



The State of Cities Climate Finance

PART 2: The Enabling Conditions for Mobilizing Urban Climate Finance

June 2021



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ABOUT THE CITIES CLIMATE FINANCE LEADERSHIP ALLIANCE

The Cities Climate Finance Leadership Alliance is a coalition of leaders committed to deploying finance for city level climate action at scale by 2030. Trillions of dollars will be required to help cities build the low-emissions, resilient infrastructure necessary to combat and react to climate change. The Cities Climate Finance Leadership Alliance is the only multi-level and multi-stakeholder coalition aimed at closing the investment gap for urban subnational climate projects and infrastructure worldwide.

ABOUT THE CITY CLIMATE FINANCE GAP FUND

The City Climate Finance Gap Fund, implemented by the World Bank and European Investment Bank, aims to help bridge the urban financing gap to achieve low-carbon, climate resilient urbanization pathways. It helps cities in developing and emerging countries realize their climate ambitions, turning low-carbon and climate resilient ideas into strategies and finance-ready projects. The Fund acknowledges the financial support provided by the Government of Germany and the Government of Luxembourg. For more information, see <https://www.worldbank.org/en/news/press-release/2020/09/23/city-climate-finance-gap-fund-launches-to-support-climate-smart-urban-development>

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CLIMATE
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1. INTRODUCTION

Key messages:

- Part 2 of the report, authored by the World Bank, analyzes enabling frameworks and presents solutions for mobilizing climate finance for low-carbon, climate-resilient urban development pathways. It is the first attempt to provide a common level of understanding of the terminologies, knowledge, and themes used by climate policy and climate finance practitioners, city-level urban planners, and municipal finance officials.
- Cities account for most of the globe's carbon emissions and must be at the forefront of efforts to reduce emissions and mainstream climate-smart and resilient urban growth pathways.
- Cities continue to face significant headwinds in mobilizing finance for transformational climate action. There is a critical gap in the demand for climate-smart urban infrastructure and the amount of financing available.
- This financing gap has been further exacerbated by the COVID 19 pandemic which has hit cities hard, and constrained budgets as revenues dropped and costs mounted to address the health, social and economic crisis that ensued.
- There is a wide variation in the institutional, administrative, regulatory, and political authorizing environment across countries and within which cities operate and this impacts the sources and amounts of finance that they can mobilize.
- Understanding the unique characteristics of a city based on the enabling conditions is important to help identify practical and well-suited approaches to mobilize urban climate finance at scale and within a time frame that fits the urgency identified by climate change science.

The **2021 State of Cities Climate Finance Report** examines the current state of urban climate investment, the barriers to reaching the needed investment levels, and the steps to overcoming these challenges. Produced by the Cities Climate Finance Leadership Alliance (the Alliance), the report contributes to the Alliance's mission to mobilize city-level climate finance at scale by 2030. The report also contributes to the Leadership for Urban Climate Investment framework initiative hosted by the Alliance, which aims to create a strong global architecture for subnational climate finance and tracking. The report delivers its findings in two parts:

- **The Landscape of Urban Climate Finance (Part 1).** Authored by the Cities Climate Finance Leadership Alliance Secretariat (Climate Policy Initiative) in partnership with the Atlantic Council's Adrienne Arsht-Rockefeller Foundation Resilience Center, Part 1 presents the most comprehensive estimate of global urban climate finance.
- **The Enabling Conditions for Urban Climate Finance (Part 2).** Authored by the World Bank, Part 2 analyzes enabling frameworks and presents solutions for mobilizing climate finance for low-carbon, climate-resilient urban development pathways.

Part 2 of the report is the first attempt to provide a common level of understanding of the terminologies, knowledge, and themes used by climate policy and climate finance practitioners, city-level urban planners, and municipal finance officials. It is intended to act as a resource for climate change stakeholders who are interested in, but less familiar with municipal finance in developing country contexts and those municipal finance stakeholders who are less familiar with global climate finance and how this can be mobilized in urban areas.

Climate change affects rich and poor regions alike, but cities start from widely different starting points when it comes to mobilizing climate finance. Part 2 takes the perspective of city and local governments and underlines the great diversity and variation of cities worldwide in managing urban growth and planning, financing, and infrastructure services. It develops a global conceptual framework for exploring the inter-layered interactions between city government roles and enabling conditions, according to country, city and climate specific elements. Part 2 also shows how cities with different governance, administrative, institutional, and fiscal circumstances can create an enabling environment for prioritizing interventions for improved management of urbanization, capital investment planning, and finance sources for climate-smart investments. The concluding section proposes general recommendations for strengthening the enabling environment for urban climate finance.

1.1 THE IMPORTANCE OF CITIES IN ADDRESSING CLIMATE CHANGE

Cities must be at the forefront of global efforts to reduce greenhouse gas emissions and climate change risks. Cities account for 70% of global CO₂ emissions from energy use, consume 75% of all the natural resources, and produce 50% of all waste (UN HABITAT 2011; UNEP 2015). If not properly planned and managed, urban emissions activity and resource use will increase as approximately 2.5-3 billion people are expected to move from rural to urban areas by 2050, with half of the world's urban population growth expected to be in Africa and Asia (UN DESA 2019).¹ Cities are also at the forefront of climate change vulnerability. 70% of cities worldwide are already experiencing the harmful effects of climate change, with 77% expected to undergo a dramatic change in climate conditions (Bastin et al., 2019; C40 2012). 90% of coastal cities are at risk of flooding from sea-level rise and storms which create significant annual losses and could rise up to USD 52 billion by 2050 (C40 2012; Hallegatte et al., 2013). In addition to financial repercussions for city and local governments caused by direct physical damages, indirect financial issues such as the severe interruption of business operations, reduced municipal revenue sources or rising municipal credit and budget constraints due to extreme weather event-related expenditures, all contribute to cities being additionally at risk of climate hazards (C40 2012).

Climate change is also a leading factor in rapid, unplanned urbanization, that can further contribute to urban emissions and vulnerability, particularly in developing countries. In Sub-Saharan Africa, extreme temperatures and unpredictable rainfall

¹ It is estimated that by 2030 60% of the urbanized land is still to be developed, especially in developing countries (NCE 2018; ODI 2019).

have already affected income from agriculture and caused people to migrate from rural to urban areas. Agricultural yields are expected to face losses of up to 15% by 2050, signaling that further rural-to-urban migration in the coming decades is likely, along with the associated pressures on urban infrastructure and services (IFC 2017; World Bank Group 2018). Smaller cities are growing faster than megacities, especially in South Asia and Africa. Lack of strategic and spatial urban planning could lock in inefficient, poorly designed, and vulnerable urban infrastructure for decades to come. Many urban and peri-urban areas will need to prepare for an influx of people, including through improved housing and transportation infrastructure, social services, and employment opportunities.

Greenhouse gas emissions in cities can be reduced by almost 90% by 2050 with technically feasible, widely available measures, potentially supporting 87 million jobs in 2030 and generating a global economic dividend of USD 24 trillion (Coalition for Urban Transitions 2019). Under the 1.5°C pathway, 70-85% of city electricity supplies must be renewable, emissions from the global building stock must be reduced by 80-90%, and energy use from the transportation sector must be reduced by 30% (with 55% supplied by electricity, hydrogen, or biofuels). Thus, there is a high need for low carbon and climate resilient urbanization pathways, infrastructure, and services to support this shift and population growth in general. Considering the lifespan of infrastructure assets, investments made today will determine how cities will grow and ‘lock-in’ emissions and vulnerability pathways (IPCC 2018).

Cities represent a significant investment opportunity. The International Finance Corporation (IFC) estimates that urban sustainable investment opportunities in six sectors (waste, water, renewable energy, electric vehicles, public transport, green buildings) in emerging markets alone amount to USD 2.5 trillion annually through 2030 (IFC 2018).

Cities are a critical ‘space and place’ to demonstrate systems-level thinking and what transformative climate action can look like, because they convene and concentrate multiple sectors, consumers and actors. Subnational governments undertake multi-sectoral investments and therefore have potential to think about public functions in a more synergistic way in their territories than do siloed national sectoral ministries. If an education ministry wants to build schools, a water ministry wants to provide water, and an environment ministry wants to ensure positive environmental impacts, local coordination is required. Subnational governments may have a better sense of how these elements can collectively address specific climate risks on the ground, and they are generally in a better position to support integrated local sustainable development and local citizen wellbeing (Smoke et al., 2020).

Cities on the front line of the COVID 19 health, social and economic crisis will likely be at the heart of national recovery efforts and this is important for climate impact.

- **The COVID-19 experience has important lessons on planning, managing, and operating urban systems in radical uncertainty, including the uncertainty and compounding risk created by climate change.** Poorly managed urbanization, especially in developing countries, can contribute to the rapid spread of infectious diseases. The risk of transmission is exacerbated in front line workers, slums and informal settlements where the limited availability of open public space offers less

opportunity for social distancing and where people live in overcrowded conditions with poor ventilation and are under-served by basic public services, such as health care, clean water, drainage, street lighting, electricity, sewerage and waste management. These impacts are further compounded by more frequent and severe future shocks and extreme weather events due to climate change effects. In addition, there is evidence² suggesting that poor urban air quality through traffic, waste, energy, and industry increases the risk of spreading the pandemic faster.

- **Cities have a key role in rebuilding, building back better and embedding green transition principles in urban systems in both the short and long term.** Building back better³ aims to deliver short term relief from the COVID-19 crisis, and achieves longer-term objectives for building a more inclusive, prosperous, and sustainable economy and adapting to profound changes transforming the world. Cities will need to respond to the COVID-19 pandemic with a long-term vision that integrates inclusive, green, and resilient recovery. As of October 2020, USD 20.5 trillion had been pledged for COVID-19 relief globally (Alliance 2020). Of this, USD 1.1 trillion is earmarked in whole or in part to urban areas, with over 80% of this amount (around USD 916 billion) designated for short-term liquidity relief to replace lost revenue from taxes and fees in cities. While important for short term recurrent and operational costs, such relief does not contribute toward needed infrastructure investments under a city's capital investment budget. There is a need to align COVID-relief recovery objectives with existing climate action planning and finance tools (Hourcade et al., 2021).

It is no surprise then, that cities are motivated to act. To date, 6,150 cities participating in the Global Covenant of Mayors and representing 20% of urban residents globally have developed climate action plans. National governments, cities, and public and private financial institutions are also increasingly acknowledging the importance of cities to climate action and launching initiatives to address barriers to accessing finance.

1.2 THE CHALLENGES CITIES FACE IN MOBILIZING FINANCE FOR CLIMATE ACTION

Despite this momentum, cities continue to face significant headwinds in mobilizing finance for transformational climate action. Please refer to PART 1 of the State of Cities Climate Finance Report for an elaborate discussion and analysis on the current state of climate finance to urban areas. Irrespective of the source of finance or who manages the investment (city level, regional, national, international, or private) there is a huge need to urgently channel more financing and funding towards urban areas, especially rapidly urbanizing cities in developing countries, to build green, resilient, and sustainable cities, societies, and economies.

² Preliminary research on the link between air pollution in urban areas and COVID 19 deaths was conducted by [Harvard University T.H. Chan School of Public Health](#) and [Martin Luther University Halle-Wittenberg](#).

³ The term "Building Back Better" was originally coined at the [Sendai Conference on Disaster Risk Reduction](#), then developed in the [World Bank Building Back Better](#) report, that showed how BBB tools such as financial preparedness and adaptive social protection can reduce disaster impacts by one-third, saving \$170 billion annually in avoided global damages, in addition to their broad economic benefits.

Cities across the world vary significantly in terms of their enabling environment to mobilize urban climate finance, irrespective of the financing source and no “one size fits all”. The ability of city governments to mobilize finance will depend on the institutional, regulatory, and political authorizing environments: the level of decentralization of regulatory, public investment and service provision authority, national circumstances, local-level decision making, coordination, and implementation and stage of climate-smart urbanization. Cities in developed, emerging, and developing countries face unique challenges based on their economic, political, and social contexts. Key challenges for city governments and municipalities follow below:

- **The constraints related to institutional, intergovernmental, and political cycles may not align with cities’ planning and budgeting cycles** (Climate-KIC 2015). In some cities intergovernmental resources may be constrained by political conflicts, cross-level governmental and administrative remit conflicts, or corruption which contributes to reduced investor confidence and more general macroeconomic weaknesses that limit the prospects for private investment (Floater et al., 2017; ODI 2019). Finally, the sovereign guarantee environment, grants and loans from IFIs for urban investments are often channeled through the national government (via a Treasury or Ministry of Finance), or in some cases where allowed, directly to cities.
- **City governments may have limited authority to plan and regulate urban spaces.** There is wide variation in both the authority and capacity of city governments to manage and plan the urban built environment, including directing placement of infrastructure and public facilities and the management of private land markets to support compact growth. Where such authority is fragmented and regulatory capacity limited, city governments will have difficulty managing low-density urban expansion, and identifying and coordinating a pipeline of climate-smart investments across sectors.
- **City governments may have capacity constraints to prepare project pipelines.** While various project support facilities exist, cities have much larger needs than the support these existing facilities can provide (Alliance 2018). Where cities are able to prepare capital investment plans, there is often a lack of investor-ready bankable projects of sufficient size and quality to scale up urban climate finance (WBG and UNDP 2020). Furthermore, many cities lack detailed evidence on financial and sustainability components of projects, which is a requirement for investors to make investment-related decisions (Climate-KIC 2016).
- **City governments may be limited by the type and amount of revenues they are able to capture, through own source revenue collections (taxes and fees) as well as through intergovernmental fiscal transfers from the higher-level government.** Constraints on own-source revenue mobilization and the (potentially limited) availability of transfer resources can negatively impact the ability of the city government to fund expenditures, including climate-related spending, and can also limit its creditworthiness, limiting their access to private finance.

More recently the COVID-19 pandemic added further financing strain to cities, and the disruption continues to make planning for the future difficult. Over 90 % of total COVID-19 cases are in urban areas, with poor and more densely populated areas

being the most deeply affected (UN 2020).⁴ While cities are spending more on social protection to address the health crisis, many cities have lost local revenue sources due to the accompanying economic crisis. This decline in revenue further constrains the ability of cities to provide essential infrastructure and services, such as mobility, sanitation, and housing. Those that are able to cover their operating expenditures are forced to significantly decrease or suspend capital expenditures. In many cities, infrastructure plans - including the potential for climate-smart infrastructure - are being put on hold to allocate more financing for operational needs.

⁴ For current geographic data on COVID-19 please see <https://unhabitat.org/un-habitat-covid-19-city-tracker-now-includes-daily-pandemic-worldview>

2. A CONCEPTUAL FRAMEWORK FOR MOBILIZING URBAN CLIMATE FINANCE AT SCALE

Key messages:

- Enabling conditions play a crucial role in determining whether and where climate investment can be mobilized in urban areas, irrespective of the source of financing. This depends on three elements:
 - **Country-specific** – national-level governance and fiscal systems under which cities fall and which determine what they can do in terms of planning, regulation, and finance;
 - **City-specific** - the capacity and remit cities have for planning and financing expenditures and their potential for mobilizing or attracting other sources of finance; and
 - **Climate-specific** - connecting city-level climate investments with the appropriate climate financing instruments.
- City governments can impact climate outcomes by leveraging their roles both as providers of infrastructure and services (what cities pay for) and as stewards with their ability to plan, regulate, convene, and champion (what cities influence).
- To mobilize urban climate finance at scale the enabling environment framework (Figure 2) needs to be vertically integrated (from local to national levels) and horizontally integrated (across urban systems, processes and planning).
- Cities operate in a wide spectrum of enabling environments across and within countries, ranging from cities with low capacity, autonomy, and control to those with high levels of administrative capacity, empowerment and strong fundamentals of planning and finance. Therefore, each city's context must determine the relevant policy levers and financial tools for mobilizing urban climate finance.

Mobilizing urban climate finance at the scale and speed needed to address the climate crisis requires an understanding of the current state of urban climate finance and the enabling conditions that support 1) greening the existing urban finance sources (increase the green share) 2) mobilizing new urban climate finance (increase the green pie) and 3) increasing the climate-smart impact of urban development (increase the green impact).

Enabling conditions play a crucial role in determining whether and where climate investment can be mobilized in urban areas, irrespective of the source of financing. This section aims to develop a common understanding of the terminologies, themes and knowledge across different audiences and identify the main opportunities and constraints for mobilizing climate finance in urban areas at scale. To do so, it offers a common set of definitions and terms (summarized in Box 1 and further detailed in Annex 1), explores the various roles and levers a city government may have (section 2.1) and provides a conceptual framework to categorize enabling conditions (section 2.2).

Please note that definitions between Part 1 and Part 2 of this report may vary slightly given the differing focus and perspectives. In particular Part 1 of the report considers the term “city” from the perspective of climate finance flows into urban areas, irrespective of its source and is therefore more closely linked to the urban geographic area. Part 2 on the other hand considers the term “city” from the perspective of the city officials and is

therefore more closely linked to the jurisdictional boundary and agency of city governments, unless expressed otherwise. Both parts of the report adopt the same definition for urban climate finance, as developed by CPI and the Alliance.

Box 1: Summary of definitions

Key terms deployed throughout the report are summarized below. The detailed definitions and background can be found in Annex 1.

Urban (and peri-urban) area: There is no internationally agreed-upon definition of “urban”. This report defines the term “urban and peri-urban” as the space encompassing more built-up and more densely populated areas relative to open and forested spaces, rural space, or predominantly agricultural space. This corresponds to the Functional Urban Area and ‘degree of urbanization’ conceptualizations used in Part 1.

City government: For the purposes of this report the term “city government” is used interchangeably with subnational, local, municipal, district, or provincial government. It is the administrative and budget entity responsible for investments and basic service delivery, which can also include additional municipal companies or entities controlled by the city government such as utilities.

Enabling environment: The conditions to facilitate and support the adoption of low-carbon and climate resilient urbanization, investment, and service delivery in urban areas, and that are predictable for potential financiers.

Country classifications: The country classifications vary by international organization and are based on a series of economic, social and development indicators. For the purpose of PART 2 of this report, three main country categories are considered using a mix of [OECD](#), [DAC](#), [UN](#) and [WB](#) country classifications and include a) developed or high income countries, b) emerging markets or transition or middle income countries and c) developing or lower income countries, including least developed countries and fragile and conflict-affected countries.

Climate mitigation and adaptation and resilience: Mitigation refers to actions that reduce, absorb, or eliminate GHG emissions. Adaptation refers to actions that prepare or respond to current climate impacts. Resilience refers to actions that prepare and respond to future risks related to climate change and allow people, businesses, cities and countries to function through, or recover quickly from, a shock or stress.

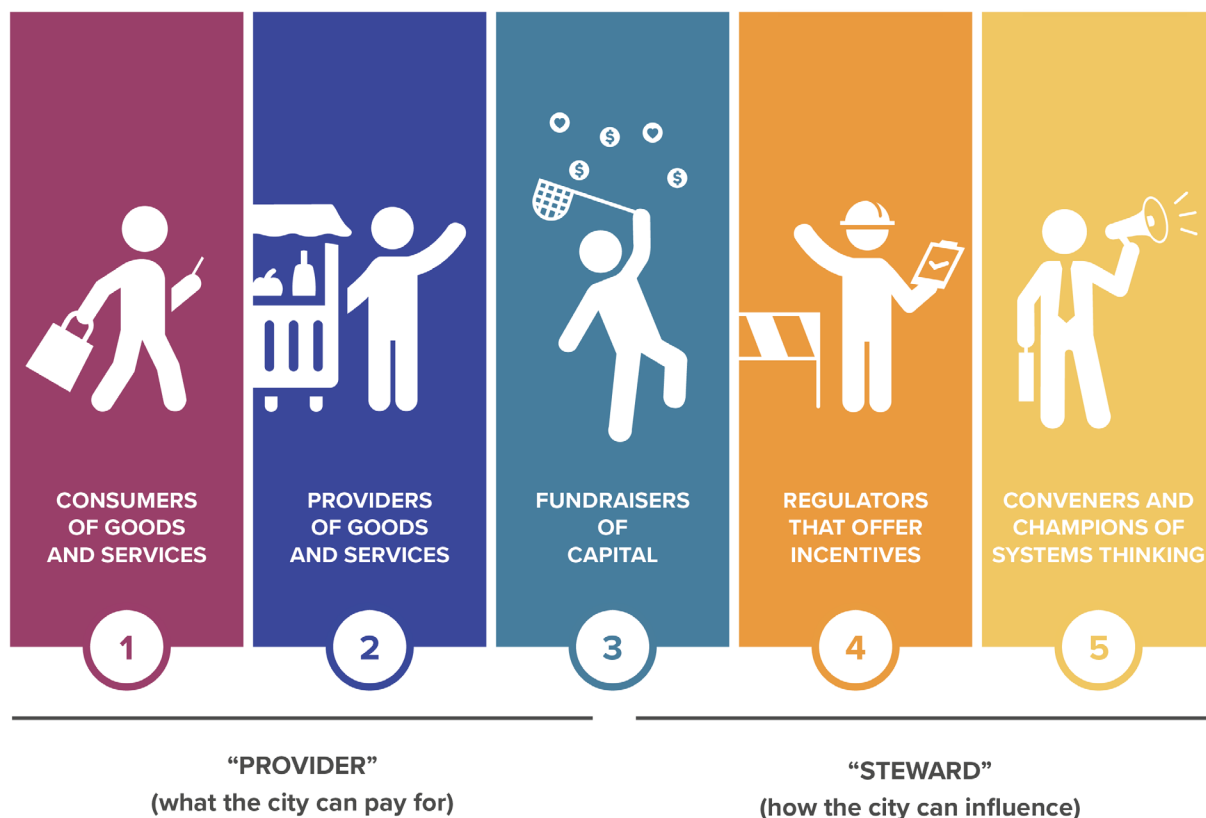
Climate-smart cities: City spaces where stakeholders (including city governments) aim to minimize environmental damage, reduce GHG emissions and maximize opportunities to improve urban adaptation and resilience, natural environment conditions and overall livability.

Urban climate finance: Resources directed to activities limiting city-induced GHG emissions or aiming to address climate related risks faced by cities, contributing to low-carbon development or resilience.

2.1 THE ROLES OF CITIES IN MOBILIZING URBAN CLIMATE FINANCE

As per Figure 1, city governments can encourage the direction of finance towards low-carbon and climate resilient investment in urban areas through five main roles: consumer, provider, fundraiser, regulator and champion of systems thinking (WBG and UNDP 2019):

Figure 1: Five roles cities play to provide or influence climate finance and investment



Source: based on WBG and UNDP, 2020

1. **Consumer:** Cities can act as powerful, demand-side influencers, demand aggregators and green bulk procurers. For example, a city government can choose to procure power for their municipal buildings from alternative renewable sources, rather than fossil fuel power sources.⁵
2. **Provider:** To the extent that city services or infrastructure falls within their legal mandate and expenditure assignments, city governments may deliver goods and services to residents. Depending on their purview and financing sources, they can ensure that city investments and services are low-carbon and climate resilient.
3. **Fundraiser:** To finance their own investment and spending, city governments can raise revenues through the collection of own source revenue (OSR). In some cases, and under certain enabling conditions, cities can raise funds from debt through

5 Further information available here <https://www.epa.gov/greenpower/community-choice-aggregation>

municipal bonds as well as from dedicated municipal trust funds and public private partnerships (PPPs). In such cases a city government can facilitate or establish green financing instruments that mobilize urban climate finance.

