org/regional/regional-policy/recommendation-effective-public-investment-across-levels-of-government.htm https://www.oecd.org/effective-public-investment-toolkit/
OECD	2015	Going Green: Best Practices for Sustainable Procurement	The compendium is a contribution of the Public Governance Committee to the OECD Green Growth Strategy. It is aligned with G20 priorities and the Compendium of Good Practices for Integrity in Public Procurement prepared by the OECD and endorsed by the G20 Anti-corruption Working Group in Rome on 9-10 June 2014. T	https://www.oecd.org/gov/public-procurement/Going_Green_Best_Practices_for_Sustainable_Procurement.pdf
OECD	2015	Recommendation of the Council on Public Procurement	This recommendation outlines how to support the proper allocation of resources through public procurement.	https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0411
OECD	2018	Subnational Public-Private Partnerships: Meeting Infrastructure Challenges	This report focuses on the challenges of governing infrastructure investment and public-private partnerships (PPPs) at the subnational level.	https://www.oecd-ilibrary.org/urban-rural-and-regional-development/responding-to-the-infrastructure-challenge_9789264304864-en
OECD	2019	Toolkit - The Principles on Effective Public Investment	This online resource guide governments in implementing the OECD Principles on Effective Public Investment Across Levels of Government. The self-assessment section of this Toolkit helps governments assess the strengths and weaknesses of their public investment capacity, with a focus on the sub-national level. This, in turn, helps policy makers set priorities for improvement.	https://www.oecd.org/effective-public-investment-toolkit/
OECD	2019	Making Decentralisation Work: a Handbook for policy makers	A comprehensive overview of decentralisation policies and reforms in OECD countries and beyond.	https://www.oecd-ilibrary.org/urban-rural-and-regional-development/making-

AUTHOR	YEAR	NAME	DESCRIPTION	LINK
				decentralisation-work_g2g9faa7-en
OECD	2020	Recommendation of the Council on the Governance of Infrastructure	The Recommendation on the Governance of Infrastructure, adopted by the OECD Council in July 2020 provides countries with practical guidance for efficient, transparent and responsive decision-making processes in infrastructure investment. It supports a whole-of-government approach and covers the entire life cycle of infrastructure projects, putting special emphasis on regional, social, gender, and environmental considerations.	https://www.oecd.org/gov/infrastructure-governance/recommendation/
OECD	2021	Procurement strategy in major infrastructure projects	The OECD has trialed a new evidence- based tool to inform procurement decisions on major projects called Support Tool for Effective Procurement Strategy or STEPS. STEPS can improve the efficiency and effectiveness of public procurement of infrastructure and beyond. It should improve the Value for Money propositions of both traditional and privately financed infrastructure projects. It is also an effective tool against bid rigging, the effects of abnormally low bids, and corruption in public procurement.	https://www.oecd.org/publications/procurement-strategy-in-major-infrastructure-projects-38996343-en.htm
OECD	2021	Ownership and Governance of State-Owned Enterprises	The Compendium on Ownership and Governance of State-Owned Enterprises ("SOE Compendium"), first published in 2018, serves as a public repository of the Working Party's accumulated knowledge about national practices on the subject of SOE governance.	https://www.oecd.org/corporate/Ownership-and-Governance-of-State-Owned-Enterprises-A-Compendium-of-National-Practices-2021.pdf
OECD	2022	OECD Compendium of Policy Good Practices for Quality Infrastructure Investment	This Compendium compiles and provides a unique set of existing integrated and multidisciplinary international good practices and measures relevant to policymakers and practitioners in both developed and developing economies to pursue quality infrastructure investment.	https://www.oecd.org/finance/oecd-compendium-of-policy-good-practices-for-quality-infrastructure-investment.htm
OECD	2022	Aligning Regional and Local Budgets with Green Objectives: Subnational Green Budgeting Practices and Guidelines	This report presents a first stocktake of subnational green budgeting practices in OECD and EU countries as well as a set of guidelines for subnational governments to use in developing and launching a green budgeting practice, in particular to prioritise green investments. It is accompanied by two green budgeting case studies and a self-assessment tool.	https://www.oecd.org/fr/publications/aligning-regional-and-local-budgets-with-green-objectives-93b4036f-en.htm
OECD-UCLG	2022	World Observatory on Subnational Government Finance and Investment	Covering over 130 countries and territories, the OECD/UCLG World Observatory on Subnational Government Finance and Investment (SNG-WOFI) initiative is the world's leading source of internationally comparable data and analysis on multi-level governance and subnational government structure and finance.	http://www.sng-wofi.org
PPIAF	2021	Supporting Sub-National Entities	This webpage provides an overview of the types of assistance provided to subnational governments by the PPIAF	https://ppiaf.org/supporting-sub-national-entities
Taylor and Francis	2015	Decentralization and Infrastructure in the Global Economy	This book discusses infrastructure gaps and the quality of subnational spending; how functional responsibilities, financing and equalization can be designed; sector-specific arrangements in high expenditure areas, such as health, education and roads; key steps of the public investment cycle and management; and analyses the political economy and corruption challenges that typically accompany decentralized infrastructure projects.	https://www.taylorfrancis.com/books/edit/10.4324/9781315694108/decentralization-infrastructure-global-economy-jonas-frank-jorge-martinez-vazquez
UN	2021	Managing Infrastructure Assets for Sustainable Development: A Handbook for Local and National Governments	This UN/DESA-UNCDF Handbook represents a significant contribution to the Financing for Sustainable Development agenda, advancing both thought leadership and action. Finalized in the crucible of the COVID-19 crisis, the Handbook brings global visibility to infrastructure asset management as a critical, high impact area for investing in local capacities to mobilize and manage financing for sustainable development, including in emergencies.	https://www.un.org/development/desa/financing/document/un-handbook-infrastructure-asset-management
UNCDF	2022	IMIF Technical Assistance Facility	The IMIF Technical Assistance Facility (TAF), aims to facilitate technical assistance to cities to help them finalize their investment project and, where necessary, strengthen their capacity to access credit, so that their investment project can be presented with the best chance of success.	https://www.uncdf.org/mif/imiftaf
World Bank	2016	How to Make Grants a Better Match for Private Sector Development	This study analyses a number of different design features and implementation arrangements for matching grants, uses descriptive case studies to show how each is implemented in practice, and correlates each	https://openknowledge.worldbank.org/handle/10986/26434