4. **Regulator:** City governments act as regulators of urban land use and commerce and are often empowered to regulate specific activities to reduce negative externalities.⁶ In addition, city governments can also offer incentives through local policies, regulations, standards, and subsidies to households and businesses to encourage climate-smart spending and investment. Incentives include instituting taxes and fees for infrastructure, changing and enforcing building codes, providing regulatory frameworks for supporting electric vehicle charging infrastructure, and providing the city-level regulatory framework for energy efficiency financing for refurbishment (e.g., Property Assessed Clean Energy PACE).⁷ These tools can help enable financial transactions for climate-positive investments or transactions that happen outside of cities' direct remit.
5. **Convener and champion for systems thinking:** Cities are spaces where different jurisdictions and layers of government, sectors, and systems (energy, transport, waste water, health, biodiversity etc.) converge and interact to serve city dwellers and businesses. The intersection of these layers and systems present a host of coordination challenges for managing urban growth and integrating climate-smart objectives for impact. In other words, an urban area is a “system of systems” and city governments can act as critical conveners and champions for systems-level thinking. City government leadership, if well-equipped in terms of capacity and aligned with other regional and national stakeholders, can be in a strong position to drive transformational change to achieve net zero carbon and resilient growth pathways.

City governments can impact climate outcomes by leveraging their roles both as providers of infrastructure and services (what cities pay for) and as stewards (what cities influence) with their capacity to plan, regulate, convene, and champion. How cities purchase goods and services, provide municipal services, raise financing, regulate private sector activities, and build coalitions of stakeholders can influence their developmental trajectories significantly. In particular, the ability of city governments to convene stakeholders while aligning optimal urban planning practices, appropriate regulations, and targeted incentives can have systemic impact. These actions can help cities harness private sector and household investment in climate-action that may greatly exceed their current capacity to mobilize local public funds.

These roles fall along a continuum based on the level of city government agency (i.e. influence, decision making authority and control). The agency that city governments hold can range from “high”(e.g., a decision to use solar panels for city government owned buildings) to ‘low’ (e.g., the city as an advocate or participant with national transportation authorities about regional transportation planning and public transit networks that is beyond its remit).

⁶ A negative externality is a term in economics to identify a social or environmental cost created by a product, service, process or system that is not reflected in the final price. In cities, examples include urban air pollution, plastic waste, or traffic jams.

⁷ One innovative financing mechanism used by local governments is subsidizing low-interest loans to homeowners to invest in renewable energy or energy efficiency, which they gradually pay back through slightly higher property taxes. This mechanism underpins the property-assessed clean energy (PACE) financing model used in the United States. Further information is available here: <https://www.energy.gov/eere/sisc/property-assessed-clean-energy-programs> and https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2016/IRENA_Renewable_Energy_in_Cities_2016.pdf

2.2 THE ENABLING CONDITIONS FOR MOBILIZING URBAN CLIMATE FINANCE

Figure 2: The enabling conditions framework to mobilize urban climate finance: country, city, and climate-specific elements

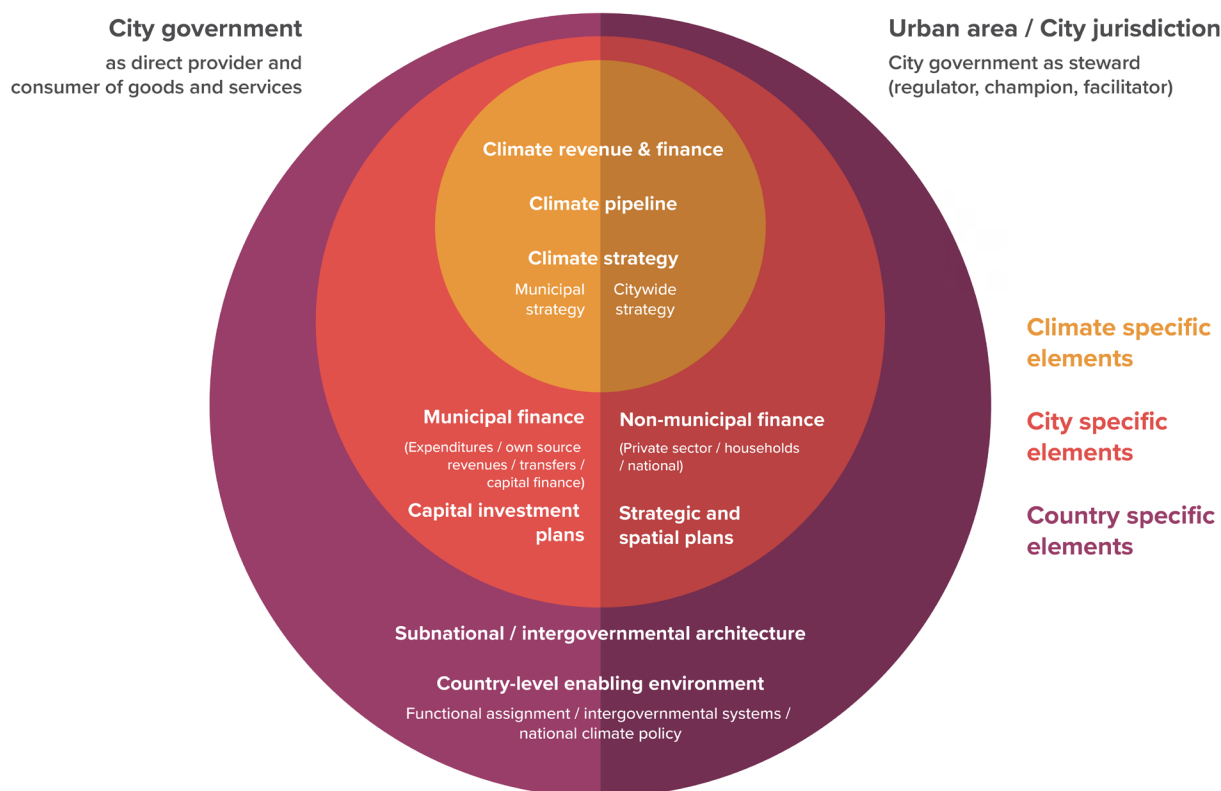


Figure 2 presents a conceptual framework that identifies three key enabling conditions that build on each other to mobilize urban climate finance at scale.

At the foundation are country-specific elements such as the broader national intergovernmental and fiscal architecture that effects what and how city governments can plan, finance, and implement. Above this are city-specific elements that enable city governments to plan, finance and implement (climate) investments and services that they are responsible for, such as city-level strategic, spatial and investment plans. Further building on these two layers are climate-specific enabling elements such as city climate plans, climate pipelines and climate finance. While these layers may exist independently of each other in some form, optimizing and mobilizing urban climate finance at scale requires that all three enabling element layers are aligned, and reinforcing each other. In other words, urban climate change objectives should be embedded and mainstreamed across all elements and processes rather than be considered as an add on objective. To mobilize urban climate finance at the enabling environment framework needs to be vertically integrated (from local to national levels) and horizontally integrated (across urban systems, processes and planning).

In terms of city government roles on these enabling conditions to mobilize climate finance, the two sides of the framework reflect the continuum influence that cities have in their as providers and consumers of goods and services to conveners and champions of systems thinking (Figure 1). On the left side, it shows the role of city government as a direct (“on-budget”) provider and consumer of goods and services (i.e. what the city governments pays for directly). City governments have three main sources of finance they can mobilize to pay for infrastructure, goods, and services: own source revenues, national or state level fiscal transfers or grants, and debt. These are considered “direct” or “on-budget” expenditures and revenues. On the right side, the role of city government as an indirect (“off-budget”) steward of incentives and behavior change for activities and financing outside of its control (i.e. what the city government does not pay for directly but has influence over in the city jurisdiction as a regulator, convener and champion).⁸ City governments have important roles as influencers through regulation, urban-level planning and influencers of urban systems to affect change and mobilize private and other sources of finance to pay for infrastructure, goods and services that occur within the urban spatial jurisdiction but that fall beyond its direct mandate. These are considered “indirect” or “off budget” activities to mobilize urban climate finance from other stakeholders such as the higher levels of government, national parastatals, authorities, trust funds, the local or international private sector or urban citizens and households themselves.

This role of city governments in facilitating city climate finance through their powers as regulators, enablers, conveners, and champions, while often less direct, may in fact be equally—if not more—important than their direct impact on urban climate finance through their own budgetary operations. Box 2 below provides a more detailed explanation on the Framework and the three enabling conditions.

⁸ Please note in that there is no perfect separation between a city government’s role as a “provider” and as a “steward”, which is shown in Figure 2 as the right side and left side of the onion. In some cases, for instance, the city government’s regulatory role (such as over spatial planning) has important implication for the city government own investment plans and budget. In other cases, on-budget local revenues (such as fees and taxes) are actually used as instruments to regulate and incentivize climate-positive behaviors and outcomes (e.g., pollution taxes or congestion tolls).

Box 2: The three enabling conditions for mobilizing urban climate finance at scale

- Country-specific enabling elements are at the foundation of the framework for mobilizing urban climate finance at scale: These conditions include a country's subnational and intergovernmental architecture, the extent of decentralization of authority to different levels of government, the functional assignment to cities of service delivery, and the intergovernmental fiscal systems. The foundation also includes the scope and application of national level climate policy agenda and Nationally Determined Contributions to the Paris Climate Agreement and how the national climate agenda may be articulated across different levels of government. As country-specific enabling conditions define the overall structure of governance and finance at the national level, these by nature define the agency city and local governments will have to mobilize urban climate finance. Section 3 of this report explores the great variation across cities on their national level constraints and enabling elements.
- City-specific enabling elements are in the middle of the framework for mobilizing urban climate finance at scale. These city-specific conditions include those that city governments are often directly responsible for such as: capital investment planning; municipal finance systems and budgetary planning for urban infrastructure (what the city government pays for directly); urban strategic development planning; spatial planning and city level regulations and standards to manage the urban footprint and energy consumption and that mobilize other sources of finance from private sector investment, urban household expenditure or national subsidies from utilities that serve city dwellers, businesses and systems (what the city government mobilizes indirectly). While these city-level enabling conditions may not (yet) be directly used for climate objectives, they offer an important entry point to mainstream climate action in existing municipal-level processes and activities.⁹ Section 4 explores in detail the city-specific issues of city planning and finance.
- Climate-specific enabling elements are at the top of the framework for mobilizing urban climate finance. This includes dedicated climate related resources, staffing, capacity, and planning that help mainstream climate objectives and mobilize urban climate finance. Climate investments often represent a subset of the types of expenditures for which cities may plan and allocate investments, cities often do not have the agency, tools, or capacity to mainstream climate objectives into their capital investment plans. In addition, the ability of a city government to engage in and implement climate action with impact, will depend on evidence-based, long term climate strategies and urban development scenario planning, the quality and depth of the pipeline of climate-related investments, and access to dedicated, predictable revenue and financing to pay for the infrastructure in line with the dynamic nature of climate change, irrespective of its source (whether directly paid for by the city government from its budget with revenue and financing instruments which are dedicated specifically to climate purposes; or indirectly paid for by other national, international, private and household sources mobilized through city climate action plans, bankable climate investment pipelines, city-level climate specific transactions. Section 5 offers a focused discussion on climate specific enabling elements for mobilizing urban climate finance.

Although intergovernmental structures and the subnational contexts for channeling climate finance to cities are highly country specific, country contexts fall along a

⁹ For example, cities may be assigned to install and maintain urban streetlights, even if they may not directly procure them and can choose to use more energy efficient alternatives such as solar-powered streetlights. Upgrades to water networks and metering systems can reduce leakages and non-revenue water losses, which improves operating efficiency and reduces energy costs to the utility to treat and transmit water. Current or planned public transportation systems can be enhanced through upgrading fleets or rolling stock to using non-fossil fuel sources.

spectrum of enabling environment conditions. Cities in mature or highly developed economies, tend to be at one end of the spectrum, while low income, fragile, and conflict-affected countries occupy the other end (refer to Box 1 or Annex 1 for a description of country categories). While not in all cases, city governments in higher income developed countries tend to be situated in intergovernmental systems that are clearly defined and relatively well-functioning or which grant them high levels of administrative capacity and decision-making power —along with financial resources and fiscal powers that support these. These elements may also be present for certain cities in middle income countries such as Mexico, Brazil, Indonesia, and India, among others. Under such conditions, the private sector is already present and investing. Efforts to strengthen the city-level climate agenda and generate innovation, therefore, tend to focus on identifying the most effective climate finance instruments to build on these capacities, their best-suited conditions, and how to establish market incentives for private sector uptake in climate-smart investments.¹⁰ Examples of these types of innovative climate finance instruments are discussed further below. It is important to note that these financing instruments may not be accessible to certain cities that are operating in an enabling environment of low capacity, low agency or where private markets are not functioning well, including in low income or fragile and conflict-affected countries.

At the other end of the spectrum, many developing countries, including fragile and conflict-affected countries often have weak and poorly functioning intergovernmental systems and low capacity city-level institutions (World Bank 2003; Roderick et. al 2004). In these countries, local government institutions often struggle to meet existing basic service demands. In some cases, cities may have little if any capacity to collect own-source revenues, regulate the built environment, compile investment plans. In other cities service delivery mandates may be unclear or fragmented across multiple entities and without adequate fiscal support from the national government. For these cities, the implementation of a climate finance agenda should begin by strengthening existing expenditure side systems, such as the fundamentals of municipal finance along with urban and capital investment planning systems. Once basic budgeting and financial management systems begin to improve, there is room for progressive innovation on the revenue side through, for example providing city governments access to climate finance grants (see section 5.4) or introducing impact fees on new development to mitigate climate or environmental impacts. As city capacity improves along with enhancement of the overall enabling environment, cities can progress along the spectrum toward more sophisticated tools including borrowing, leveraged or blended finance instruments.

In the context of fragile and conflict affected countries, then, the priority must be to address the fundamentals of city management and finance while providing cities access to climate finance grants and identifying and implementing alternative climate finance instruments that are fit-for-purpose. Section 6 develops this discussion further, detailing how improvements to planning, regulatory and municipal finance systems can over time enable these cities to move up the ladder to access greater diversity of urban climate finance sources.

¹⁰ Good examples of innovative financing approaches are featured in the report Catalysing Private Sector Investment in Climate Smart Cities 2020: An Invest4Climate Knowledge Series <http://documents1.worldbank.org/curated/en/179101596519553908/pdf/Catalyzing-Private-Sector-Investment-in-Climate-Smart-Cities.pdf>

3. COUNTRY-SPECIFIC ENABLING CONDITIONS FOR MOBILIZING URBAN CLIMATE FINANCE AT SCALE

Key messages:

- Country-level laws, regulations, and institutions shape the powers, authority, and resources available to cities (functional expenditure and revenue assignments) to undertake climate-smart investment and service delivery
- These country-level enabling conditions can support or constrain the ability of cities to act as consumers, service providers, fundraisers, regulators, or conveners for climate finance.
- Most cities and subnational governments rely heavily on fiscal transfers from national governments to cover their expenditures, rather than own source revenues (fees and taxes). This provides a potential window for country-level governments to incentivize and enable city climate actions.
- The more that country-level climate priorities can be reflected in intergovernmental systems – especially city functions and fiscal transfer systems, the greater the potential impact will be for helping cities to mobilize climate finance.
- Cities operating under a central administration, where their role as fundraisers is limited, can focus on leveraging their other roles as providers and consumers of goods and services and as facilitators, conveners, and advocates of urban climate action.

Country-specific contexts, such as the intergovernmental framework and the fiscal architecture that structures how public revenues are collected and distributed across levels of government, impacts the power and authority of city governments to engage climate-related functions. This section therefore reviews the role of country-level enabling elements to mobilize urban climate finance at scale, which includes the i) subnational and intergovernmental architecture, ii) nationally determined functions for cities, iii) intergovernmental fiscal systems and iv) the institutional environment for climate policy.

The structure of subnational governance architecture and fiscal framework at the national level directly influence how cities and local governments will be able to address climate issues. The extent and nature of the city (climate) agency on urban planning, finances and implementation are driven by a variety of intergovernmental and institutional factors. For example, city governments led by elected officials have different motives and incentives than do leaders of city governments that are appointed by ministries or which are civil servants. As a result, there is a wide spectrum of city government capacity (technical resources to be deployed), autonomy (empowered with a wide remit of powers at the local level) and authority (responsibilities for regulation, planning and service delivery). Annex 2 presents further detail on basic distinctions of intergovernmental systems.

3.1 THE ROLE OF SUBNATIONAL OR INTERGOVERNMENTAL ARCHITECTURE FOR MOBILIZING URBAN CLIMATE FINANCE

At one end of the spectrum of country-level enabling elements, city governments with high levels of autonomy, authority, and capacity tend to have robust systems and mechanisms for service delivery and financing. New York City, London, Helsinki, Cape Town, and Jakarta are prominent examples of cities with legal and political autonomy (Barber 2013; World Bank 2013). Elected mayors and city councils lead these cities with the aid of professional city administrators, and they are funded by a combination of intergovernmental fiscal transfers and (at the margin) solid own source municipal revenues (from local taxes and fees). This ideal scenario for mobilizing urban climate finance features city governments as high-performing, results-oriented local government organizations that are empowered by an effectively devolved intergovernmental architecture. They also feature an enabling environment where central or national governments give wide-ranging functional, administrative, and fiscal powers to the local level. This intergovernmental architecture allows city leaders to play an important role in motivating and enabling city-level climate action by influencing the development of subnational and national policy. As champion cities mainstream climate considerations, they grow in their capacity to advocate for climate action and pool resources with other cities, in country and abroad. However, this model only prevails currently in selected countries and regions. For example, out of the 500 largest cities in developing countries in 2019, only 21% had investment grade ratings. Out of these cities, 74 have issued municipal bonds; 20 cities in Europe and Central Asia and in 19 East Asia (excluding China), but only 12 in South Asia and 6 in Sub Saharan Africa (World Bank Municipal Finance Database 2019).

By contrast, the nature of subnational architecture and urban governance for cities in many developing and transition countries, particularly in parts of Africa, Asia and the Middle East presents challenges to city level service delivery and finance (Boex et al., 2016). For instance, despite having three of the ten largest cities on the African continent (Cairo, Giza, and Alexandria), Egypt currently does not have any elected local government bodies. Instead, Egypt's subnational architecture comprises 27 Governorates, which are considered deconcentrated local administration units, and are therefore an integral part of the national government apparatus and budget (Box 3). Likewise, except Nairobi and Mombasa, Kenya's 2010 Constitution replaced elected local governments with urban boards appointed at the country level.^{11,12} The absence of elected local governments does not necessarily mean that countries like Egypt or Kenya cannot or should not pursue localized or city-wide climate strategies and climate finance. Rather, these interventions need alternative approaches to decentralization and localization than those more commonly used elsewhere.

¹¹ Nairobi and Mombasa are fully urbanized counties, served by elected county governments.

¹² The absence of elected city governments is not necessarily nationwide. For instance, whereas elected local governments prevail across Uganda, Uganda's Parliament established the Kampala Capital City Authority (KCCA), which is part of the national government, as the legal entity responsible for the operations of the capital city of Kampala, replacing the previous elected Kampala City Council (KCC).

Box 3: Types of decentralized and localized service delivery and funding arrangements

Throughout the world, there are different types of decentralized or localized service delivery and funding models used, often in combination, to deliver public services to urban residents. The most common are devolution, deconcentration, delegation, direct, and “last mile” models.

Devolution. In many mature economies where public institutions and private markets function well, elected local governments act as semi-autonomous governments and play an extensive role in the delivery of local public services. This type of local governments can be seen in South Africa, Canada, France, and Brazil, among others. Known as devolution, this approach to decentralization is often considered to be more democratic and effective than centralized delivery of local services, although this does not necessarily mean that local government delivery of public services is the only mechanism for achieving better development outcomes at the grassroots level. In fact, roughly half of the developing and transition countries around the world deliver public services predominantly or exclusively through mechanisms other than devolution (Boex et al., 2014).

Deconcentration. Many countries rely on a public sector structure known as deconcentration by which public services are provided through deconcentrated administrative bodies. In contrast to elected local governments, deconcentrated administrative bodies do not have their own elected political leadership but form a hierarchical part of the state administration. Examples include local government structures in Kazakhstan, Afghanistan, Egypt, and Saudi Arabia where some city administrators (mayor equivalent) may be appointed or are part of national-level local government ministries. As a result, deconcentrated governments’ financial resources are included in the state budget and local administrators often report to central ministry officials instead.

Delegation. In other cases, national governments may rely on delegation to deliver public services by delegating or outsourcing the responsibility for the delivery of public services or other functions to para-statal organizations, national authorities or funds, state-owned businesses, or even trusted NGOs. Examples include urban development authorities in India and Pakistan or the NGO BRAC in Bangladesh.

Direct, centralized. Despite these different decentralization approaches being available, many national governments continue to deliver all or some front-line public services directly through vertical programs managed by national government agencies (i.e., direct, centralized service delivery). Direct cash transfers to beneficiaries (or cash-like vouchers) are another approach by which the national government can decentralize and localize public sector benefits.

Last-mile provision. Finally, it is important to understand the mechanisms by which “last mile” provision of public services takes place. While in some countries, local utility companies or urban development authorities are owned, operated and controlled by local governments, in other countries these entities belong to (and are controlled by) central or regional governments. In most countries, frontline services—even within a single sector—are often provided and funded through a combination of different “vertical” or intergovernmental mechanisms at the same time. Therefore the “last mile” of getting services to a citizen’s door may involve going through many layers of government.

3.2 THE ROLE OF COUNTRY ASSIGNED FUNCTIONS FOR CITIES IN MOBILIZING URBAN CLIMATE FINANCE

City governments can be the main catalysts for climate mitigation and adaptation within their respective jurisdictions, depending on their country-assigned powers and responsibilities for investment and service delivery (assigned city functions).

While urban areas in many countries have elected local governments, city governments’ powers and functional responsibilities vary greatly among and within countries. In countries where local governments are highly empowered and well-resourced, it is not uncommon for city governments to have clear and extensive functional responsibilities



over urban affairs as detailed in Table 1. For example, although it is increasingly rare for cities to engage in upstream energy generation, it is not uncommon for city governments to have responsibility for managing (or regulating) electricity distribution to local households and businesses.

Urban greenhouse gas emissions tend to be concentrated in five sectors: transport, buildings, energy, waste, and industry (WBG and UNDP 2020). Despite clear variation among cities, 2050 projections from the Coalition for Urban Transitions, show that the highest potential to reduce emissions in urban areas will be in the urban buildings and urban transport sectors, accounting for 70% of projected green-house gases potential (Coalition for Urban Transitions 2019). The Coalition also finds that cities globally have direct remit over only about one-third of potential emissions reductions, suggesting that there is a key role for national governments to play in setting the framework and enabling environments to help close this gap (Coalition for Urban Transitions 2021). To transform the main sources of GHGs in urban areas into opportunities for green growth, job creation, and livable neighborhoods, cities need integrated, systems-based approaches and spatial strategies supported by national government agencies to leverage other finance opportunities (WBG and UNDP 2020).

Where city governments are empowered by national governments on broad-ranging city functions, they are well positioned to implement climate-smart investments and leverage other sources of finance toward these goals. Table 1 presents the key climate-relevant city functions and expenditures that cities may control directly and indirectly. These city functions are grouped by five main urban sources of green-house gases (transport, buildings, energy, waste and industry). Perhaps the most striking feature of the table is the extensive overlap between the sources of urban GHG emissions and the potential functions and expenditure responsibilities to mitigate these sources that can be assigned to city governments as the direct providers of city infrastructure and services.¹³ However, the table also shows that key drivers of emissions, such as private vehicles, electricity generation, and industrial production, are largely outside of the direct remit of city governments. These areas can be addressed more indirectly through planning or regulatory action or through the coordination of incentives with the support of national governments and the private sector.




¹³ The table aims to present a “typical” functional assignment for urban infrastructure and services. To the extent that specific infrastructure or service delivery functions do not fall within the legal mandate of city governments, these items should be moved from the left-hand column to the right-hand column of the table as appropriate. Likewise, if—in a specific country context—any function listed in the right-hand-side column falls with the city government’s remit as a service provider, that function would accordingly have to be moved to the left-hand column.

Table 1: Country-assigned city functions and expenditures are critical to mobilizing urban climate finance and implementing climate objectives directly or indirectly.

SOURCES OF GHGS IN URBAN AREAS	DIRECT CITY FUNCTIONS AND EXPENDITURE RESPONSIBILITIES (WHAT CITY GOVERNMENTS COMMONLY PAY FOR)	INDIRECT CITY FUNCTIONS THROUGH REGULATION, STANDARDS, AND PLANNING (WHAT THE CITY GOVERNMENTS CAN COMMONLY INFLUENCE WITHIN THE CITY SPATIAL JURISDICTION OR URBAN SYSTEM)
	<ul style="list-style-type: none"> ▪ Street, bike, bridge network extension and maintenance ▪ Parking management ▪ Public transport route planning ▪ Fast electric vehicle (EV) charging network ▪ Green vehicle fleet procurement ▪ Public transit fleet procurement and operation 	<ul style="list-style-type: none"> ▪ An integrated transportation plan that promotes: <ul style="list-style-type: none"> ▪ Compact development principles and urban planning ▪ Multimodal, networked, electrified green transport systems ▪ High occupancy vehicle (HOV) lanes and bus-only lanes ▪ Walkability, bikability and micro mobility ▪ Electrified mass transit and public transport (bus, metro, light rail). ▪ Incentives for electric vehicles (taxis, rideshares, private vehicles). ▪ Street design guidelines to reduce heat island effects, promote pavement permeability, green spaces and nature-based solutions. ▪ Vehicle emissions and fuel efficiency standards ▪ Vehicle registration standards, fees and congestion pricing tools ▪ Well prepared policies and plans for new and upcoming technologies such as self-driving vehicles and passenger drones, that if well managed could bring opportunities for efficiency and lower emissions.¹⁴
	<ul style="list-style-type: none"> ▪ Planning and design standards, construction permitting ▪ Social / public housing ▪ Trunk infrastructure connections¹⁵ ▪ Parks and green spaces ▪ City-owned assets (public buildings, land, property) 	<ul style="list-style-type: none"> ▪ New or retrofitted net-zero public buildings and public housing ▪ An integrated spatial / land-use / buildings plan that promotes compact, green, and efficient buildings and environment through urban form; green infrastructure and nature-based solutions; centralized district approaches; building codes; zoning; appliance standards; incentives (permitting, subsidies); payment for ecosystem services

14 Local and city governments have a challenge and an opportunity to start thinking about how to manage disruptive mobility technology to benefit urban areas, including towards low-carbon and climate resilient uses. For example, in California, the League of Cities submitted a policy statement on local regulation for unmanned aircraft systems: https://www.cacities.org/Resources-Documents/Policy-Advocacy-Section/Hot-Issues/Drones/Drone-White-Paper_Feb-14-2017.aspx. Another upcoming disruptive technology being developed and piloted by major car and aircraft companies includes passenger drones: An example is the airbus urban air mobility program: <https://www.airbus.com/innovation/zero-emission/urban-air-mobility.html>. Particularly in cities that still need to be built, leap frogging to such future options could bring benefits and lower costs for trunk infrastructure.

15 Trunk infrastructure refers to a higher order development infrastructure supplied by the local government or state-level infrastructure agency and primarily intended to provide network distribution and collection functions or to provide services shared by a number of developments. For example, these include, parks, sub arterial roads, sewage pumps, and water supply networks.

	<ul style="list-style-type: none"> ▪ Management of electricity distribution network (grid) ▪ Street lighting (including energy efficient or solar powered street lamps) ▪ Energy consumption of city-owned assets (rooftop solar on city-owned buildings) 	<ul style="list-style-type: none"> ▪ An integrated energy plan fed by micro grids, urban grids, and centralized utilities, supported by storage. ▪ Promotion of rooftop solar on residential and commercial assets. ▪ Rooftop solar for slum upgrades and social housing.
	<ul style="list-style-type: none"> ▪ Water, wastewater and SWM strategic plans ▪ Solid waste collection and street cleaning ▪ Water supply systems ▪ Storm and waste water management 	<ul style="list-style-type: none"> ▪ Plan to move towards circular economy and zero waste concepts: reduce, reuse, recycle (materials), recover (energy) and only then dispose. ▪ For water supply, wastewater management include storm water diversion actions through urban design and incentives for pervious materials, green roofs, water gardens and nature-based solutions for built environment
	<ul style="list-style-type: none"> ▪ Planning, location, and design standards for industrial zones/ estates ▪ Business licensing ▪ Trunk infrastructure, roads and grid connections 	<ul style="list-style-type: none"> ▪ Reduce final energy demand in Industry by one third through renewables, energy efficiency and green infrastructure planning. ▪ Increase recycling of materials and the development of a circular economy in industry

In some contexts, a city government’s authority over land use, expenditures, and services is curtailed or fragmented across national or regional authorities.

For instance, while Dhaka, Bangladesh, is formally governed by two elected city corporations (Dhaka North City Corporation and Dhaka South City Corporation), urban land use planning and construction approval within the city is controlled by a national government agency (the Capital Development Authority, RAJUK) under the Ministry of Housing and Public Works, while the city’s water provider (Dhaka WASA) is an agency established under the Ministry of Local Government, Rural Development and Co-operative (MLGRDC). Another department under this ministry (Local Government Engineering Division) is active in directly implementing civil works projects in Dhaka and other city corporations. This illustrates that even at the city level, there may be substantial barriers to coordinating and mainstreaming action on climate-smart planning and investment when the appropriate institutional or enabling framework is not provided at the national level.

Even in countries where city functions are less decentralized or where local government institutions are not as strong, empowered or effective, city governments can still play a significant role in promoting city climate investments by using their regulatory and convening power. City leaders can still champion, advocate and enable climate mitigation and adaptation efforts by convening national government officials,

managers of city-level parastatals and authorities, the local business community, and civil society representatives. Particularly in cities where urban residents potentially face direct impacts from climate change shocks, (or suffer from urban air pollution, traffic congestion and mountains of waste that also contribute to greenhouse emissions) city leaders have an important role to play in mobilizing public opinion and working with national government stakeholders, civil society, and the local business community around developing a city-wide climate agenda.

3.3 THE ROLE OF INTERGOVERNMENTAL FISCAL SYSTEMS IN MOBILIZING URBAN CLIMATE FINANCE

One of the most critical enabling conditions created by country-level governments for urban climate action is the urban fiscal system. The overarching intergovernmental fiscal system is defined as part of the national legislation and follows from national budget decisions about intergovernmental finance. The system also defines the fiscal powers and the fiscal space of cities.¹⁶ The intergovernmental fiscal system within which city governments operate is commonly divided into four “pillars” of intergovernmental finance (see Figure 3):

- (1) Assignment of powers, functions, and expenditure responsibilities to the city government;
- (2) Assignment of revenue powers (i.e., the “own source” revenues the city can collect);
- (3) Provision of intergovernmental fiscal transfers (including grants) to city governments; and
- (4) A framework that allows city governments to borrow, incur debt, or access other forms of capital finance.¹⁷

The first of these four pillars—the assignment of powers, functions, and expenditure responsibilities to city governments—was discussed in Section 3.2 because relates mainly to the ability of cities to pursue climate interventions. By contrast, the next three pillars of the intergovernmental fiscal system—own source revenues, intergovernmental fiscal transfers, and borrowing—provide city governments with access to the financial resources they need to incur expenditures and are highlighted in this section.

¹⁶ “Fiscal space” is a term commonly used to reflect the ability of a government to engage in additional expenditures without jeopardizing macroeconomic stability or debt sustainability.

¹⁷ Intergovernmental fiscal transfers or grants refer to amounts paid by one government to other government units for the performance of specific functions or for general financial support. Such intergovernmental transfers include conditional or unconditional grants, shared taxes, and any amounts or reimbursements paid to other government units for the performance of general government services or activities. The term does not include financial transfers by the public sector to households or businesses (such as social security payments, cash transfers, or the payment of subsidies).

Figure 3: Country-level enabling conditions determine the sources and size of city government funding and finance for (climate) investments.

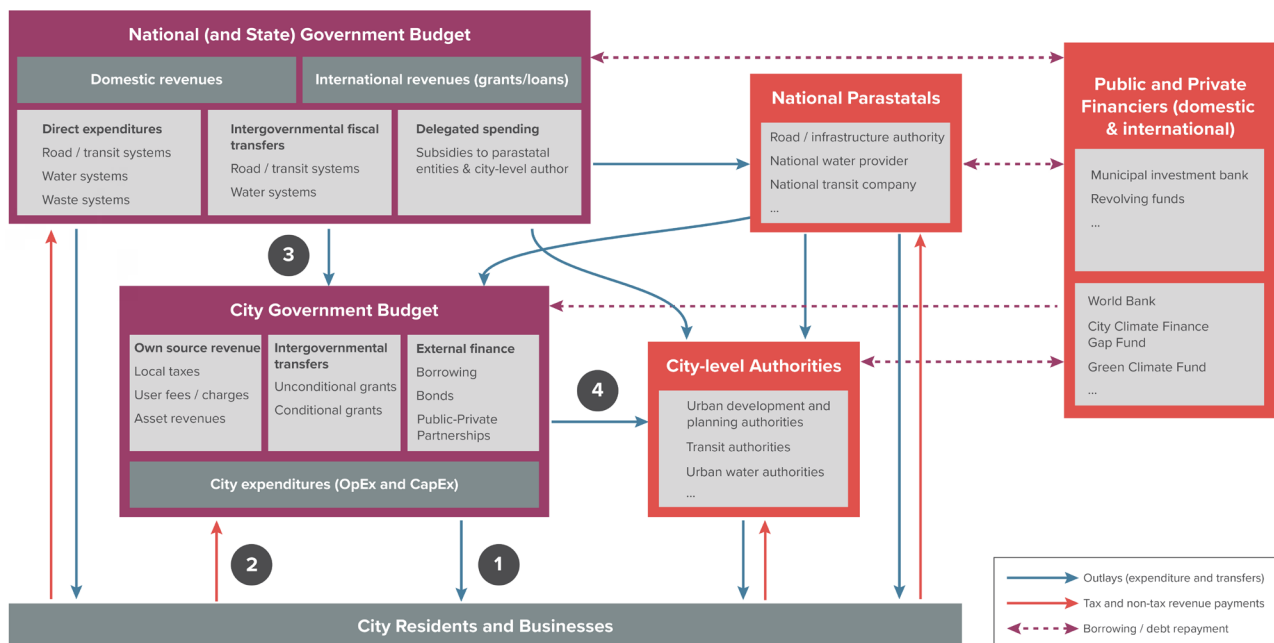


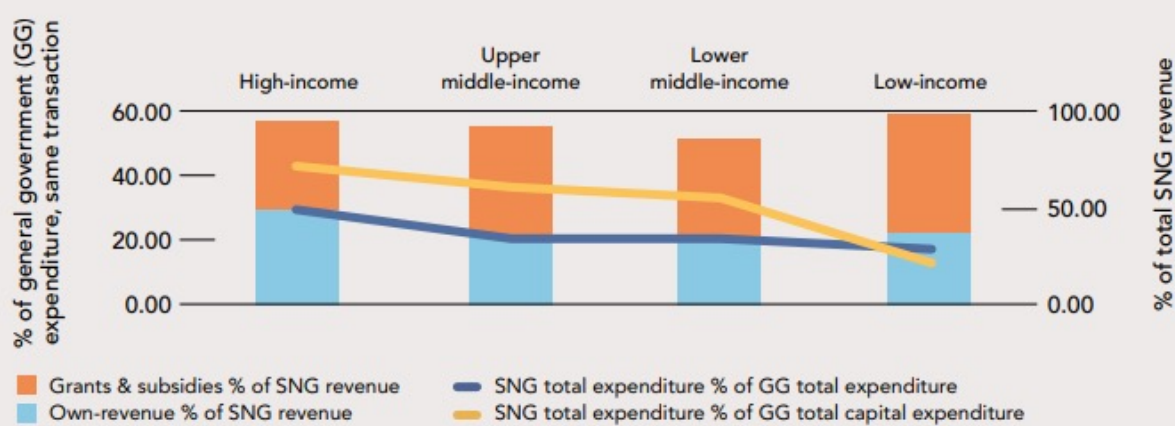
Figure 3 shows how intergovernmental fiscal systems provide city governments with the financial resources they need to act as direct providers (and consumers) of goods and services. There are also important interlinkages between the role of the city government as revenue collector and service provider with the city’s role as a steward for climate action across the urban area (discussed further in Section 4).

Globally, local and city governments receive a large share of their funds via intergovernmental fiscal transfers – often even more so than funds received via their own-source revenues (OECD and UCLG 2019). The term “intergovernmental fiscal transfers” captures a wide range of funding flows between the central (or regional) government and local governments, including revenue sharing arrangements, unconditional (equalization) grants, conditional sector grants, categorical capital development grants and earmarked capital investments grants. Many countries, especially federal or larger decentralized countries, rely on a combination of unconditional and conditional grants (e.g., Indonesia, Kenya, South Africa), while smaller countries with unitary systems tend to rely more heavily on conditional (earmarked or categorical) grant payments.

Box 4: Overview of subnational government own source revenue and intergovernmental fiscal transfers

The latest edition of the Global Report on Local Democracy and Decentralization (UCLG 2019) concludes that fiscal decentralization can be a ‘win-win’ for all, not a zero-sum game where national governments lose what local governments gain. The report argues there is potential for local governments to raise funds for investment and service delivery through a variety of mechanisms, if given the authority and agency to do so. Worldwide, however, intergovernmental transfers are the primary sources of local government revenue, especially in middle- and lower-income countries. Note, too, that there is a positive correlation between own source revenues and capital expenditures: as own source revenues grow for local governments, so do capital expenditures.

Sub-national own revenue/transfer ratio compared to the volume of expenditure (total and capital) by income groups



Source: OECD-UCLG, 'World Observatory on Subnational Government Finances and Investments', 2019.

Note: SNG refers to subnational governments

While the intergovernmental fiscal context is an important part of the enabling framework for city climate finance overall, city government expenditures on climate-related programs form only one of several public sector funding flows that may be directed towards urban climate investments.¹⁸ Numerous other public sector expenditures and funding flows take place in the context of city climate finance that flow outside the city government’s budget (See Figure 3). City leaders may have a degree of influence over these intergovernmental funding flows in their role as champions of their constituents’ interests. These parallel funding flows include three specific types of expenditures:

- National government spending on urban infrastructure or climate-related investments within the city limits or urban area made directly by national government departments or ministries;
- Climate-related infrastructure spending within the city limits or urban areas by national infrastructure funds or parastatal entities; and

¹⁸ In addition to the public sector funding flows discussed here, city climate finance includes investments and interventions that are implemented and funded by the private sector and/or households. As discussed further in section 4.3, in these instances, the role of the city government is that of a convener, enabler or champion.

- City-level utility company, boards, or authority spending that is often not part of the city budget.¹⁹

The relative prominence of different funding flows is determined in large part by the functional responsibilities assigned to city and local governments. In highly devolved countries where city governments play an important role in the provision of essential services, the share of (climate) spending that is part of the city government's budget could possibly outweigh the resources provided by non-devolved funding streams. In many countries, however, some or most of these climate-related functions are the responsibility of higher levels of government or are provided through alternative mechanisms (such as national or regional organizations).²⁰ In such countries, the non-devolved funding streams are likely to dominate city climate finance.

Climate-related expenditure decisions by city governments are often shaped by the overarching system of intergovernmental fiscal relationships in ways that are beyond the control of city governments. For instance, climate-related expenditure decisions can be the result of many different types of decisions at the higher levels of government. The higher government levels may impose and limit the assignment of revenue sources; shape the provision (or not) of earmarked funding through conditional grant schemes; and limit city-level fiscal powers, such as the ability to borrow. Finally, as will be discussed in Section 4, cities also benefit from a range of other types of leveraged finance for addressing climate goals. These range from private sector investments in climate-friendly technology, buildings, and services to other types of national government support such as subsidies, rebates and taxation programs to encourage business and household investment or consumption with climate benefits in urban areas.

3.4 THE ROLE OF THE INSTITUTIONAL ENVIRONMENT FOR CLIMATE POLICY IN MOBILIZING CLIMATE FINANCE

Even though cities and urban spaces have an important role to play in reducing emissions, there is often not a direct link from national policy to city-level action. Policies pursuant to the Paris Agreement (2015), for example, consist of nationally determined contributions (NDCs) to reduce emissions and adapt to climate change. National governments can provide incentives to expand the role of cities in developing and updating NDCs and to assist in implementation (CCA 2021). For example, to reduce GHG emissions by 2030 to 55% from a 1990 baseline, EU countries have committed to an EU-wide emissions trading system that prices carbon as well as binding targets for land use, land use change, and forestry; along with other national level legislation on standards for renewable energy and energy efficiency, green buildings, vehicle and GHG emissions standards and waste management improvements (EC & Germany 2020;

¹⁹ As was discussed in Section 3.1, while city-level municipal utilities companies or entities are typically owned and operated by local governments in OECD countries, in developing and transition countries, it is much more common for these city-level authorities to be owned and operated by national-level ministries.

²⁰ These may include regional power and water utilities, transportation and mass transit authorities, or other entities that are not directly under a municipal budget.

Europa 2021). While city participation is necessary to achieve this target, the existing markets, regulations, and standards implicated in these policies are structured mainly at the national or international scale.

A specific intergovernmental constraint on cities engaging on climate-related issues is the extent to which national governments enable and engage cities as partners in the national (or global) climate agenda. These intergovernmental systems can empower or limit city-level actions for climate change adaptation and mitigation. In particular the intergovernmental system can have implications on the extent a city government can:

- Regulate spatial planning and the urban built environment;
- Prioritize and link city-level capital investments to climate and spatial plans;
- Rely on the intergovernmental fiscal system;
- Control their basic administrative functions (including human resources and procurement);
- Align, coordinate, and cooperate on sectoral (climate) policy objectives across different levels of government.

The differences in the decentralization levels and management of city infrastructure development and regulation influence the impact of climate change policies. Urban contributions to greenhouse gas emissions are largely shaped by energy, buildings, transportation, and waste sector assets (Coalition of Urban Transitions 2019). Nearly half of the greenhouse gas emissions reductions that are anticipated from cities by 2050 depend upon each city's access to or authority to develop energy from non-emitting sources, such as solar, wind, hydro, and nuclear. However, cities are not uniformly responsible for managing these assets, even if the assets exist within their spatial boundaries. Cities in developing or emerging economies tend to have responsibility for even fewer services and, therefore, a reduced ability to align them with climate change objectives.

Often city-level constraints, such as the lack of local political will, weak administrative capacity, or limited own source revenue collections, are the result of the overall intergovernmental context. Intergovernmental institutions and systems are seldom shaped by technical analyses of opportunities and constraints, but rather by political and economic forces inherent to multi-level governance (Eaton et al., 2010; Eaton et al., 2011). For instance, to the extent that national political parties help to select mayoral candidates for the largest cities in their countries, the ruling political party may be more interested in selecting a mayor who will implement the party's agenda or is deferential to party donors, rather than selecting a candidate who will be responsive to the needs of local constituents. In fact, it is not unusual for national or higher-level governments to work against the powers and efforts of city governments when the urban areas are dominated by opposition parties.²¹ Likewise, in countries that lack a strong tradition of devolved local governance, national government bureaucrats often have institutional

²¹ In the United States, the phenomenon of state governments standing against city governments is often referred to as the tension between "blue cities and red states." However, this tension is a worldwide phenomenon in countries where ruling parties have a rural base, with opposition parties prevailing in the urban areas. In fact, it is not unusual for the ruling party chairman or secretary to be the minister responsible for local government.

incentives to retain power and resources at the higher level, and thus, dampen efforts to empower their local counterparts. Each of these may limit consensus in climate-smart investments at the city level.

A common intergovernmental fiscal constraint on city-level climate action is the gap between legal and actual city functions.²² It is not unusual for city governments to be assigned legal jurisdiction over urban functions that in reality are performed by other national government entities or authorities, as discussed earlier in Bangladesh or in Tanzania where a separate agency manages urban and rural roads. In these cases, national-level ministries may continue to play a role in urban infrastructure development (legal assignment notwithstanding), or may channel delegated spending through national parastatal organizations, national government-owned utility companies, or development authorities (Figure 3). These arrangements often become self-fulfilling prophecies: by routing financial resources around the city budget — rather than through — the city is perpetually unable to fulfill its legal mandates regarding urban infrastructure development, thus providing the continued argument for central intervention.

National-level disaster risk management regulations, policies, and initiatives may also exclude cities from contributing to climate change adaptation. Responses for addressing hazards include physical barriers, warning systems, building codes, engineering design standards, relief programs, and insurance mechanisms, many of which are governed at state or national levels (Biagini et al. 2014; Travis 2010).