AUTHOR	YEAR	NAME	DESCRIPTION	LINK
			feature with success or failure	
World Bank	2016	Public-Private Partnerships in Infrastructure Toolkit	Tools presented here showcase efforts to enable the most appropriate decisions around infrastructure delivery and PPPs by empowering better decision-making.	https://thedocs.worldbank.org/en/doc/982261479317855835-0100022016/original/InfrastructureToolkitBooketFINALWEB.pdf
World Bank	2017	Boosting access to market-based debt financing for subnational entities	This webpage provides resources and examples of subnational entities using loans to finance infrastructure investment.	https://blogs.worldbank.org/ppps/boosting-access-market-based-debt-financing-sub-national-entities
World Bank	2019	Using Carbon Revenues	This report lays out a framework that can assist governments in using carbon revenues to pursue these objectives, drawing insights from a range of practical experiences.	https://openknowledge.worldbank.org/bitstream/handle/10986/32247/UsingCarbonRevenues.pdf
World Bank	2020	A Framework for Managing Government Guarantees	Framework for managing guarantees can, however, help governments overcome the difficulty and enhance the transparency of guarantees. This paper sets out a checklist of issues for a government to consider when designing or revisiting its framework for managing guarantees.	https://openknowledge.worldbank.org/handle/10986/33828
World Bank	2020	PPP Knowledge Lab	This webpage provides resources relating to Public-Private Partnerships	https://ppp.worldbank.org/public-private-partnership/ppp-knowledge-lab
World Bank	2020	Municipal Public-Private Partnership Framework	This Municipal Public-Private Partnership Framework is modular, comprising a guidance note, 20 topic guidance on key issues, and a collection of project summaries that highlight innovative approaches to municipal PPP around the world.	https://openknowledge.worldbank.org/handle/10986/33572
World Bank	2020	Public-Private Partnership Legal Resource Centre	The Legal Resource Center contains sample PPP agreements and concessions, checklists and sample clauses, terms of reference, risk matrices, standard bidding documents developed by government agencies and sample PPP and sector legislation and regulation	https://ppp.worldbank.org/public-private-partnership/
World Bank	2022	City Creditworthiness Initiative: A Partnership to Deliver Municipal Finance	The City Creditworthiness Initiative provides local authorities with comprehensive, hands-on, and long-term support and help them:	https://www.worldbank.org/en/topic/urbandevelopment/brief/city-creditworthiness-initiative
World Bank et al.	2017	Public-Private Partnerships: Reference Guide Version 3	The Guide tackles the following questions: What are public-private partnerships (PPPs), why and when to use them. What kind of policy, legal, and institutional framework is needed to ensure PPPs achieve their objectives efficiently and effectively. What is the process for developing and implementing a PPP project.	https://openknowledge.worldbank.org/handle/10986/29052
World Bank; European Investment Bank	2020	City Climate Finance Gap Fund	The Gap Fund aims to close the urban climate financing gap for early-stage climate planning and project preparation, particularly in rapidly urbanizing cities in developing countries. Funding supports three main goals: 1) Provide technical assistance and capacity building; 2) Build a high-quality urban investment pipeline for later-stage technical assistance; and 3) Share knowledge on project preparation with developers and financiers.	https://www.citygapfund.org/

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