To address this gap, cities are rising to the international stage of climate policymaking as advocates for action. Many local governments may even have more ambitious climate actions relative to their national governments (CCA 2021). In the years between the Kyoto Protocol (1997) and Paris Agreement (2015), a groundswell of subnational and non-state actors emerged, exemplified by global networks of cities (Gordon 2020; Betsill et al. 2015; Chan et al. 2015). These include for example the Global Covenant of Mayors for Climate Action (GCOM); the Cities Climate Leadership Group (C40), the Local Governments for Sustainability Network (ICLEI) and the Cities Climate Finance Leaderships Alliance (the Alliance). These transnational networks of cities and other stakeholders have become sources of shared information, commitment, innovation, and experimentation in local climate policymaking and implementation which, though limited, has improved access to opportunities for funding (Nguyen et al. 2020; Kern et al. 2009). The collection of cities leading in climate policy is substantial and growing, but not widely representative, especially for small- and medium-sized cities. The Global Covenant of Mayors for Climate and Energy is the largest of the global city networks and lists 10,550 members from 138 countries, representing just 10% of the world's population. About 9,500 of their members have set targets for reducing emissions, and 5,500 have produced greenhouse gas inventories and mitigation plans.²³

While climate policy is mainly national policy, there are examples of city-led initiatives in the energy sector to support clean energy investment. Several examples of innovation in municipal involvement in the energy sector — a critical contributor to GHG emissions - that illustrate the potential for city climate action. In the United States, more than 200 cities play direct roles in the transition to clean energy, due to either their

²² For a review and assessment of functional assignment performance in a number of countries, see Boex et al. 2016

²³ Database available at Global Covenant of Mayors for Climate and Energy. <https://www.globalcovenantofmayors.org/our-cities/>

municipal ownership or regulation of power utilities. For example, municipally owned Seattle City Light became the first net-zero emissions electrical utility in the U.S. in 2005. Utility regulation in the US also varies widely across states, allowing room for innovation for alternative policies for the decarbonization of power systems in urban areas. For most countries, however, the conditions for energy sector are less dynamic. China's energy system is the world's single largest source of carbon dioxide emissions, and the system's processes of planning, project approval, and rate-setting are all carried out by the national government (Xu et al., 2015; Kahrl et al., 2011). This reduces the potential for cities to direct or benefit from clean energy investments.

National and state or provincial governments can use a variety of convening mechanisms to support and engage with cities. National or state/provincial government can determine relationships among cities, create incentives, and even enforce cooperation among cities. Climate action offers a compelling rationale for the integration of cities in matters of national importance, as cities are driving forces for global emissions, exert tremendous influence over their surrounding peri-urban areas, and bear significant financial risks from climate impacts (WBGU 2016). Especially in developing and emerging economies, where cities are more likely to face institutional and political constraints, cities would benefit from national initiatives to address weaknesses in public administration and urban management as well as minimize macroeconomic and currency risks to stabilize investment prospects (OECD 2010).

4. CITY-SPECIFIC ENABLING CONDITIONS FOR MOBILIZING URBAN CLIMATE FINANCE AT SCALE

Key messages:

- To mobilize urban climate finance at scale cities need to define and embed climate considerations in all four levels of city planning (strategic, spatial, capital investment, and budgetary) and ensure alignment among these four levels.
- Cities manage investments through a sequence of planning, prioritization, and financing:
 - Strategic and spatial plans determine urban form, land zoning and provide incentives for private development
 - Capital investment plans identify urban infrastructure and service priorities
 - Municipal finance capacity will determine how investments can be financed (via own source revenues, transfers, or the potential for leveraged finance with the private sector)
- Cities can adopt and use compact city principles in planning to help reduce emissions, discourage low density urban expansion and save on costs. With proper management of urban form, cities can reduce the cost of infrastructure by 15%, on average, every time the city doubles in population.
- Cities must integrate capital investment planning with climate-smart principles, carbon pricing and data to inform decisions and prioritization of investments.
- Strengthening city-level municipal finance systems (budgeting, financial management, procurement) will enable better linkages of city revenues instruments to climate expenditures.
- Cities can adopt and implement regulations, design standards, and incentives to encourage private and household investment in green buildings, vehicles, equipment, and appliances.

Cities have four main levels of planning: strategic, spatial, capital investment, and budgetary. Each level of planning is an important lever for mainstreaming city-level climate action and it is therefore critical for these plans to align with one another. Strong city planning and finance are important city-level enabling elements for shifting and accelerating the flow of funds to climate-smart infrastructure investments. This section provides an overview of relevant city-level planning process (Section 4.1) as well as city finances (Sections 4.2 and 4.3) as preconditions for city effectiveness. Climate-specific issues related to planning and finance are addressed in greater detail in Section 5.

Figure 4: The dynamic relationship between urban planning and urban finance

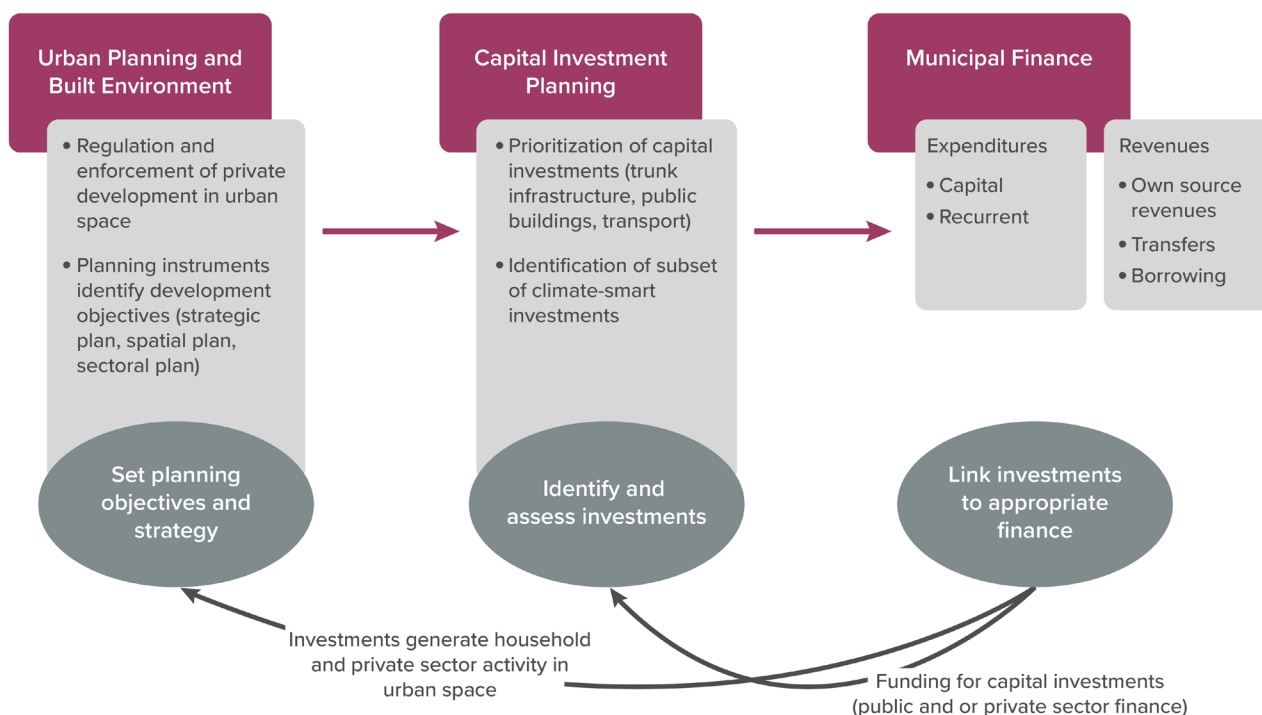


Figure 4 details the relationship commonly found in cities between urban planning and urban finance. The process is dynamic and iterative. Planning instruments, which include built environment regulations as well as prospective strategic and spatial plans, identify longer-term development objectives to manage and align with city growth. Capital investment plans (CIP) identify investments needed in the near- or medium-term to move toward these plan’s objectives. Green and climate-smart investments form a subset of this step, and many cities have yet to mainstream climate goals into their capital investment planning practices. This is discussed in greater detail in Section 5.

A city’s ability to finance (climate-smart) investments will depend both on expenditure assignments (i.e., the types of capital and recurrent expenditures they are responsible for) along with the revenue tools that can be mobilized to pay for these. If a city alone cannot finance or operate a key investment, it may seek to leverage other funding sources, such as public investment from a line ministry, utility, or higher level of government, or through private sector finance.

Embedding climate considerations across all levels of urban planning (strategic, spatial, capital investment and budgetary) will enhance the enabling environment for mobilizing climate finance at the city level. Urban planning and built environment regulations can be deployed for or against climate goals. But the climate impact will depend on how well compact growth principles are embedded and enforced in these goals.²⁴ Capital investment planning processes often consider climate objectives as

24 For example, the city of Ulaanbaatar, Mongolia allowed residents free plots of up to 700m2 for self-construction of single family detached housing. While this reduced housing scarcity, it also dramatically increased the footprint of the city and the city government struggled to extend roads, basic infrastructure, and district heating to these areas. Most households in these settlements used coal fires for heating, which contributed to some of the worst urban air pollution in the region. See World Bank 2015, Land Administration and Management in Ulaanbaatar, Mongolia

an “add on” objective rather than embedding greenhouse gas analysis or climate risks as part of the core CIP and investment decision process. This risks omitting or overlooking synergistic opportunities for resource efficiency, low-emissions alternatives or enhancements to designated expenditure functions that they already undertake such as streetlights, public buildings, vehicle fleets, water and wastewater management systems and others. A climate strategy and investment pipeline, where aligned with these expenditure functions, can also help a city link to the appropriate revenue tools for finance, either on budget or through leveraging off-budget sources. Embedding an internal price of carbon into the CIP process would create the incentives for municipal officials and private operators servicing the city to embed low carbon, climate resilient goals system-wide. Carbon pricing at the municipal level is further discussed in section 5.

4.1 THE ROLE OF CITY STRATEGIC, SPATIAL, AND INVESTMENT PLANNING FOR MOBILIZING URBAN CLIMATE FINANCE

Urban planning is the critical first step in linking public investments with current and future needs. However, in many cities urban planning and built environment functions are often disconnected from municipal finance and investment planning. Spatial and strategic plans specify the long-term development and growth objectives of the city and provide a regulatory structure to incentivize or discourage different types of private investment and economic activities. The city plans also allow city governments to better anticipate the location and amount of the different types of public investments that will be needed. A city’s infrastructure, which influences urban form, has long-lasting environmental and financial consequences. These consequences include locking in limits to the benefits cities may accrue, their capacity to decarbonize emissions, and their vulnerability to climate impacts. Cities can only manage what they measure, meaning that revenue sources and the expenditure management are a function of the underlying planning systems and the data they generate.

4.1.1 THE ROLE OF CITY STRATEGIC PLANNING

City master plans (also referred to as city strategic plans or comprehensive plans) provide cities with a unified, general strategy for their community’s future with a common time horizon of 20 to 30 years. Master plans also frequently include plans for sub-areas of the city, such as transportation corridors or business districts, which may have shorter time horizons. The plans often include standards for urban design that determine the density, type of construction, and the mix of different land uses, which impact energy consumption and emissions. The master plan also clarifies the relationships among physical development policies and social, economic, and environmental goals (Berke 2006; Kent 1990). Master plans may be implemented

through a series of shorter-term plans at different scales and granularities, from the broad and strategic level to more specific city- or neighborhood-level action plans.

4.1.2 THE ROLE OF CITY SPATIAL PLANNING

The regulation of urban space through spatial planning is a critical driver of a city's urban form, and it is important that spatial planning aligns with the city's long-term strategic and climate-smart plans. Regulation has direct consequences on the locations of capital investments and infrastructure and how they will be financed. Spatial planning also impacts the investment decisions of households and firms within a city, which are beyond the scope of the city government's own spending. Spatial planning is an approach to align different types of sectoral investments based on location to address needs or leverage place-based advantages. For example, transit-oriented design (TOD) principles demonstrate how spatial plans and sector plans can align to maximize synergies and the efficiency of both (combining public transport routes and bus stops near to densely populated areas and diverse land uses). These and other compact development principles promote greater population density, a concentration of services and jobs, and alternatives to private vehicle usage. This can result in lower emissions by reducing vehicle miles traveled, wasted heat (e.g., shared building envelopes and less space per resident), and ecosystem degradation through green and open space protection (Raven et al. 2018).

The concept of compact cities, which emphasizes the efficient use of residential and commercial land and optimally managed urban expansion, is where city planning, urban economics, and climate mitigation align. Compact cities share three relevant characteristics for aligning urban design and climate change (CUT 2018):

- **Economic density**, with a high concentration of people living, running businesses, and working in a given area;
- **Morphological density**, which makes the most efficient use of available land and built space to meet people's needs; and
- **Mixed land use**, which puts residential, green space, employment, retail, and leisure opportunities close to one another.

Spatial planning and urban design prioritize these compact characteristics through urban form, urban functions (activities), land or surface cover change, and regulation of construction materials (Raven et al., 2018). With proper management of urban form, cities can reduce the cost of infrastructure by 15%, on average, every time the city doubles in population (West 2018). Limiting urban expansion can safeguard farmland and natural habitats, increasing the likelihood of maintaining biodiversity and ecosystem services and contributing to climate change resilience and mitigation.

Box 5: Leveraging compact city principles to further enhance climate benefits

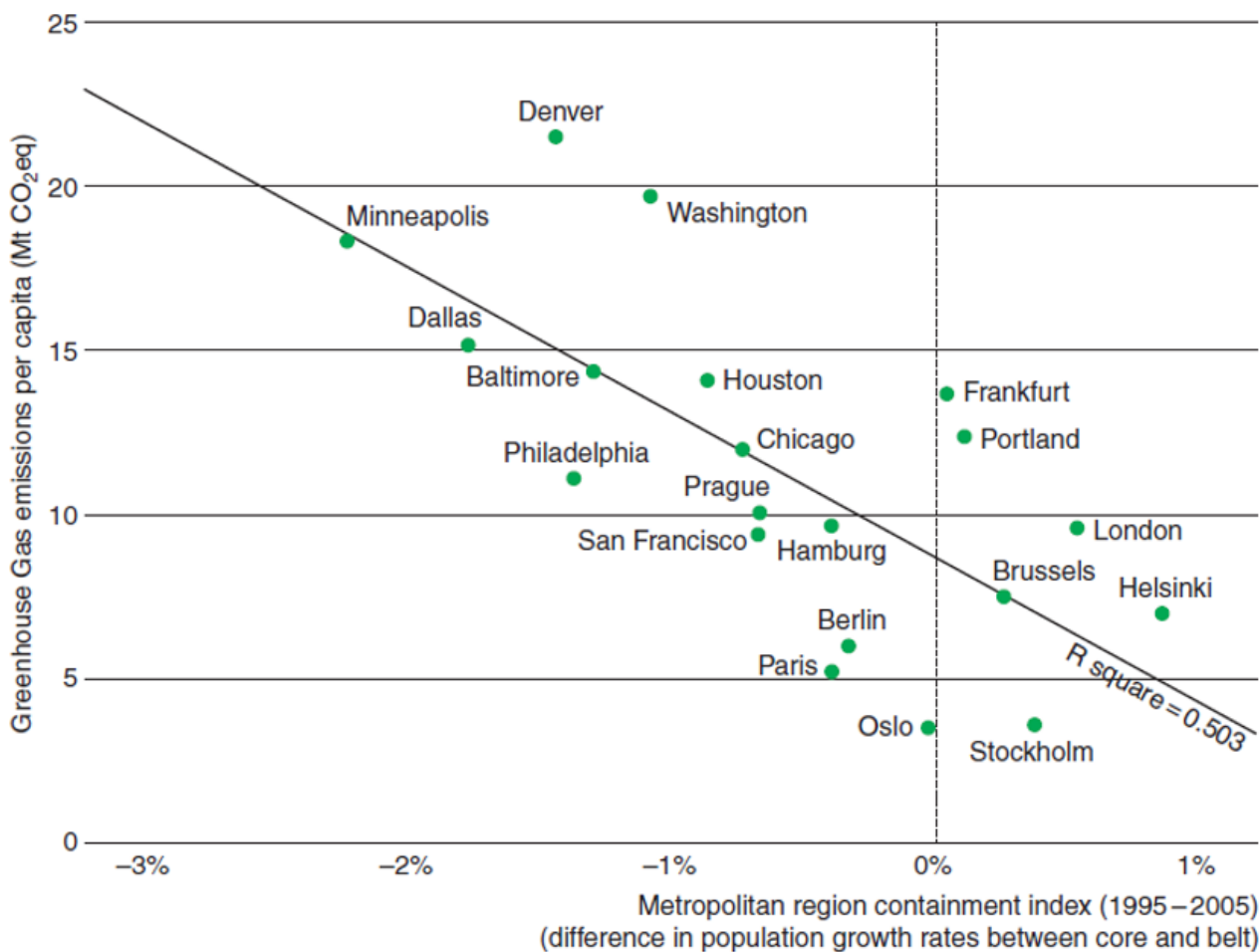
Compact cities can enhance their benefits further by transitioning toward zero-carbon energy sources. As mentioned, the energy sector is a key driver of GHG emissions and cities can lead the way in reducing consumption. In mature cities, the pathway to a low-carbon future involves:

- First increasing resource efficiency by retrofitting and reconstructing existing public assets according to increasingly stringent standards for energy efficiency and waste prevention;
- Second pricing carbon by participating in renewable energy credits or available markets for carbon trading for example and to incentivize low carbon choices.
- Third, reducing embedded carbon in the materials and surfaces used in the city by fostering markets for low carbon construction materials; and
- Fourth, setting standards and rules for incentivizing property markets to adopt climate-smart permitting systems (e.g., the Green Building Council's LEED systems and the International Living Futures Institute's Living Building, Product, and Community Challenges).

In rapidly urbanizing areas, establishing low-carbon pathways for growth also requires proactive planning for people at all income levels and a massive expansion in the supply and use of clean electricity to cover lighting, heating, cooling, cooking, and transportation. In all cases, cities will need either the access or authority to ensure the availability of clean, renewable sources of electricity.

Figure 5 highlights the role that compact city design plays in the overall capacity of cities to decarbonize. The figure shows the containment of urban expansion in select U.S. and European cities and its relationship to GHG emissions reduction. Population density, a prominent feature of compact cities, is itself a driver of urban agglomeration effects and economies of scale. Density has the potential to improve economic growth through increases in connectivity across social networks with the pooling and division of labor that come from industry clustering. For infrastructure services, the urban agglomeration effects of density offer increasing returns to providers by concentrating consumers in existing networks. Cities have many types of infrastructure services that benefit from density, including high-capacity transit (i.e., rail, metro, tram, bus, cable car, ferry), ride sharing, active travel (e.g., biking and walking), digital communications, electricity, district heating systems, and water or wastewater distribution systems. For city dwellers, compact city principles, coupled with adequate green and open spaces, can reduce the negative health impacts of air pollution through reduced emissions. Green compact cities can also contribute to increases in social interaction, improving mental health, and increases in physical activity, leading to overall health benefits (Moran et al., 2018)..

Figure 5. U.S. and European metropolitan region containment index, 1995-2005



Source: Rhode 2012; Raven et al., 2018

Densification planning should improve resilience and reduce exposure to future natural and climate change hazards. Densification concentrates physical assets. For urban assets that are physically exposed to climate hazards, this also heightens exposure to other risks such as financial, business continuity, and human health. Planned densification should also protect green spaces and environmentally sensitive areas, which are the spaces most critical to the expansion of climate-smart services. Improved data systems, hazard mapping, and risk assessment data can be translated into plans to protect vulnerable and environmentally sensitive areas and reduce hazard exposure to people and property (Hallegatte 2017). These plans should also take into account how climate and disaster risks could impact current and future financing models (in terms of demand, tariff rates, debt servicing, etc.).

4.1.3 THE ROLE OF MUNICIPAL CAPITAL INVESTMENT PLANS (CIP)

As noted in Figure 4, the municipal Capital Investment Plan (CIP) forms the link between the city’s strategic and spatial plans on the one hand, and investments in city-owned facilities and infrastructure systems on the other. City spatial plans have implications for the city’s investment responsibilities, as well as for urban investments made by other stakeholders in the urban area. City governments may be responsible for the provision of services that include long term trunk infrastructure and other assets such as facilities, transportation networks, streetscapes (e.g., lighting, urban forests, sidewalks, drainage), water, wastewater, solid waste, education, childcare, cultural facilities, affordable housing, environmental protection, health care, and disaster risk management.²⁵ As such, CIP is a critical planning instrument and an important city-level precondition for city-climate planning (further discussed in Section 5).

Cities may also jointly own facilities, such as public-private partnerships or leasing arrangements for capital assets. City-owned facilities are jointly governed by planning and engineering staff through asset management systems (i.e., inventories, condition assessments, and replacement plans). Managing these assets involves city personnel and procedures for budgeting and finance, especially for capital improvement or capital investment planning and programming. Mainstreaming climate considerations in the CIP processes will be critical to help incentivize infrastructure investment decisions today and avoid “locking in” high carbon and vulnerable urban patterns of settlement, material consumption, and energy use in the city.

4.2 THE ROLE OF CITY FINANCE IN MOBILIZING URBAN CLIMATE FINANCE

The general capacity of cities to manage finance-related urban infrastructure and services constrains the city’s ability to finance climate-smart investments. This section provides an introductory overview of municipal finance. Section 4.3 deals with non-municipal sources of urban infrastructure finance. Climate-specific issues related to municipal and non-municipal finance are subsequently dealt with in Sections 5.3 and 5.4, respectively.

Capital investment plans drive urban infrastructure investment decisions at the local level and have potentially large implications for achieving climate smart impact over the useful life of this infrastructure. This includes decisions for investments in road infrastructure, public transportation, or public buildings and social housing. However, as noted, the extent to which these investments and financing decisions fall within the decision-making remit of the city government varies across and within countries and will depend on the assignment of city-level functional responsibilities and other country-level enabling conditions. The degree to which city governments are empowered over their own finances, as well as their ability to successfully manage their revenues and

expenditures, is often informed by the overall level of development within which the city operates.

4.2.1 THE ROLE OF MUNICIPAL EXPENDITURES IN MOBILIZING URBAN CLIMATE FINANCE

A city government's budget is a statement of the city's priorities that is created through a procedural and political process. Therefore, building voter support is an important element for ensuring that municipal budgets and expenditures target climate action. City government budgets link tasks with the resources required to accomplish those tasks. While city budget formulation and execution tends to be procedural in nature, public budgeting is also inherently a political process: the budget reflects the degree of importance that city leaders place on satisfying their various constituents' demands (Rubin 2019). In this sense, a city budget is an articulation of a city's diverse priorities, which includes climate investments but also a wide range of other areas. As such, the development of a City Climate Strategy (discussed more fully in Section 5) should not only be understood as a vehicle for identifying climate investment as a spending priority for the city's elected leaders; the document should be used also to build critical support among city residents and other constituents. City leaders who want climate-smart budgets and infrastructure, need to encourage and foster the political will of citizens.

The ability of city governments to allocate resources to municipal priorities – including expenditures in support of city climate interventions – depends on the city's decision-making powers as well as its fiscal space. A city's climate strategy covers both climate-relevant investments undertaken by the city government, as well as city climate investments outside the city government's own budget scope. The extent to which city climate investments are reflected in the city's budget varies considerably across cities and countries based on the legislated assignment of functions and expenditure responsibilities, both for the recurrent provision of city services (such as operational budget for solid waste management or water and sanitation access), as well as for capital investment responsibilities (such as infrastructure investments in transportation or public housing). In addition, the size and type of municipal expenditure varies considerably across cities in response to the availability of fiscal space: unless financial resources are available (whether through own source revenues; intergovernmental transfers; or access to borrowing and other capital finance), the legal assignment of functions (the cities level of agency) may not be a relevant indicator of the city government's true role in the climate policy arena.

The link between municipal expenditures and urban planning is an important city-level enabling condition. As discussed further in Section 5, city governments may develop climate strategies, city-climate investment pipelines, and aim to implement climate-smart investments in urban infrastructure. To put these plans into action, there must be a strong link between municipal strategies, the city's CIP, and the preparation and implementation of the city budget. Weak links between municipal planning and municipal expenditures, as well as weak budget formulation and budget execution practices at the local level – common challenges in many developing and transition

countries – can form a major obstacle to the implementation of city-level capital investment plans, including climate-related investments.

4.2.2 THE ROLE OF MUNICIPAL REVENUES AND FINANCE FOR MOBILIZING CLIMATE FINANCE

City governments use four main categories of funding and financing tools for urban infrastructure investments and urban services (Figure 6): own source revenues, intergovernmental fiscal transfers and grants, dedicated infrastructure and climate trust funds and borrowing and other types of leveraged finance. Figure 6 below details a sample of tools for each category that cities can use for investment support.

- **Own source revenue-enhancing instruments.** While recurrent municipal revenue sources (such as property taxes and local business license fees) provide a steady revenue stream to fund the recurrent operation and maintenance of urban services and infrastructure, these revenues are seldom adequate to pay for major investments in urban infrastructure. In most low- and middle-income countries, local taxation accounts for only 3 to 5% of all tax revenues (World Bank 2019). Although ensuring effective city revenue administration is a hallmark of good urban management, another avenue for increasing own source revenue collections is by identifying revenue instruments that can be linked directly with urban growth management and compact development approaches through a redistribution of the costs and benefits of new development. These approaches to revenue enhancement -- collectively known as land-value capture instruments – are discussed in greater detail below and in Box 6.
- **Intergovernmental fiscal transfers.** Most city governments receive different types of intergovernmental fiscal transfers from higher levels of government. Depending on the fiscal framework, the mix of grants can be adjusted to focus on climate-smart investments. Such grants could include new or modified performance-based transfers that provide grants to city governments based on qualifying criteria and climate-smart related performance indicators. This could include targeted conditional grants for specific projects that meet qualification criteria for resilience or emissions reduction goals.
- **Dedicated infrastructure and climate trust funds.** Cities may also be able to access grants, concessional loans, or results-based payments from a host of national or international-level authorities, funds, or entities that operate outside the national government budget. These funding sources include established endowments and funds designated for climate-smart activities and investments or environmental protection and remediation purposes established by national governments and donor organizations.
- **Borrowing and leveraging (or blended finance) Instruments.** Where cities are both permitted to borrow and meet creditworthiness standards, they may be able to borrow directly from domestic or international capital markets, including the issuance of a class of green bonds for climate investments. National governments can provide additional support to cities by establishing financial intermediaries (i.e., a

municipal investment fund or bank), and through credit enhancements or guarantee initiatives that facilitate local governments’ access to credit. Indirect borrowing may occur through certain types of public-private partnerships (PPPs) arrangements or the establishment of special purpose (financing) vehicles (SPVs), which are able to borrow, but which remain off the city government’s balance sheet.

- Combined revenue-enhancing & leveraging instruments:** In certain circumstances, own source revenues such as fees and taxes can also be used to mobilize additional sources of finance through the repayment of bonds or by incentivizing new or additional private investment. This includes for example, the imposition of special assessment districts where owners agree to pay an additional tax to finance a bond for improvements that will benefit them directly or a tax increment scheme where future or anticipate property tax revenue increases designated area are used for debt finance for infrastructure improvements. Other land value capture instruments, such as the sale of development rights (e.g. air rights) at the site/project-level can also incentivize private investment by reducing risk and increasing returns for developers.

Figure 6: Map of funding types and innovative city infrastructure finance instruments



Property taxes form the single, most important own revenue source for city governments in most countries and can potentially play an important role in the optimal urban densification (Lall et al., 2021). Argue that property taxes (and related land-value capture instruments, as discussed further below) are generally non-distortionary and have the potential to incentivize optimal urban densification. Higher city revenues from land and real estate can come from (a) improved valuation of land and properties closer to their market value, which deepens the tax base; (b) improved tax compliance, so that more property owners pay land and property taxes, which broadens the tax base; and (c) monetization of underused public land. Establishing land

and real estate tax systems that support economic density is not straightforward (Lall et al., 2021). Strong institutions are essential to defining property rights clearly, ensuring standardized and objective methods of land valuation, and supporting and overseeing the process of land management, land sales, and tax collection. In practice, however, the effectiveness and degree of granularity with which property taxes are imposed and administered varies considerably across regions and countries. High-income countries generate roughly four times more revenue from property taxes (as a % of GDP) than low-income countries (White et al., 2020).

In most countries, including many major cities, intergovernmental fiscal transfers are the main source of local government funding. Intergovernmental fiscal transfers fill the fiscal gap between what the city governments need to spend according to their nationally assigned functions and expenditure responsibilities on the one hand, and what they are able to fund themselves from their own revenue sources or borrowing on the other hand. Because it is generally more appropriate from a technical viewpoint (and politically easier) to devolve functional responsibilities to local governments than it is to devolve revenue sources, intergovernmental fiscal transfers play a significant and permanent role in funding local governments. Even though urban local governments tend to have a larger own revenue base than their more rural counterparts, intergovernmental fiscal transfers nonetheless constitute a significant share of the urban financing sources. For instance, funding from intergovernmental fiscal transfers accounts for over one-fourth of New York City's operating revenues, while the City of London funds over two-third of its municipal expenditures from transfers (Slack 2016).

While own-source revenues are important, they often do not cover city-level expenditures without support from intergovernmental fiscal transfers. While own source revenues are typically a good way to fund city infrastructure and services that are seen to benefit city taxpayers directly, own source revenues are generally a suboptimal funding mechanism for funding city infrastructure and services that are not viewed as benefitting city taxpayers, either because the infrastructure generates externalities for residents outside the city or because the city-level spending is redistributive in nature. Advocating solely for city governments to become reliant on own revenue sources would, therefore, ignore the limited own source revenue powers typically assigned to local governments, as well as the tremendous economic, social and innovation benefits that urban areas contribute to the country as a whole. Urban residents and businesses are often the engines of regional and national creativity and economic growth and the main contributors to the national tax base and GDP output. Residents and businesses generate economic and fiscal benefits for the nation as a whole. Therefore, national governments would be wise to re-invest some of these fiscal resources in sustainable urban development through intergovernmental fiscal transfer systems.

As discussed in Section 3.3, the intergovernmental fiscal system provides the enabling framework for municipal expenditures and revenues at the city level. Unlike national governments—which get to determine their own approach to public financial management and macro-fiscal policies—the legislative and budgetary frameworks within which city government finances are managed are typically defined by the national or regional government. This means that the annual budget cycle for the municipal budgets, the format, as well as many decisions regarding specific municipal expenditures are prescribed by higher-level officials. Likewise, the higher-level

government typically has considerable control over how municipal expenditures are funded, whether expenditures are funded by own source revenues (municipal taxes or non-tax revenues), intergovernmental fiscal transfers or grants, or through borrowing or other forms of capital finance. In short, national governments set the fiscal rules of the game for city governments, and therefore have considerable control over the extent and nature of fiscal decision-making ceded to city governments.

Perhaps the most promising area for unlocking resources for urban investments lies at the intersection of revenue enhancement, land value capture, and leveraging instruments. Although borrowing and debt instruments have the potential to provide city governments access to considerable financial resources for major urban investments, the debt that results has to be repaid from future revenue streams. This means that when cities are cash-strapped (as is often the case), it is difficult for them to access additional debt financing. As such, interventions and innovative financing mechanisms that combine some revenue-generation with access to capital provide a unique opportunity for urban development. For instance, cities may also be able to designate own source revenues or sell development rights to leverage additional private finance. This could include the use of anticipated increases in property tax receipts to issue bonds (tax increment finance) or the sale of development rights to public lands.

In certain circumstances, there can be combined revenue enhancement and leveraging instruments. Own source revenues such as fees and taxes can also be used to mobilize additional sources of finance through the repayment of bonds or by incentivizing new or additional private investment. This includes for example, the imposition of special assessment districts where owners agree to pay an additional tax to finance a bond for improvements that will benefit them directly or a tax increment scheme where future or anticipate property tax revenue increases designated area are used for debt finance for infrastructure improvements. Other land value capture instruments, such as the sale of development rights (e.g. air rights) at the site/project-level can also incentivize private investment by reducing risk and increasing returns for developers.

Finally, it is important to remember that not all urban finance occurs as part of a city government's budget. The conceptual framework for mobilizing urban climate finance at scale (Figure 2) distinguishes between two types of urban climate finance. The first type, municipal finance, which is explored in this section, includes the municipal finances (expenditures and revenues) accounted for on the city government's budget. The second type, urban city finance, refers to indirect or non-municipal city finance, which includes the broad range of funding streams in the urban area that are not part of the city government's own budget. As discussed further below (Section 4.3), urban city finance includes capital investments made by households, businesses, financial institutions, residential housing developers, and commercial building developers, as well as public spending by national government ministries in support of specific urban investments. In these cases, the relevant investments in urban infrastructure are not accounted for on the city government's budget: instead, the role of the city government is that of a convener, facilitator, champion, or regulator to encourage these investments.

Box 6: Land-value capture as an innovative source of urban finance

Cities may use various types of land value capture instruments to generate revenue based on the value of land and property that is improved through public investments. There are several tools cities may use, which vary in terms of the timing, targeting and frequency of collection. These can include upfront, one-time fees for new developments in exchange for permits and entitlements, development rights that can be allocated to incentivize new types of investment, and property taxes based on the assessed value of real property. While each of these can be deployed city-wide, others, such as special assessments, can be linked to specific locations or beneficiary groups within the city.

Development/impact fees. These include requiring new developments to contribute monetarily or in kind to the provision of infrastructure and community services. These may be assessed relative to the size or density of the development, calculated to offset the cost of increasing network or road capacity for the site, or contributions to a fund for supporting expansion of health or education facilities in the city.

Development Rights. Cities can also create markets for private developers to sell different types of rights within their jurisdiction to encourage investment and increases in property values. These may include air rights, which would increase the allowable height of new buildings by selling the “unused” air space from structures that are lower than maximum heights. In other cases, rights to build up to the boundaries of agricultural or open space land may be transferred to already developed areas to reduce pressure for encroachment in these areas.

Property taxes. Property taxes are levied on private property to generate revenue for the provision of basic infrastructure and services. Property taxes take many different forms. Some may depend on the size or area of the property, its use, or its assessed market value. Some countries also allow cities to impose one-time transfer or sales taxes on property transactions within their jurisdictions.

Special Assessments or Betterment Fees. These fees are additional assessments to property taxes that are linked to specific public investments or improvements, often localized to a specific place or beneficiary group. For example, a special assessment could be leveraged to finance a specific improvement, such as a small wastewater treatment plant serving a newly annexed residential area. Or, commercial property owners may agree to a special assessment tax to finance parking facilities that would also benefit them.

Land-value capture revenue streams can also be leveraged for private finance. In the case of tax increment financing, a city or special purpose vehicle would be allowed to issue a bond to finance localized improvements to vacant or underutilized land backed by the anticipated increase in property tax revenue over time following the completion of the trunk infrastructure or retrofits.

4.3 THE ROLE OF PRIVATE SECTOR AND OTHER NON-MUNICIPAL SOURCES OF FINANCE IN MOBILIZING URBAN CLIMATE FINANCE

Municipal finances in support of urban infrastructure investments only provide half the story of financial investment in urban areas. While the city government’s direct role in funding and implementing urban infrastructure is both highly visible and tends to be the main preoccupation of city leaders and administrators, the enabling conditions conceptual framework (Figure 2) suggests that city leaders play another – and equally important – role as conveners, facilitators, and champions of non-municipal urban investments.

In practice, the vast majority of capital investments made within a city’s jurisdiction is controlled and made by private residents, local businesses, banks, and other financial institutions, as well as by public sector actors and agencies managed at different government levels. While these non-municipal sources of urban finances are not on the

city's books, the city government's capacity to bring together these actors in synergetic ways gives proactive city leaders the ability to shape the physical, environmental, and social life of the city far beyond what would be possible by focusing on municipal finances alone.

The critical role of the city government as a convener, facilitator, and regulator of urban finance is often overlooked. In many developed economies, residents and businesses are generally able to obtain mortgages from financial institutions to finance the purchase or improvement of urban property. The role of city governments in these highly developed financial markets is relatively limited and largely invisible, but city governments can be critical to the success of urban property markets. The ability of financial institutions to provide reasonable access to real estate financing is highly dependent on the city government's ability to record property ownership accurately and enforce property liens. When financial markets are less developed, the role of the city government as a convener, facilitator, and regulator becomes even more important. In these cases, beyond their role as property registrar and enforcer of property liens, city officials often need to play a more proactive role in connecting residents and local businesses to financing solutions.

The need for city officials to play a proactive role is as true for more traditional urban investments as it is for climate-related urban investments. For instance, city officials may facilitate private sector funding for green buildings, act as a regulator by promoting clean vehicles and enforcing emissions standards, use spatial planning to imposing parking limitation in the city center to encourage public transit usage, or act as a climate champion by encouraging city residents to use national subsidy programs to move to alternative energy sources. This dimension of city climate finance is explored further below in Section 5.4. To the extent that many of the key areas of urban climate investment fall outside the range of direct responsibility for city governments, these indirect (non-municipal) city climate interventions represent a large opportunity to mobilize urban climate finance.

Therefore, a key enabling element to mobilize urban climate finance at the city level, especially in developing country contexts, is to strengthen city's municipal finance capacities, including budgeting, financial management, contract management, and procurement and through this lay a stronger foundation for climate finance through the improved use of fiscal transfers, own-source revenues, and blended finance instruments.

5. CLIMATE-SPECIFIC ENABLING CONDITIONS TO MOBILIZE URBAN CLIMATE FINANCE AT SCALE

Key messages:

- Cities' climate action plans (or strategies) need to be integrated into their existing planning processes that include strategic, spatial, capital investment and budgetary planning.
- Capital investment planning and prioritization mechanisms need to embed carbon pricing and align with climate objectives and optimal compact spatial planning.
- Municipal finance systems need to link city expenditures with appropriate revenue instruments (own source revenues, transfers, dedicated funds and borrowing or blended finance) for climate-smart projects.
 - Development regulations, fees, and taxes can be used to finance project-level mitigation and infrastructure improvements.
 - Conditional fiscal transfers with climate criteria is an important incentive and opportunity, especially in developing countries, to finance urgent city climate-smart investments.
 - Under the appropriate conditions, land value capture revenues can be leveraged for borrowing or for public-private partnership initiatives to unlock private finance sources.
- Cities must utilize the levers they control and influence as providers and stewards to scale climate finance for urban infrastructure and service delivery, irrespective of the urban climate finance source.
- Cities control the investments they make and the public-private partnership concessions they structure, and these should be leveraged for climate-smart investments.
- Cities can influence private sector financing – including by investors, businesses, and households – through policy incentives, taxation, and fees

Climate-specific enabling elements to mobilize urban climate finance at scale will require: First establishing a city climate action plan (or strategy) that is grounded in data (GHG and climate vulnerability), that incorporates carbon pricing and that addresses Just Transition concerns; second identifying a pipeline of climate-smart projects, prioritized based on climate smart criteria and city-wide systems level efficiency and spatial considerations; and third the ability of cities to mobilize the needed finance from both “on” and “off” budget sources to construct and implement them.

5.1 THE ROLE OF CITY CLIMATE-ACTION PLANS TO MOBILIZE URBAN CLIMATE FINANCE

A city climate action plan is key for city governments to establish the city’s vision, ambition, and strategy for achieving low carbon, climate resilient urban development and mobilizing urban climate finance. Recently, many cities have begun developing climate action plans (Box 7). However, often, these plans are either not ambitious enough to create the climate impact and outcomes needed, or they have advanced to a limited degree in terms of implementation on the ground. To turn these climate action plans into reality and into implementable actions, the plans will need to be well-aligned and integrated into the four existing city planning processes: strategic, spatial, capital investment and budgeting. Though the pathways for cities to develop climate strategies will differ, these climate action plans represent the first steps to ensuring the allocation of strategic, financial, technical, and human resources that support decarbonization and enhance adaptation and resilience in cities.

Box 7: The Global Covenant of Mayors for Climate and Energy have actively promoted the adoption of city-level climate action plans.

The climate and energy commitments in these plans include:

- A community-scale greenhouse gas (GHG) emissions inventory.
- An assessment of climate hazards and vulnerabilities.
- Ambitious, measurable, and time-bound target(s) to reduce/limit greenhouse gas emissions.
- Ambitious adaptation vision and goals, based on quantified scientific evidence when possible, to increase local resilience to climate change.
- Ambitious and just goals to improve access to sustainable energy.
- Plan(s) to address climate change mitigation/low emissions development, climate resilience and adaptation, and access to sustainable energy, including provisions for regular (annual or biennial) progress reports.

These targets and plans must meet or exceed relevant national commitments defined through the relevant United Nations Framework Convention on Climate Change (UNFCCC) and the intended Nationally Determined Contributions, as found in the Paris Agreement. To date, The Global Covenant of Mayors lists 10,550 members from 138 countries, about 9,500 of which have targets for reducing emissions, and 5,500 have greenhouse gas inventories and mitigation plans.

Localized improvements to vacant or underutilized land backed by the anticipated increase in property tax revenue over time following the completion of the trunk infrastructure or retrofits.

City climate action plans should have five main instruments to link to climate change action outcomes. These include a GHG emissions inventory, a climate change vulnerability assessment, a clean energy transition plan, carbon pricing, and “Just Transition” analysis.

1. **GHG emissions inventory and scenario planning.** A GHG emissions inventory and scenario planning is critical for helping cities identify the current and projected sources of green-house gases, target action effectively and track their progress toward their climate goals. Global protocols for conducting GHG emissions inventories vary in their approach and scope, but generally they establish a base year and annually monitor the generation of GHG emissions citywide (at community-scale) focused on city-owned assets (WRI, C40 and ICLEI 2014; WBCSD and WRI, 2015). GHG emissions inventories are limited most commonly to emissions generated from three measures: i) within the boundary of the city, ii) due to energy consumed from activities within the city, and, less often, iii) based on the purchase and use of materials. For a GHG inventory to inform the development of a pipeline of climate-smart investments effectively, it should include a “bottom-up” greenhouse gas emissions inventory and energy consumption assessment using high quality data related to local infrastructure assets.²⁶
2. **Climate vulnerability assessments.** Citywide analyses of the effects of climate change on natural hazards, with vulnerability assessments and adaptation strategies, are another common component of climate action plans. Such assessments involve first identifying climate change and associated hazards that a community will be exposed to – for example, sea-level rise, extreme heat, drought, flooding, or wildfire – and then identifying community infrastructure, assets, and functions that are at risk from these hazards. There are no formal protocols for assessing climate vulnerability, but several guidance notes and tools have been developed for cities to follow.²⁷ See Box 11 for a list of vulnerabilities that should be assessed.
3. **Clean energy transition plans and policies.** Cities also need to establish policies that enable their transition to a clean, carbon-free energy supply. About 50 % of cities’ GHG emissions are tied to the electrical grid, meaning a city’s capacity to reach carbon neutrality depends on its access to clean, reliable, decarbonized electricity (CUT 2018). This means that for most cities around the world, the governance of the electrical system they rely on will have to change. There are examples of varying levels of city control over energy generation and distribution.²⁸ Grid neutrality and market choice policies enable cities, as they would any large customer of an electrical utility, the option to develop and use the electrical grid at cost to transmit and distribute the power they generate. Even more decentralized, but no less important, are policies that incentivize public or private investment in distributed energy generation and storage, such as commercial and residential solar systems, microgrids at community scale, and battery systems. Similar options should be available for cities to use geothermal, tidal, and thermal storage systems, at city or district scale.

²⁶ This involves establishing a dataset that serves as a baseline inventory of carbon emissions from existing local infrastructure systems and related land use, to provide an annual baseline for interpreting the magnitude of carbon emission growth or reduction anticipated from future capital investments.

²⁷ The U.S. states of New York and California have developed model guidance including the New York Climate Change Science Clearinghouse, which includes maps, data, and supporting tools and documents for local governments to use as they conduct vulnerability assessments and prepare climate-smart plans and policies. California developed the Adaptation Clearinghouse, ResilientCA, which provides climate adaptation and resiliency resources, including the Adaptation Planning Guide and Cal-Adapt, which includes a state-wide geographic information system of climate related hazards, New York Climate Change Science Clearinghouse, <https://nyclimatescience.org>; California Adaptation Clearinghouse, <https://resilientca.org/>; California Adaptation Planning Guide, <http://resources.ca.gov/Climate/safeguarding/local-action/>.

²⁸ For example, in the U.S. state of Washington, the Clean Energy Transformation Act requires that all electricity provided to retail customers must be free of all greenhouse gases by the year 2045 (RCW 2019).

4. **Carbon-pricing instruments.** Carbon pricing instruments put a price on CO₂ pollution, thereby discouraging carbon emissions and the use of fossil fuels. They also incentivize investment in cleaner approaches and technologies. These cleaner strategies take many forms, including a carbon market approach (where an Emissions Trading Scheme is established and carbon credits are bought and sold based on a market price per TCO₂e); a carbon emissions tax approach (that can also be in the form of a fossil fuel tax or removal of fossil fuel subsidies); or by establishing an internal price on carbon that is reflected on the municipal balance sheet. This is discussed in detail in the next section 5.2.
5. **Just transition considerations:** The transition to a low carbon resilient global economy is about shrinking carbon footprints and growing shared prosperity through economic security; opportunities for all; affordable, accessible energy and transportation and healthier communities. Just Transition is a framework highlighting public policy and social interventions needed to secure workers' jobs and livelihoods as economies shift towards a low-carbon and climate-resilient economy, and aiming to maximize benefits and minimize hardships for workers and their communities in this transformation. It recognizes that while clean energy transition presents an opportunity to create millions of jobs, some sectors such as energy extraction and production, transport, agriculture and forestry, will undergo dramatic restructuring, impacting some jobs. Just Transition policies therefore aim to ensure that there is a fair, well planned shift and strong public support for the city-climate action plan. (OECD 2017; McCauley et al. 2018)

5.2 THE RISING ROLE AND USE OF CARBON PRICING INSTRUMENTS AT THE CITY LEVEL

There is growing interest among city leaders in using carbon-pricing instruments to incentivize low-carbon investments and mobilize climate finance in urban spaces.

Carbon-pricing instruments put a price on CO₂ pollution, thereby discouraging carbon emissions and the use of fossil fuels. They also incentivize investment in cleaner approaches and technologies. Carbon pricing also helps incentivize investments and behaviors that increase energy efficiency and associated cost savings as well as prepare and position cities to attract more national transfers linked to “building better” and more international climate finance.

Three main categories of carbon pricing instruments exist that can be incorporated as part of city climate strategies to establish incentives for low-carbon solutions:

a carbon market approach (where an Emissions Trading Scheme is established and carbon credits are bought and sold based on a market price per tCO₂e); a carbon emissions tax approach (that can also be in the form of a fossil fuel tax or removal of fossil fuel subsidies); or by establishing an internal price on carbon that is reflected on the municipal balance sheet.

- **Emissions Trading Schemes (ETS)** at the city level: While carbon-pricing instruments have typically been explored at the national and state levels, the growing interest

among city leaders means that cities are emerging as trailblazers for carbon pricing instruments (CPLC 2018). For example, a number of cities have been piloting ETS's, also known as cap-and-trade systems, including the Tokyo Cap and Trade program, the Beijing pilot ETS, and Shanghai ETS. In 2013, Shanghai launched its pilot ETS that covered more than half of the city's carbon emissions, including the power, industry, building, aviation, and shipping sectors. In 2017, Shanghai was selected to lead the development of China's national ETS, and, in 2020, Shanghai opened its auctions to institutional investors for the first time. Developing countries with ETS's also under development or consideration include Ukraine, Colombia, Indonesia, Vietnam, Brazil, Chile, Pakistan, Philippines, Turkey, and Thailand. These countries have relatively well-functioning institutions and private markets as well as large urban areas and populations (ICAP 2021). Cities in these countries need to prepare for this eventuality. See Box 8 for a more detailed city example.

- Carbon emissions tax at the city level:** A few cities have introduced a carbon emission tax instrument that puts a tax on polluters directly related to the level of tons of CO₂ emitted. Unlike an emissions trading system, a carbon tax does not guarantee a maximum level of emissions reductions, but it does provide certainty on the marginal cost of emitting CO₂ (PMR 2019). In 2006, Boulder Colorado became the first city in the U.S. to implement a voter-approved Climate Action Plan tax. The city is supplied by one electric utility (Xcel Energy) that charges residents about \$8 and businesses about \$1.5 per kWh of electric usage. Renewable energy consumers are exempt. The carbon tax revenue is then used to pay for solar rebates, resilience efforts, and sustainability projects (Climate-Xchange 2018). Similarly, Singapore (1975), London UK (2003), and Milan (2018), introduced a vehicle congestion charge where vehicles entering parts of the city with lots of traffic pay a fee. This approach had strong results in terms of reducing congestion, improving air quality, incentivizing modal shift towards public transit, and freeing up public road space for pedestrians and cyclists. The vehicle congestion charge also created an additional revenue stream for the cities that could be used to subsidize public transit.²⁹

However, the vehicle congestion tax may fluctuate with political electoral cycles that are typically short-term relative to the infrastructure investment cycles. As a result, the approach can have mixed results in terms of who benefits and who is left out and in terms of voter support, in particular among lower income households located on the city outskirts who must commute in (Bloomberg CityLab 2018). The choices city governments make about how to spend carbon emissions tax revenues are important for ensuring a fair and well-planned green transition and attracting and sustaining stakeholder and public support. As mention earlier, it is therefore important for the city climate action plan to include Just Transition considerations when establishing carbon emissions taxes. In particular it should incorporate the below four key policy goals.

1. Offsetting the new burdens that a tax places on consumers, producers and communities, especially those with low-incomes;

²⁹ [https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/WKP\(2019\)2&docLanguage=En](https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/WKP(2019)2&docLanguage=En); <https://www.brookings.edu/blog/the-avenue/2019/10/16/congestion-pricing-is-all-around-us-why-is-it-taboo-on-our-roads/>; <https://citymonitor.ai/transport/london-congestion-charge-has-been-huge-success-it-s-time-change-it-3751>; <https://qgwash.org/view/78612/whats-decongestion-pricing-anyway-2>; <https://www.bloomberg.com/news/articles/2020-10-01/congestion-pricing-the-route-more-cities-are-taking-quicktake>

2. Funding efforts to reduce greenhouse gases, including investing in green urban infrastructure;
 3. Improving climate resilience; and
 4. Funding public priorities unrelated to climate (Brookings 2016).
- **Internal price on carbon:** In addition, some cities pursue an “internal price of carbon” approach. An internal price on carbon is a price that organizations, companies, or in this case, city governments choose to apply and incorporate as part of their decision-making process for internal investment decisions and operations. City governments use this as a strategy to manage climate-related risks, prepare for a low carbon transition, increase efficiency, and reduce regulatory risks on carbon emissions. For example, under its city climate action plan, Ann Arbor, Michigan aims to establish an internal price on carbon as a financial mechanism whereby all city service areas integrate greenhouse gas emissions and their impacts into decision making. The action plan is designed to fit into the existing city financial and operating structures. Ann Arbor collects the carbon fee revenue paid by each service area for each ton of CO₂ equivalent and then allocates funds back to departments to support energy efficient investments (A2Zero 2020). Unlike an ETS or tax approach to carbon pricing, internal prices on carbon may offer a solution for city governments that lack jurisdiction to implement a carbon tax or carbon-market approach, or when they are otherwise constrained by budget, politics, or other resources.

In this context, city governments should at a minimum prepare to pursue internal carbon pricing to inform capital investment planning infrastructure and decisions, address the regulatory risk of carbon pricing requirements, and send a signal to private sector actors operating in the city space.

Box 8: City-level Emissions Trading Schemes - Beijing ETS

The Beijing Pilot ETS went into force in November 2013 and covers 45% of the city’s total green-house gas emissions, including both direct and indirect emissions from electricity providers; heat, cement, petrochemicals, and other industrial businesses; manufacturers; the service sector; and public transport. Beijing is one of the two Chinese pilots with ETS regulations passed by its regional congress. In 2020, Beijing also included the aviation sector in its mandatory reporting scheme, preparing the sector for inclusion in the carbon market.

Beijing is the only regional pilot in China that uses a price floor [CNY 20.00 (USD 2.90)] and ceiling [CNY 150.00 (USD 21.74)] as a price stability mechanism. In cases of consecutively high or low average prices, the government can auction or buy back extra allowances. The Beijing pilot has seen a relatively high carbon price level, as compared to other pilots. [The average price in 2020 was above CNY 80.00 (USD 11.59).] The Beijing pilot is open to diversified market participants, including compliance entities, institutional investors, and individuals.

Beijing also has pioneered cross-regional trading with its neighboring provinces. A Framework Agreement for Cooperation on the Study of Cross-regional Carbon Emissions Trading with Tianjin, Hebei, Inner Mongolia, Shaanxi, and Shandong signed in 2013 provided a basis for regional cooperation. As a consequence, several cement companies from the Hebei province as well as companies from both the cement and power generation sectors voluntarily participated in the Beijing ETS in 2014 and 2015. Several companies from the same sectors in Inner Mongolia also voluntarily participated in 2015.

The Beijing Pilot ETS is managed by the Beijing Municipal Ecology and Environment Bureau, which became the competent authority for the Beijing ETS in 2019. Updated implementing legislation is contained in the 2018 Carbon Emission Management and Trading Plan.

Sources : ICAP 2021 ; CPLC 2018

5.3 THE ROLE OF CITY CLIMATE PROJECT PIPELINES FOR MOBILIZING URBAN CLIMATE FINANCE

Identifying, prioritizing, and funding city climate project pipelines is key to achieving climate-smart urban development and mobilizing urban climate finance, irrespective of its source. City infrastructure investment and project pipelines are identified and selected during the city capital investment planning (CIP) process. Infrastructure investments are climate-smart when they serve the social, economic, and environmental purposes for which they were intended, while also reducing greenhouse gas emissions and increasing resiliency to extreme climate events. It is during this CIP process then, that there is a big opportunity to embed climate smart considerations and objectives and create a city climate-smart project pipeline that can also attract climate finance.

Well-developed CIPs can be used to implement urban and economic development plans, extend the service life of assets, and enhance city creditworthiness. City governments typically develop a new CIP in each budget cycle to determine the capital budget allocation for the next fiscal year and to forecast the financial effects those commitments will have in subsequent years.

CIPs are one of the main activities of the finance function of city governments and involve the planning, engineering, and line department experts, as well as elected or executive leadership. CIPs should include estimates of the costs (e.g., capital, operations, maintenance, site design, and lifecycle) of each project over time. They should indicate how the city intends to cover those costs by showing the amounts to be allocated from specific local government revenue sources (e.g., own source revenues, intergovernmental transfers, and user fees or tariffs) to each capital project in the years to come. CIPs should also highlight the public infrastructure investment priorities to local decision-makers, financial stakeholders, and the taxpaying public and how those priorities align with current and future revenue sources (Marlowe et al. 2009).

A climate-smart CIP process allows cities to screen, prioritize, and select low-carbon, climate resilient projects, designs and technologies for the investments made each fiscal year. Such a process builds on the existing procedures already in place, and draws from analysis, objectives, and proposals already available in the city strategic plan, spatial plan and climate action plan. When completed, a climate-smart CIP provides measures of lifecycle costs, GHG emission forecasts, and estimated value of the damage likely to occur from the natural hazards exacerbated by climate change for the portfolio of selected investments. In each case, the selected climate mitigation or adaptation projects are compared to those that would have occurred with business-as-usual decisions. Climate-smart designs and technologies usually have the effect of reducing the annual cost of operations and maintenance while raising capital costs by a small margin. Climate-smart CIP principles have been developed for cities including Kampala, Dar es Salaam, and Durban (C40 2015).

Box 9 suggests how climate-smart considerations can be embedded within the common sequence of decisions made during the CIP process. This draws from recent research and experience in aligning CIPs with screening and modifying capital investments to

meet climate-related goals in diverse settings, including Sub-Saharan Africa, Eastern Europe, and the U.S. (Kaganova 2010; Marlowe et al. 2009; Dowall et al. 2003; Whittington et al. 2015).

Box 9: Five key steps to identify a climate-smart project pipeline through the city’s capital investment planning process.

- Step 1: CIP project proposals are sourced from city strategic, spatial and climate-action plans as well as proposals from various line departments in cities.
- Step 2: CIP project proposals are screened for climate change related risks and vulnerabilities. Based on this screening, the location or the design of the proposals are modified to address identified risks (Box 11). Such an approach will help reduce lifecycle infrastructure cost by avoiding the damages and reconstruction costs of extreme weather events. When it pertains to trunk infrastructure, such an approach will also help reduce indirect losses associated with business interruptions and service continuity.
- Step 3: CIP project proposals are assessed against climate mitigation criteria, including GHG assessments and scenarios, energy and material efficiency across urban systems and carbon pricing (box 10). Based on this assessment, alternative designs, materials, technologies, or service providers are selected. Such an approach will help reduce lifecycle costs by increasing energy efficiency and urban health and environment (by reducing air pollution, heat island, waste etc).
- Step 4: CIP project proposals that have completed the vulnerability screening and mitigation assessment are then prioritized for funding, based on their transformational climate impact, as well as other strategic and political drivers. Projections, scenario planning and systems level thinking can be important elements to assess the potential climate-smart impact.
- Step 5: CIP project proposal pipeline is adjusted to fit within the city’s available capital budget and other funding sources. The formal approval of the CIP and the allocation of funds from the capital budget for the next fiscal year follows. Climate measures, project locations, and project scope, along with lifecycle costs and forecasts of likely revenue streams associated with the projects offer the basis for screening, sorting, and aggregating projects from the CIP for climate finance.

Following these five steps, the climate-smart CIP project pipeline is finally confirmed.

Most cities have yet to embed climate considerations into capital investment planning (Whittington & Lynch 2015). Often the CIP process is conducted, and investment decisions are made without regard to emissions and climate change risks. On the one hand, cities many developing countries do not have a capital investment planning process in place to begin with. On the other hand, where cities do undertake capital investment planning, the needed ‘climate’ data, tools, forecasts or cost analysis may not be readily available or well understood to embed in the process. Supporting city governments in embedding climate considerations in CIPs, and align these across all existing planning processes will be key to mobilize urban climate finance and achieve transformational climate impact at the city level.

Box 10: The internal pricing of carbon can inform CIP prioritization

As explained in section 5.2, an internal price on carbon is a price that organizations, companies, or city governments choose to apply and incorporate as part of internal investment and operational decision-making. Cities undertake this as a corporate strategy to manage climate related risks, prepare for a low carbon transition, increase energy efficiency savings, and reduce regulatory risks on carbon emissions. Such an approach can be an effective carbon pricing tool to inform CIP prioritization – irrespective of the city governments jurisdictional mandate, or budget, political or other constraint.

Box 11: Citywide assessments of climate change risks and other natural hazards³³

To assess the vulnerability of proposed capital investments to damage, loss, and service interruption from extreme events, a climate-smart approach to capital planning needs to include a citywide analysis of exposure to extreme climate impacts and other natural hazards. The assessed hazards should be based on each city's geographic context and regional location. Below are common hazards that are commonly included in assessments using integrated mapping and geoinformation systems data.

Droughts. Climate change increases climate variance. Due to these changes, climate extremes are more likely to occur in frequency and severity. As a result, climate change may result in both increased flooding and increased incidence of drought. In locations where drought may occur, city projects should be evaluated for their ability to withstand prolonged drought. This means an evaluation of the degree to which a project is reliant on water (drinking or otherwise) and the availability of alternative sources.

Earthquakes. Earthquakes are not a climate risk; however, they are a hazard that can threaten built structures and public safety. For this reason, earthquakes are included in the impacts evaluated in the resilience analysis. Ground shaking due to earthquakes can damage structures (including infrastructure) such as those included in a CIP. Based on available data, nearby faults and their role in ground shaking should be evaluated, allowing projects to be adjusted to better withstand the earthquake impacts.

Flooding. Climate change may result in extreme events such as intense storms, which are projected to increase in severity and frequency throughout the world (IPCC 2014). One expected result of an increase in extreme storm events is flooding that escalates both in occurrence and severity. Flooding can be estimated by using hydrologic models to quantify the total runoff from a rainstorm, route of the flood waters, and the resulting impacts.

Landslides. The same data used to create flood maps can also be used to assess municipal landscapes for areas at greatest risk for landslide impacts.

Sea-level rise, storm surges. Climate change may result in increased coastal inundation. Risks result from regular inundation of previous areas that only experienced tidewaters occasionally, more severe coastal storms (including typhoons and storm surge), increased coastal erosion, and increased coastal flooding at river outlets.

Tsunamis. Tsunamis are primarily caused by earthquakes, which are the result of submarine faults and submarine landslides. The location of a submarine fault near a shoreline results in increased tsunami risk after an offshore event. Tsunami risk is assessed by mapping those areas potentially affected by large-scale inundation following a tsunami.

30 Only earthquakes and volcanoes eruptions are not weather dependent hazards and are therefore not climate change related hazards.

Volcanos. Like earthquakes, volcanos are not a climate risk; however, if a volcano is located near a city, the impacts of volcanic eruption will depend on several factors including the direction of the eruption, type of eruption, prevailing wind, and debris flow path. Lahars, or debris flow, from volcanic eruptions tend to follow pre-existing valleys and riverways. The eruption history of volcanos near a city should be evaluated to define the level of risk the volcanos pose to proposed projects.

Wildfires. Wildfire risk is the product of many factors including land cover and vegetation type, slope, wind, temperature, and moisture levels. The most easily mapped data layers are land cover and slope.

Source: Whittington and Lynch 2015

5.4 THE ROLE OF CITY CLIMATE REVENUE AND FINANCE IN MOBILIZING URBAN CLIMATE FINANCE

Finally, it is important to ensure that the climate-smart project pipeline identified and selected in the CIP (or other pipeline), is suitably funded, including from the “on budget” sources of finance: city own source revenues, intergovernmental fiscal transfers, dedicated infrastructure or climate trust funds, or borrowing and leveraged (blended) finance (Figure 6).

5.4.1 CITY OWN SOURCE REVENUES

Municipal own source revenues are an important climate-action tool both in terms of what the city can pay for directly with the revenues from local taxes and fees as well as what the city can influence others to pay through the collection of these taxes and fees. On the one hand, municipal own source revenues allow cities to mobilize greater revenues and create fiscal space to finance city climate-smart investments. On the other own source revenues can act as an incentive for residents, businesses, and other stakeholders to make climate-smart decisions. In the context of the enabling framework for mobilizing urban climate finance (Figure 2), city governments therefore can leverage own source revenues both to provide climate smart investment (left hand side of the framework) and to influence others to make climate smart investment (right hand side of the framework). In developing countries where the nature of local revenue authority and regulatory power of city governments is typically highly prescribed by the national government, city governments often are limited to lever own source revenues only in its role as a provider. City governments that have greater discretion over municipal revenue instruments and rates, such as in many developed countries, city governments can lever own source revenue instruments in its role as a steward to regulate and incentivize local residents and businesses to make climate-smart decisions.

City-level taxes and fees generated through different land value capture tools are increasingly being used as revenue instruments to leverage additional resources and implement adaptation infrastructure developments (box 12). (See, for example, Grafakos et al. 2018; Ingram and Hong 2012; Kozak et al. 2020; Smolka 2013; Welch et al. 2020). The use of development rights to finance green infrastructure is a common land value capture tool. A stormwater retention credit program, introduced in 2013 in Washington, DC is an example of how tradeable permits can be used to attract

private finance for climate-related benefits.³¹ The city requires new construction to meet stormwater management requirements to reduce the burden on treatment plants and to improve regional water quality. Developers can either meet this requirement on site or purchase retention credits from other property owners that have installed additional retention features. The program has attracted private finance, which helps city residents increase the supply of credit-generating projects through the installation of green spaces, roofs, swales, and permeable surfaces that can be traded on this market.

Green taxes and subsidies have considerable potential for incentivizing climate-smart investment and behavior, but have traditionally been implemented at the national level, rather than the local level. By raising the price on polluting activities (e.g., gasoline taxes, carbon taxes, vehicle emission taxes), and reducing the price on green activities (solar roof top subsidies, renewable energy credits) consumers and producers will be discouraged from engaging in polluting activities and encouraged to shift to green alternatives.³² Public finance theory suggests that policy solutions for market failures (such as pollution and greenhouse gases) should generally be assigned to the government level that is best positioned to correct for these market failures. Thus, in the presence of extensive cross-jurisdictional negative externalities from consumption and production activities that lead to the emission of GHG, the assignment of responsibility for green taxation and similar solutions should generally be placed at the higher levels of government. In line with these principles, to the extent that green taxation is pursued (for instance, through gasoline taxes or carbon taxes), these taxes are traditionally considered to fall within the realm of national government.

City own source revenues from taxes and fees are a good way to fund certain climate-smart city investments and services that benefit city taxpayers directly. Although national governments tend to play a leading role in the collection of green taxes, this does not exclude city own source revenues from playing an important role in city climate finance. Under certain conditions, it is more efficient to have city governments provide local-level infrastructure from municipal own revenue sources (i.e., paid by local taxpayers) rather than by providing these goods or services through more centralized mechanisms (Oates 1972). Under ideal conditions, local taxes act like a quasi-user fee for local public services provided, so that decentralized provision of services achieves a greater correspondence between the costs and benefits of city infrastructure and services. Thus, city taxes would be an efficient way to fund specific localized interventions (e.g., flood mitigation investments; tree planting and parks to prevent “heat islands”; and so on) where city residents are the immediate beneficiaries.

By contrast, local taxpayers and city leaders are less likely to fund climate mitigation efforts from own source revenues when the investments benefit people outside the city jurisdiction. Climate adaptation and resilience investments such as early warning systems or coastal protection infrastructure typically benefit an entire country or region and sits beyond the city jurisdiction. City taxpayers expect the bulk of their local tax payments to come back to them (or at least to their neighborhoods) in the form of better urban infrastructure and services. Similarly, to the extent that city climate adaptation investments might disproportionately benefit some groups of city residents over others,

³¹ <https://www.nature.org/content/dam/tnc/nature/en/documents/green-infrastructure-pa-report.pdf>

³² In public economics, such taxes are referred to as “Pigouvian taxes;” economic theory suggests that the tax should be set equal to the marginal environmental damage caused, thus setting the proper incentives to achieving a socially optimal market equilibrium.

the political viability of funding such efforts is more challenging. Using city revenue sources for projects with disproportional benefits will depend on the exact nature and fiscal incidence of the proposed climate investments (i.e., who pays versus who benefits) and the strength of the prevailing social contract. However, if city residents can be made aware that they benefit from the environmental efforts of residents outside their urban area, they may be willing – through their city government – to fund payments for ecosystem services. In such instances it is important for city governments to be equipped with a solid just transition plan and communications campaign.

Table 2 presents examples of how city governments can leverage own source revenues in support of city-climate action. As noted throughout this report, whether any specific revenue instrument truly falls within the remit of city government – or whether city government has control over the tax rates or fee levels – varies from country to country.

Table 2: Leveraging city own source revenues in support of city-climate action

CITY GOVERNMENT OWN REVENUE SOURCES	POTENTIAL CLIMATE-RELEVANT APPLICATIONS
LOCAL TAXES	
Local property taxes (buildings and land)	<ul style="list-style-type: none"> - Provide local property tax credits to incentivize specific climate behaviors (e.g., solar energy credits) - Give preferential property tax treatment for green buildings
Local business taxes (or business license fees)	<ul style="list-style-type: none"> - Give local businesses tax deductions for offering employees public transit programs
NON-TAX REVENUE SOURCES	
Building license fees, development fees, land value capture taxes and fees	<ul style="list-style-type: none"> - Use land value capture taxes and fees to fund Transit-Oriented-Development (TOD) infrastructure
Market fees and rental fees	<ul style="list-style-type: none"> - Ensure market fees and rental fees fund climate adaptation and mitigation measures
Transit fees	<ul style="list-style-type: none"> - Subsidize or eliminate transit fees to increase public transit ridership.³³
Water and sanitation connection charges and tariff structures	<ul style="list-style-type: none"> - Establish differentiated connection charges and tariff rates for households and businesses in neighborhoods or for structures with optimal density
Solid waste management fees	<ul style="list-style-type: none"> - Add surcharges for specific types of waste disposal - Encourage waste reduction and recycling
Fuel levies and road tolls	<ul style="list-style-type: none"> - Increase fuel levies and road tolls (including congestion pricing) to reduce GHG emissions from road transportation and promote climate-smart public transit alternatives
Parking fees and parking structure taxes	<ul style="list-style-type: none"> - Increase parking fees in city centers to discourage single-car commuting - Increase public transit usage, reduce the demand for urban parking space - Increase urban green space, and promote densification

33 <https://cities-today.com/what-benefits-can-cities-expect-from-fare-free-transport>

Property taxation is an obvious candidate for promoting climate-smart policies because it is the main local tax source for most cities. This can be done in different ways. For instance, New York City provides a property tax abatement to properties that use solar power.³⁴ Another example is Cincinnati, Ohio, which—since 2007—has provided major property tax abatements and exemptions to encourage the construction and renovation of commercial and residential properties that achieve LEED certification.³⁵

Property tax special assessments have also been used to leverage finance for climate change mitigation efforts. These tools can form the financial basis for densification around transportation corridors and for increasing public transportation coverage. For example, in Fairfax County, Virginia, a special tax district (Dulles Rail Transportation Improvement Levy) was established to finance part of the extension of the metro rail Silver Line into the area. The special tax district was justified by the argument that firms and residents in the district would benefit from the improved access to public transit and property value enhancements that the proximity would create.³⁶ In another example, the city of Miami, Florida has added an additional property tax assessment to residences located along the waterfront area. This assessment will support the city’s “Living Shoreline” initiative to mitigate sea-level rise through the reintroduction of mangrove clusters and other nature-based approaches, thus enhancing the property value.

Box 12: Climate-related land value captures to enhance revenues

Development and impact fees often include payments to support infrastructure improvements for new and denser developments (such as expanding water or wastewater connections). To make a more direct climate impact, some cities require climate-smart and energy efficient development conditions from private developers before they build. These requirements can be design and construction improvements that builders must provide, such as green-certified buildings, passive heating and cooling, setbacks, and green spaces. The World Bank, under the Cities Resilience Program (CRP), supports these types of requirements. For example, in Porto Alegre, Brazil, a ground-lease arrangement helped secure financing for redevelopment and flood protection of a historic waterfront district.

The ability of city governments to use own source revenue instruments as a climate finance tool depends considerably on the autonomy they have over their revenue. In general, cities in less developed economies operate in a more centralized intergovernmental context and have less discretion over their own revenue instruments compared to cities in more highly developed economies, which are typically more decentralized. For instance, outside the OECD countries, it is common for intergovernmental fiscal systems to rely on a “closed list” approach to local revenues, which is when the national government defines the list of revenues that local governments may collect. This results in very few cities in developing countries having the power to establish and define their own local revenues in a climate-smart

34 <https://www1.nyc.gov/site/finance/benefits/landlords-solar-roof.page>

35 <https://ohiogreenbuildinglaw.wordpress.com/tag/green-building-incentives/>
http://resources.cleanenergyroadmap.com/SCPP_Z_green-building-incentives.pdf

36 <https://www.fairfaxcounty.gov/taxes/real-estate/tax-rates>

way. For instance, Martinez-Vazquez (2020) identifies a sizeable group of countries where subnational governments have been assigned traditional levies that have a potential bearing on green taxation, such as taxes on motor vehicles, road taxes, water supply, sewage and waste charges, but which generally are not linked to emission or environmental performance, and where subnational governments have not been granted any authority over revenue yielding non-traditional green levies.

Political-economic constraints and social equity considerations may also shape the use of municipal revenue tax and fee instruments for urban climate finance. Elected city leaders often face considerable voter pressure to keep local tax rates, tariffs, and user fees as low as possible. For instance, many municipal water and sanitation providers in developed economies collect water and sanitation tariffs (partially or fully) in proportion to water consumption. For equity reasons, this may not be an appropriate solution in a developing country context, where cities may have a large number of indigent households. As explained in section 5.2, (green or carbon pricing) tax policies may fluctuate with political electoral cycles that are typically short-term relative to the infrastructure investment cycles and it is important that social equity and just transition considerations, especially for lower income households, be incorporated to ensure that there is a fair, well planned shift and strong public support for such measures.

5.4.2 INTERGOVERNMENTAL FISCAL TRANSFERS

Intergovernmental fiscal transfers from national (or regional) budgets to city level budgets are perhaps the most overlooked opportunity to mobilize urban climate finance at scale. Higher-level governments face a range of policy options when providing local governments with funding through the intergovernmental fiscal transfer system, ranging from unconditional or equalizing grants, categorical grants (or conditional block grants), to earmarked conditional grants (Boadway et al., 2018)

Unconditional and general-purpose intergovernmental grant transfers: Unconditional and general-purpose grant transfers offer little incentive to cities increase their share in climate related spending as they are under no obligation to do so. In public policy discussions on the role of intergovernmental fiscal transfers, unconditional transfers, and horizontal allocation formulas almost always get most of the attention. For instance, the inclusion of forest cover as an allocation factor in the formula for India's equalization grant by the Fourteenth Finance Commission in 2015 was lauded as a move in support of environmental policy objectives (Institute of Economic Growth, Delhi, 2019). Even though distributing resources to encourage forest conservation is clearly a positive move, unless accompanied by corresponding interventions to improve subnational environmental planning and resource allocations, the inclusion of forest cover as an allocation factor in an unconditional grant formula by itself does little to improve climate-related spending.³⁷ In reality, it is largely the vertical allocation (i.e., the size of the grant) and the conditionality of a transfer scheme (i.e., the extent to which it is successful in directing additional spending on a specific function or purpose) that unlocks the power of local governments. This power is unlocked first by providing local governments with greater financial resources to do things that they couldn't afford to do based on their

³⁷ After all, the resources that are distributed by this formula are unconditional in nature, and subnational governments are under no obligation to increase their climate-related spending.

own revenue sources alone. Second, the power improves the allocative efficiency of local government spending (Boex et al., 2021).

Conditional intergovernmental grant transfers: Conditional grants for recurrent and capital purposes, are generally well equipped for designing and implementing climate specific transfers to subnational governments and can provide a useful and appropriate entry point for city-level climate action. Climate-focused conditional or performance-based grants can be targeted to achieve specific policy results, whether they are related to climate mitigation or climate adaptation.³⁸ In the realm of mitigation, conditional grants from the national government can incentivize specific climate actions by city governments, for example in the Netherlands, where subsidies are provided to city governments to implement specific mitigation-related policies. These include ensuring that municipal buildings adhere to green build standards, encouraging the use of sustainable energy, and engaging in road infrastructure investments to improve traffic flows (Martinez-Vazquez 2021).

Conditional grant transfers are also suitable mechanisms to provide funding to local jurisdictions for promoting urban climate resilience and adaptation-related investments. Conditional grants develop the minimum conditions for a city to participate, performance measures, and a menu of eligible expenditures. A good example is the Local Climate Adaptive Living (LoCAL) conditional grant program, supported by the United Nations Capital Development Fund (UNCDF). LoCAL provides support for governments to strengthen (or introduce) performance-based fiscal transfer systems for climate change adaptation.³⁹ The program works through providing additional support to participating local governments for eligible climate investments through existing fiscal transfer systems.

In the case of Tuvalu, LoCAL is used as the basis to design the first intergovernmental fiscal transfer system. Key inputs into Tavalu's fiscal transfer design include a climate risk assessment, the linking of planning and budgeting practices to the risk assessments, and improved procurement, equipment and reporting systems to track investments. Typical expenditures include improved IT and data systems, small infrastructure investments (e.g., water supply, drainage systems), and climate retrofits. Apart from on-budget transfers, Tavalu's program can also leverage additional financing from multilateral development banks, bilateral donors such as the EU and climate funds such as the Green Climate Fund (UNCDF 2019).

One advantage of the performance-based approach to conditional transfers is that it encourages the mainstreaming of climate adaptation priorities at scale and prior to climate-related natural disasters. Post-disaster recovery infrastructure spending is often reactive and does not prioritize resilient infrastructure investments (relative to other investments) after a disaster. Aligning fiscal transfer systems with climate adaptation can provide cost savings in the long run by reducing exposure of all investments to climate change and other natural hazards.

³⁸ Conditional grants typically impose specific conditions on the use of grant resources, for instance, by limiting the menu of investment options (or in fact, by earmarking funding to a specific investment project). Performance-based grants are a special type of conditional grant that not only imposes minimum access conditions, but that rewards good local practices (such as the adoption of a City Climate Strategy) by providing a grant bonus to well-performing local jurisdictions.

³⁹ The initiative began in 2013 and has supported performance-based resilience grants to totaling 16.5 million to 15 countries and 99 local governments in Bhutan, Lao PDR, Tanzania, Mali, Ghana, Tuvalu, Bangladesh among others.

It is not unusual for ministry officials with responsibility for implementing climate-smart urban infrastructure to prefer direct, centralized action over conditional grants. Like other aspects of intergovernmental finance, the design of intergovernmental fiscal transfer schemes – as well as the volume of resources that is provided through these schemes – is defined not only on their technical merits but also by important political and economic drivers. These drivers include a desire by higher-level governments in many countries to retain control over policy implementation. As such, when given a choice, ministry officials in many countries – especially in those that lack extensive experience in collaborative, decentralized governance – would prefer to implement climate-smart urban infrastructure investments directly, rather than provide conditional grants for this purpose to city governments. As a result, in many developing countries, government ministries – including those responsible for urban development, local governments, or the environment – tend to manage city climate investments centrally (thereby bypassing the municipal budget). Where this occurs, the legal functional powers of city governments over their urban development functions are diminished, and the role of city leaders is shifted from provider of city climate investments to convener and facilitator of city climate infrastructure.

5.4.3 DEDICATED INFRASTRUCTURE AND CLIMATE FUNDS

Another type of transfer that city officials may tap into include grants, results-based or performance payments from national parastatal entities, dedicated climate trust funds, sustainable development organizations and other specialized authorities. Given the global nature of climate change, there are a large number of international sources of climate finance, and a growing number of these are focusing specifically on cities. Such sources of grant climate finance is especially needed in rapidly urbanizing cities in developing countries, particularly with low income, low capacity and high vulnerability country contexts. Such support is also important in cities where local level taxes are small and irregular (World Bank 2019) and where the willingness and ability for city taxpayers to contribute to global climate change reduction may be lower than in more developed economies.

In developing countries, most of the dedicated international climate finance invested in urban areas flows through the national level government to the finance ministry and line ministries. An alternate funding route – as discussed further below – would be for national governments to funnel international and national-level climate finance to city governments in the form of intergovernmental fiscal transfers or grants for the purpose of funding city-level climate action. Box 13 provides an overview of the key international dedicated climate trust funds.

Box 13: An overview of key dedicated international climate funds that support climate-smart urban development

There is a growing number of dedicated international climate funds that are supporting low-carbon and resilient urban development through national ministries or through city governments directly. These climate funds may specialize in specific sectors, financial products, or at specific stages of the project development cycle. For example, the [City Climate Finance Gap Fund](#), implemented by the World Bank and European Investment Bank, supports city governments directly with upstream technical assistance for climate-smart city plans and identifying bankable climate mitigation and resilience projects at the pre-feasibility stage. The [Resilient City Development Program](#) (RECIDE), funded by Spain and the European Commission, aims to provide EUR 100 million in guarantees. RECIDE will also distribute EUR 14 million in technical assistance to cities in Sub-Saharan Africa and the EU Southern Neighbourhood to help ministries mobilize greater levels of private investment in resilient urban infrastructure. The [International Municipal Investment Fund](#), implemented by the United Nations and Meridiam, bundles climate investment opportunities to crowd in institutional investors. The [Shanghai Green Infrastructure Fund](#) leverages private sector investments through blended finance mechanisms. The [Green Climate Fund's Green Cities Facility](#), implemented by the European Bank for Reconstruction and Development, supports cities by providing concessional finance for district cooling, green buildings, and waste management. Similarly, the International Finance Corporation (IFC) and U.K. government have partnered to introduce the [Market Accelerator for Green Construction Program](#) (MAGC) to incentivize the scaling up of green construction. The Transformative Carbon Asset Facility is developing innovative results-based payments from a new class of carbon assets. It will measure and pay for emissions reductions achieved through investments in low-carbon cities, solid waste management, and renewable energy, thereby providing a potential additional revenue stream to project developers.

5.4.4 CITY GOVERNMENT BORROWING AND LEVERAGED (BLENDED) FINANCE

Another way for city governments to pay city climate-smart projects is to borrow money from banks or leverage private finance and co-investors. In an ideal setting, long-term investments in sustainable urban infrastructure are best paid for over time through loans or other forms of capital finance, rather than from recurrent revenues. But as explained throughout the report cities start from different places in their ability to access borrowing or tap private markets.⁴⁰ On the one hand large cities in high-income countries, such as London, Copenhagen, Stockholm, New York, San Francisco, and Tokyo, have sound fiscal policies, established and well-functioning private markets and have high credit ratings to access private infrastructure investment and debt financing. For these cities, access to credit matters for the extent to which they can increase the pace of climate-smart investment in a fiscally responsible way and attract private investment at scale. Even in these highly empowered settings, however, climate impacts threaten to siphon funds away from proactive climate investments to address

40 For example, in accordance with guidance from the Government Finance Officers Association, <https://www.gfoa.org/>

emergencies and reconstruction in the wake of extreme weather events and thereby constrain credit access.

For the majority of cities across the world however, and especially in rapidly urbanizing cities in developing countries, access to borrowing and private finance is not an option. Most cities in developing or emerging markets operate in more interdependent fiscal arrangements with state and national governments playing key roles. National treasury authorities tend to have strict limits on subnational borrowing to prevent fiscally irresponsible behavior. Access to private markets and financing is limited by their low rates of creditworthiness, prohibitions on borrowing, the scope of their powers of taxation, and their capacity to efficiently manage expenditures (World Bank 2013). As a result only 16% of developing countries grant taxation authority to local governments and more than half (56%) of developing countries do not allow cities to borrow, excluding them from issuing bonds. Of the 500 largest cities in developing countries, 21% have an international or local credit rating. Of the 43 largest cities in low-income countries, only two have investment grade ratings. A total of 74 of these 500 largest cities have issued municipal bonds, which are clustered primarily in high- and upper middle-income countries (49 cities), with only one city out of 43 in low-income countries (Zimbabwe) having issued a municipal bond (World Bank Municipal Finance Database 2019). Only a handful of cities in developing countries have issued green bonds.⁴¹ More must be done to prepare cities to access the domestic or international finance necessary to transition to climate-smart infrastructure. National and state governments can work with cities to strengthen the capacity to manage finance for improved creditworthiness.

Where appropriate, promoting prudent city government access to borrowing for climate-related investments (potentially through concessionary lending) can help advance an enabling environment for climate-smart infrastructure. The ironic challenge is that under weak accountability constraints and lax fiscal controls, local elected officials are more likely to borrow, albeit not necessarily in a way that effectively promotes urban development objectives. In contrast, when local officials have an adequate economic base to borrow and are accountable to their constituents, local governments either already have (some degree of) access to finance or are often cautious taking on debt (e.g., South Africa).

Cities need enhanced financial management systems and capacity to mobilize new urban climate finance from borrowing or leveraged private finance. This includes the quality of municipal financial data, balance sheets and accounting information systems, which will provide a better understanding of the liabilities and risks a city would present in borrowing. On the supply side, the nature of domestic capital markets will affect the amount of financing available, terms and type of instrument (White et al., 2019). Finally, the potential for cities to utilize revenue enhanced and leveraging instruments such as public-private partnerships (PPP), land value capture (LVC) and tradable permits also depend on legal and regulatory frameworks that determine whether these are allowed, what rights are afforded to municipalities to enter into contracts, how much can be borrowed (and in what currency) and how to deal with default or arrears (Floater et al., 2017; WEF 2013).

41 These include Mexico City, Johannesburg, Cape Town in South Africa and most recently, Ghaziabad in India.

Credit enhancement facilities have been used to assist less creditworthy municipalities access credit in contexts with incomplete regulatory frameworks.

These tools allow some of the risks taken by borrowers to be assumed by an intermediary, such as a national government, donor agency, or development bank to facilitate the transaction. Some examples include the Philippines and support facilities through the World Bank, USAID, and others (White et al., 2019). In principle, there is an incentive for national governments and donors to subsidize credit for these purposes given that some of the benefits of climate investments (such as GHG emissions reduction) will accrue beyond city boundaries (and the scope of municipal budgets). However, without careful design, targeting, and management of these programs, they can create distortions to credit markets and limit the further expansion and competitiveness of the financial sector in the long run (Schmidt 2014).

A city that borrows, also has to repay the loan and this becomes a reoccurring cost for the city that should not be overlooked and considered with care. A city's ability to repay the loan depends critically on the size and reliability of municipal revenue streams and intergovernmental fiscal transfers. The financial practices that can allow cities to access financial markets accrue incrementally and, as they are established, they are reinforced by market signals such as audits, credit reports, credit ratings, and interest rates on debt. Legislation that allows city governments greater power to collect own source revenues as well as enable borrowing are barriers that many cities in many developing countries may need to overcome. Yet, whether it is through the dedication of particular sources of revenue for debt service, or the overall management of funds to result in an operating surplus and capital reserves for debt service, cities can start small and build their capacity to manage debt. Conditional grants and concessionary loans may be precursors to market-rate debt. States and national governments may assist with instruments to pool city capacity, offer matching funds and guarantees, and provide debt at more favorable rates, so that cities may invest in ways that assist nations in meeting Paris Agreement commitments to reduce GHG emissions or to become more resilient to disaster (White et al., 2019).

For decades, cities in developed countries have received significant inflows of private finance into urban infrastructure through public-private partnerships (White and Wahba 2019) Contracting or public-private partnership (PPP) arrangements are those in which private funds are secured as equity contributions and/or debt for infrastructure projects and where the returns are secured through the future revenue streams directly attached to those projects. PPPs can also include when funds are indirectly borrowed for projects and repaid from the general revenues of the city government/utility through dedicated fee arrangements. For example, parts of such iconic projects as the London Underground and Sydney Harbor Bridge were financed through PPPs. PPP activity in developing countries at the subnational level is estimated at around USD 10 billion annually, which is less than a fifth of national PPP volumes.

Identifying bankable urban climate-smart projects that have viable business models for private investment is key to attracting private finance. Cities often lack the capacity to build effective business cases for infrastructure investments that can attract private investment. Similarly, private and institutional investors may lack familiarity with urban infrastructure investment, or the way that climate finance operates (ODI 2019). Therefore, it is important that cities either build the capacity or seek third party support

from intermediaries and preparation facilities, to build and deliver a clear business case with well-informed project financial structuring and risks assigned to the most appropriate actors in a strong, contractual framework. Innovative financing may be an option.

Development financial institutions, especially multilateral development banks, have a role to play in expanding project preparation support to cities, improving project pipelines and allocating financial risk. They may provide structural or technical support to cities, aggregating projects to facilitate more direct access for cities to financial markets, and reducing risk for private sector investment. National development banks, though they have not historically focused on climate, can benefit when cities establish strong climate measures for their investments using a climate-smart approach to CIPs. At the same time, national development banks are aware of local barriers and opportunities, and can help cities access large numbers of public, private, and institutional investors.

5.5 PRIVATE SECTOR AND OTHER NON-MUNICIPAL SOURCES OF CITY CLIMATE FINANCE

The discussion thus far highlights how cities can mobilize climate finance through their role as *providers* and what they pay for “on-budget” and their role as *stewards* and what they influence others to pay for “off-budget”. Table 3 provides a snap shot of strategies for mobilizing “off-budget” sources of finance for climate investments in urban areas, by sector. The ways in which city officials can support the financing of “off-budget” city climate investments vary considerably among countries and sectors. Additional discussion of specific climate interventions can be found in Part 1 of this report.






Cities can mobilize “off-budget” sources of urban climate finance from the private operators and developers through the design and structuring of thoughtful public private partnerships and concessions which establish the objectives and parameters of the contract to be in line with climate-smart objectives and criteria. Because PPP concessions must be structured to be bankable and attractive to private sector sponsors, city administrators’ direct control over these investments is lower than circumstances where cities are investing their own funds into climate-smart infrastructure. Beyond the scope of channeling funds within their direct control into climate-smart investments, cities can influence private funds – including those from investors, developers, businesses, and households – through policies, zoning, taxation and the creation of standards.

City governments can further lever “off-budget” sources of urban climate finance from businesses and households through their role as stewards, by setting regulations and incentives. For instance, as a regulator, the city can implement land use controls, development and building standards in ways to encourage private sector investment in critical emissions-generating sectors including construction, energy, and transportation. They can also use regulatory tools to limit low density expansion and

promote linkages with alternatives to private vehicle use (walking, bicycling, bus, and rail networks). As conveners and facilitators, they can promote other climate-smart public programs and initiatives targeted at firms and households including subsidies, credits, and tax rebates to further enable private investment in climate solutions.

City governments can mobilize “off-budget” climate-smart investment from other investors to finance or co-finance urban climate-smart projects that are feasibly sound and bankable. Most city leaders and municipal financial officials are primarily oriented towards making sure that the city government prepares its budget on time; that revenues are collected; that spending properly accounted for; staff and contractors are paid; and that the city budget is balanced for. To the extent that the focus of city officials is on internal (municipal) financing process—especially in city organizations where municipal capacity and staffing is limited—opportunities for the city government to promote “off-budget” climate interventions that offer higher value-for-money may be overlooked.

Table 3: Strategies for mobilizing non-municipal finance for climate investments in urban areas

KEY SOURCES OF URBAN GHGS	NATIONAL LEVEL STRATEGIES	PRIVATE SECTOR AND HOUSEHOLD STRATEGIES	CITY GOVERNMENT (AS FACILITATOR AND REGULATOR) STRATEGIES
	<ul style="list-style-type: none"> - Establish vehicle emissions standards - Provide tax exemptions for alternative fuels - Offer incentives and subsidies for electric vehicle purchase - Close the viability funding gap for transport 	<ul style="list-style-type: none"> - Offer green bonds for public transport facilities and fleet purchases - Provide leases for electric bus fleets 	<ul style="list-style-type: none"> - Develop green fleet procurement standards - Integrated transit-oriented design, planning and land value capture - Develop a parking management policy - Introduce congestion pricing
	<ul style="list-style-type: none"> - Introduce energy-efficient construction, appliance, and design standards - Offer incentives for green building design and construction 	<ul style="list-style-type: none"> - Offer green mortgages for housing purchases 	<ul style="list-style-type: none"> - Create zoning and land use regulations to promote density and mixed use - Establish ecosystem services for land preservation
	<ul style="list-style-type: none"> - Provide subsidies for solar panel installation - Offer grid neutrality for purchase of renewable power 	<ul style="list-style-type: none"> - Issue green bonds to build power generation facilities - Introduce on-bill repayments 	<ul style="list-style-type: none"> - Introduce a net metering policy - Transition to solar-powered streetlights
	<ul style="list-style-type: none"> - Issue waste disposal and recycling standards and guidelines - Establish deposit/refund programs 	<ul style="list-style-type: none"> - Issue green bonds to build waste processing or recycling facilities - Establish environmental funds for preservation and remediation 	<ul style="list-style-type: none"> - Provide recycling and/or sorting incentives for household waste - Introduce plastic bag levies
	<ul style="list-style-type: none"> - Launch carbon trading programs - Leverage taxes and/or penalties for emissions or discharges 	<ul style="list-style-type: none"> - Issue green bonds for industrial estate development, and localized energy, waste processing, and recycling facilities - Establish environmental funds for retrofitting and remediation 	<ul style="list-style-type: none"> - Integrate eco-industrial parks into planning - Establish a tax holiday⁴² and/or abatement for green industry location

42 A tax holiday is a government incentive program that offers a tax reduction or elimination to businesses. Tax holidays are often used to reduce sales taxes by local governments, but they are also commonly used by governments in developing countries to help stimulate foreign investment.

6. MAINSTREAMING CLIMATE-SMART URBANIZATION AND INVESTMENT

Key messages:

- The level of agency cities have to mainstream climate change and mobilize urban climate finance is correlated to the extent of their autonomy and capacity to deliver on their roles as a *provider* and *steward*. This is also closely linked to the countries stage of development (Figure 8).
- The ability of cities to mobilize climate finance depends in part on broader shifts in the decentralization and empowerment of local governments to better allow them to plan and respond to local needs, implement investments, and mobilize revenues for these purposes.
- In terms of the spectrum of enabling conditions, cities in contexts with low levels of empowerment and capacity should first focus on strengthening fundamentals of planning and municipal finance, moving toward more complex instruments that can leverage own-source revenues to other sources of finance (Figure 8)
- For many cities in developing countries improvements in city finance fundamentals - such as financial management capacity, accounting systems, transparency, capital investment planning, budgeting and expenditure management and procurement - would increase the overall revenues available for climate-smart activities and potentially serve as a signal for creditworthiness for private sector lending.
- In many countries, these improvements in city finance capacity and performance can be supported through performance-based or conditional (green) intergovernmental transfers.
- In general cities progress along a continuum of four stages of mainstreaming climate change considerations, moving from basic knowledge and awareness, toward introducing, and integrating planning and finance systems into their operations, changes which occur in line with consistent policy and regulatory support at the national level (Figure 9).
- It would be possible for cities to leap frog these phases. For example small cities or peri-urban areas that are rapidly urbanizing, can leap frog over the carbon intensive urban forms, energy sources (such as fossil fuels) and technologies that characterized the earlier urban transition in developed countries, and build in ways that enhance adaptive capacity and break the cycle of disaster-induced poverty, while increasing savings from avoided infrastructure and human losses.

Building from the previous sections of the report, section 6 provides general considerations and stages for mainstreaming climate change considerations in cities and urban systems.

6.1 THE LEVEL OF AGENCY CITIES HAVE TO MAINSTREAM CLIMATE CHANGE CONSIDERATIONS WITHIN THEIR COUNTRY CONTEXT

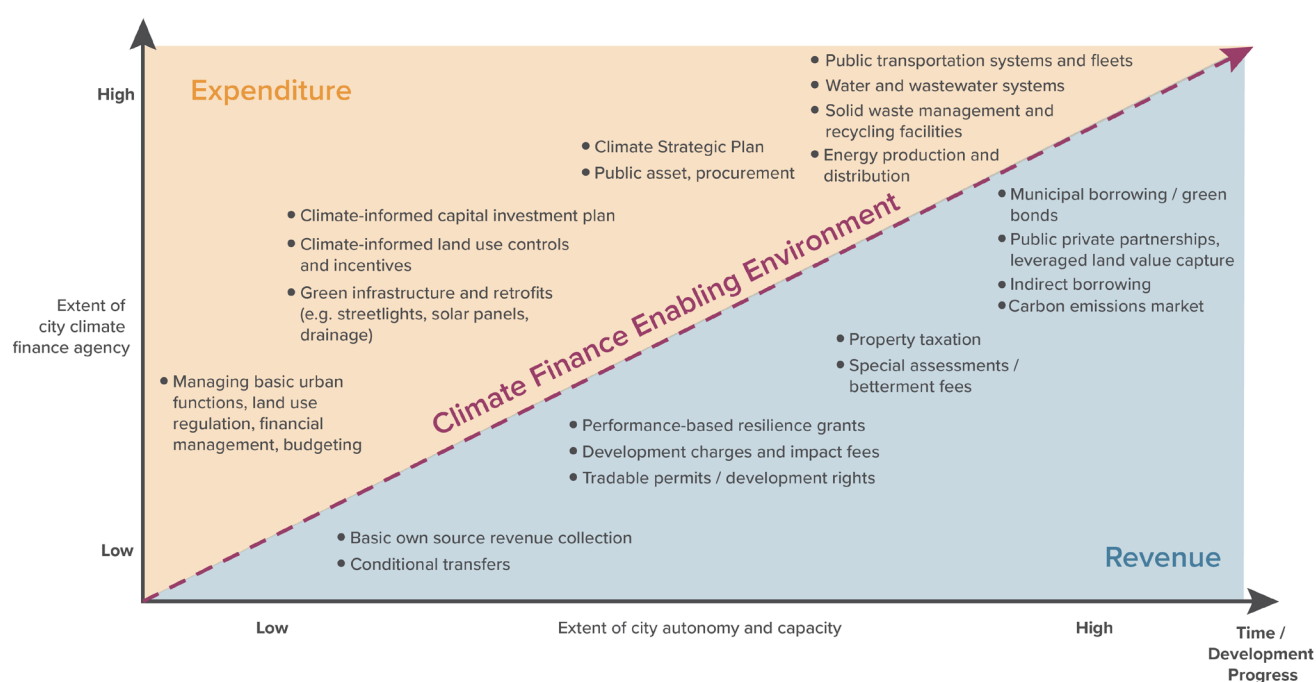
The ability of a city government to engage in city climate finance—both as a provider of city infrastructure and services, as well as a steward that plans, regulates and champions—depends to a large extent on the country-level and city-level enabling environments. However, the evolution of the enabling environment for city climate finance is not a linear process. For example, the unforeseen effects of climate-related crises and disasters may increase pressure on national governments to decentralize power and resources to local governments for adaptation and mitigation pursuits. While each country is unique, there is a general observed trend that the nature and composition of intergovernmental systems evolves over time and with a country's state of development from more centralized to more decentralized (Boex et al., 2021). This trend has three major features:

- **First, within the public sector, the nature of national government institutions tends to evolve along the development spectrum.** In low-capacity, low-income country contexts, national government administrations tend to function as traditional, hierarchical (top-down) and bureaucratic administrative entities, which leave little or no decision-making space for local governments. As a country moves along the economic development spectrum, national or regional government administrators tend to adopt more results-oriented and collaborative public administration approaches, and thus, start seeing local governments as a potential partner within the public sector, rather than as a competitor for scarce resources.
- **Second, the nature of devolved institutions and devolved finance tends to change as a country's income levels increase.** The administrative and governance capacity of city governments tends to improve over time and with development progress. Similar to the central level changes, local government administrations in low-income countries and low-empowerment contexts, to function as hierarchical, rule-based, and bureaucratic administrative entities, while public participation is hard to achieve but can progress toward being more inclusive, transparent and responsive (Collier 2010). In higher income and more empowered contexts, these entities begin to function more as collaborative, high-performing local government organizations (HPLGOs) which are capable of proactively identifying and responding to the needs of local constituents.
- **Third, as a country's state of development evolves, the balance between different modalities of decentralization and localization tends to shift away from national government institutions towards greater reliance on devolved institutions (i.e., regional, and local governments) and devolved financing mechanisms.**

As a result of these three different reform trends, the intergovernmental framing of the city climate finance agenda is shaped quite differently along the development spectrum discussed in Section 2 (Figure 7). As earlier noted, on one end of the spectrum, in more mature economies, city governments tend to operate in the context

of having reasonably well-functioning intergovernmental systems, private markets and enjoy relatively high levels of decision-making power and administrative capacity—along with considerable financial resources and fiscal powers. Efforts to strengthen the city-level climate agenda, therefore, tend to focus on identifying the most effective climate finance instruments to build on these capacities, their best-suited conditions, and how to establish market incentives for private sector uptake.⁴³ Cities in these countries, along with cities in a number of middle income countries where fundamental planning and management capacities are strong, can prioritize.

Figure 7: Progression of city climate finance agency



Low-income, conflict-affected, and fragile-state countries often feature limited functioning intergovernmental systems, low capacity city-level institutions and limited private sector markets. In this context, the first step toward better, greener urban investment decisions is to improve the fundamentals of city government budget and finance systems. These local government institutions often struggle to meet existing basic service demands, so the implementation of a climate finance agenda should begin by strengthening the fundamentals of municipal finance systems themselves. Addressing the fundamentals of city management and finance can be done while identifying and implementing alternative climate finance instruments that are fit-for-purpose. This can include regulation and enforcement of the built environment and the imposition of development or impact fees that can be used for climate purposes. Also, as many local governments rely on fiscal transfers for capital investments, it is possible for national governments to incentivize local governments to prioritize climate-smart investments through the design of fiscal transfer programs.

43 For innovative financing examples in urban green transport and green buildings please refer to Part I of this report.

Strengthening the intergovernmental context for city climate finances will likely be a gradual reform process. For example, in some countries, city governments may have limited or fragmented control over built environment regulation, capital investment prioritization and revenue mobilization which would impede their ability to plan and implement climate-smart investments. Or, city leaders may see climate change adaptation and mitigation action increasingly important – in the wake of a natural disaster for example – but may find little regulatory or fiscal support for this agenda from the national level. This would limit the tools and incentives city governments have to prioritize climate-smart investments and convene other potential resources for these goals.

National governments play a key role in shaping the landscape of revenue sources within which city governments can operate. Reforms to the intergovernmental fiscal transfer system including the assignment of revenue sources to cities and local governments, such as the ability collect (and keep) different types of taxes and fees, along with linking transfers to designated expenditure functions, both of which can also be amended to encourage cities to focus on climate. Improvements to regulatory and legal frameworks that can support municipal borrowing will also allow cities to unlock additional sources of finance, including setting the ‘rules of the game’ governing PPP arrangements and different types of land value capture tools, such as tradeable rights, and revenue-leveraged borrowing. National governments can also shape the regulatory and policy and macroeconomic environment for supporting domestic capital markets as a potential first source of leveraged finance for city investments. Multi and bilateral donor organizations, endowments, city networks and climate advocacy organizations have a role in providing support to local and national governments with technical assistance, knowledge sharing and investment support (White and Wahba 2019).

6.2 THE ABILITY OF CITIES TO EMBED CLIMATE CHANGE CONSIDERATIONS ACROSS ALL ASPECTS OF CITY-LEVEL PLANNING, DECISION MAKING AND IMPLEMENTATION

Another key aspect for channeling more finance towards low carbon, climate resilient urban areas is for cities as jurisdictions to understand, identify and implement approaches for mainstreaming climate change considerations across all aspects of the cities work and engagements. Considering the enabling environment framework and discussion above, cities as jurisdictions may be categorized into four different stages of mainstreaming climate into everyday life, operations, policies, and investment, irrespective of whether the city is located in a developed, emerging or developing country context. Depending on where the city is in its evolution, city governments may have different tools and strategies to leverage climate action within their jurisdiction.

As discussed in this report, city governments each begin with widely different levels of technical capacity, authority to plan and regulate, functional revenue and expenditure

assignments and potential to convene and enable other stakeholders. There are also wide differences in the baseline conditions that cities face, such as emissions levels, exposure and vulnerability to climate change risks and urban form and growth trajectories (IPCC 2012; IPCC 2014).

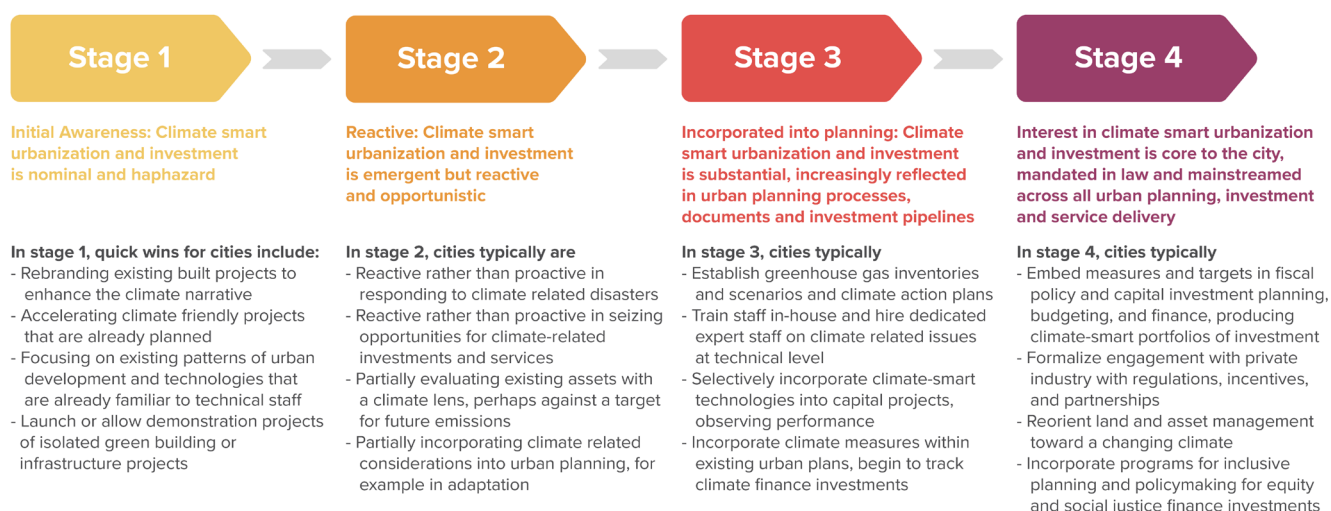
As discussed earlier, climate change mitigation and adaptation activities also depend on each city's existing integration of climate measures and targets with the fundamentals of municipal planning and finance, existing urban form and municipally owned assets and options for renewable energy access (Coalition for Urban Transitions 2019; C40 and Arup 2020). This challenge can be exacerbated by existing gaps in infrastructure and social services, and population growth and migration forces, as well as the absence of adequate finances and institutional support for local action.

Many cities in developing countries would benefit from improvements in city finance fundamentals that would increase the overall revenues available for climate-smart activities. For city governments, this includes the improvement of financial management capacities and accounting systems as well as promoting stronger capital investment planning practices and linkages with budgeting and expenditure management. This can be complemented by enhanced accountability and transparency mechanisms for budget planning, procurement, contract management and other functions. Collection and deployment of data for investment analysis and prioritization will improve capital investment plans and pipelines generally and help identify climate-smart projects. In many countries, these improvements in capacity and performance can be supported through performance-based or conditional transfers, either of which can be aligned to climate goals. With additional capacity and regulatory support improved city finance systems can also serve as a signal for creditworthiness for private sector lending.

6.3 THE STAGES OF MAINSTREAMING CLIMATE CHANGE CONSIDERATIONS IN CITIES AND URBAN SYSTEMS

To mobilize urban climate finance at scale the enabling environment framework (Figure 2) needs to be vertically integrated (from local to national levels) and horizontally integrated (across urban systems, processes, and planning). Figure 9 identifies four stages of integrating climate objectives into cities and urban systems. These are based on the depth and alignment of the three levels of enabling conditions (country, city and climate-specific) to mobilize urban climate finance at scale, and national support for climate objectives. The four stages also reflect the horizontal integration where city governments leverage all their roles and varying levels of agency in climate-smart planning, finance and implementation. While Figure 9 shows an evolution of stages, it would be possible for cities to leap frog these phases. For example small cities or peri-urban areas that are rapidly urbanizing, can leap frog over the carbon intensive urban forms, energy sources (such as fossil fuels) and technologies that characterized the earlier urban transition in developed countries, and build in ways that enhance adaptive capacity and break the cycle of disaster-induced poverty, while increasing savings from avoided infrastructure and human losses.

Figure 8: Stages of mainstreaming climate-smart urbanization and investment



Stage 1: Initial Awareness. Climate-smart urban development and investment is nominal and haphazard. In this stage a city is in the early phase of being on the path to climate-smart urbanization and investment. Most city-level actions in this stage are small-scale and incremental and may be driven by a mayor or local advocacy groups. The actions are fragmented and uncoordinated and not connected with city-level development regulations or investment plans (Romero-Lankao et al. 2018). In this stage, national level programs to provide fiscal incentives to promote clean car purchases, subsidies, or mandates for renewable energy use, requiring energy-efficient standards on new buildings, or bans on incandescent lighting. These incentives and demonstration projects may direct new investments toward cleaner equipment and technologies but lack an overall strategy or integrating framework to mainstream into city-level climate action.

Stage 2: Reactive. Climate-smart urbanization and investment as a response to crisis. In this stage, a city is motivated and inspired by both crises to begin to adopt climate measures and re-evaluate their assets in response to climate change threats. Climate-related shocks, such as hurricanes, droughts, and wildfires, focus city government local attention and the support of technical expertise on developing hazard-specific and sector-specific disaster risk management, resilience, and adaptation plans. Recent economic recessions such as the financial crisis in 2008 and the pandemic in 2020, have pressed national governments and international organizations to provide funds to stimulate the economy, which have at times also included support for innovation and market expansion for low carbon technology (Åhman et al. 2018). International networks of cities similarly represent opportunities to advocate and share resources and knowledge and elevate the importance of planning for and adopting measure of climate, such as greenhouse gas inventories at the municipal level (e. g. ICLEI, C40, UCLG, FMDV, GCOM).

Stage 3: Incorporated into urban planning. In this stage climate-smart urbanization and investment mainstreaming is increasingly reflected in urban planning processes, documents, and investment pipelines. In this stage, cities begin to link capacities in planning and finance fundamentals to begin to address climate goals systematically.

The policies that make transformative change possible require more coordination across governmental sectors, and between governmental and non-governmental actors and city governments are frequently regulators and conveners of other stakeholders to align climate investments. They may benefit from national level reforms to revenue and expenditure assignments that better enable them to plan and implement climate investments and clear support climate policy at the national and sectoral levels. Cities have climate action plans, which aim to mitigate emissions and adapt to climate impacts, are multi-sectoral plans at the municipal level with the potential for scope and scale that extends beyond municipally owned assets (Boswell et al., 2019). These strategies are also mainstreamed under urban development plans, standards, and regulations. Green zoning and building codes, if consistent with climate action plans, can become important tools to further implement climate goals (Bedsworth et al., 2013). Subnational and national mandates can influence city progress, of course, and be formative and shaped by international agreements, such as the Paris Agreement (2015).

Stage 4: Mandated and mainstreamed. In this stage climate-smart urbanization and investment is a core driver for city decision making, mandated in law, and mainstreamed across all city planning and functions. In this end stage, cities and national governments co-produce the most robust “enabling environment” to unlock and channel finance to low carbon, climate resilient cities. Ultimately, each city’s portfolio must shift toward long-term zero emission assets. Climate measures incorporated into city fiscal policy and capital investment plans can mainstream climate action with each budget cycle (World Bank Group 2015). As governmental actors become accustomed to working with low carbon and resilient development for municipal purposes, they will lead by example and become equipped with the arguments to incentivize and mandate changes in private development. Such policies, then, are more likely to be widely supported when framed within a positive agenda and attached to goals that the population cares about, such as economic growth, health care, job creation, and the reduction of poverty and inequality.

Higher levels of government – state and provincial or national – can either accelerate a city’s ability to ‘leap frog’ to different stages or stand in the way. As discussed above, cities exist within institutional environments with the potential to enable or hinder the transition to a low carbon, climate resilient urbanization pathway. Climate policies and mandates that often reside within the national environmental ministries or departments are gradually being adopted by data-rich departments of planning, disaster risk management, and resilience, but these movements can also stall at any time, at any stage. Ultimately, each city’s budget and financing will need to be placed in service to climate action and associated with planning and policymaking that befits its conditions and pathways.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1 CONCLUSIONS

Climate change affects rich and poor regions alike, but cities start from widely different points when it comes to mobilizing urban climate finance at scale. At one end of the spectrum are city governments with high levels of agency, autonomy, authority, and capacity with robust systems and mechanisms for service delivery and financing. At the other end of the spectrum are city governments, such as those in low income or fragile and conflict affected countries that have limited levels of agency and capacity, or that have weak intergovernmental and fiscal systems, services delivery mechanisms and private markets. Mobilizing urban climate finance at scale will require workable solutions tailored to the country-specific, city-specific and climate specific enabling environments of each city.

Despite wide differences in enabling environments within countries and across the world, cities can impact climate outcomes by leveraging their many roles, including as providers of infrastructure and services (what cities pay for) and stewards with their capacity to plan, regulate, convene and champion systems thinking (what cities can influence). In particular, the ability of city governments to convene stakeholders and embed climate-smart considerations and incentives across all levels of existing urban planning - strategic, spatial, capital investment and budgetary planning - can have systemic impact. These actions can help cities green their existing urban finance, harness new urban climate finance from intergovernmental fiscal transfers, private sector and household investment and increase the climate-smart impact by mainstreaming climate considerations across urban systems and spatial level planning.

The composition and management of city government finances—municipal expenditures and revenues—represent another important city-level enabling condition for implementing climate investments in urban areas. For many cities in developing countries improvements in city finance fundamentals - such as financial management capacity, accounting systems, transparency, capital investment planning, budgeting and expenditure management and procurement - would increase the overall revenues available for climate-smart activities and potentially serve as a signal for creditworthiness for private sector lending. In many countries, these improvements in city finance capacity and performance could be supported through performance-based or conditional (green) intergovernmental transfers.

There is a huge opportunity to embed city climate considerations into city government budgetary and expenditure agendas that comprise both “on-budget” (city own source revenues, intergovernmental fiscal transfers, city government borrowing) and “off-budget” resources (city regulator, convener and influencer) to

provide the adequate budgetary support, optimize allocation of public resources and mobilize private climate finance. The requirements to address this include:

- Improve the capacity and ability of cities to fund and finance climate-related investments through improved planning and implementation capacities.
- Strengthen intergovernmental systems to align incentives across levels of government, utilities, service providers, and the private sector to mobilize climate investment in cities.
- Develop and scale climate-focused financial instruments and incentives to mobilize private climate finance (international, local, and household), where country- and city-level enabling contexts allow, and where institutions and private sector markets function well.
- Introduce fiscal instruments that directly target climate-focused urban infrastructure investment, e.g., environmental conditional grants, green tagged intergovernmental fiscal transfers, or payments for ecosystem services within urban areas.

Carbon-pricing instruments represent the next frontier of financial tools and are gaining traction at the municipal level. These instruments include emissions trading schemes, carbon taxes, and setting an internal price of carbon. Carbon-pricing instruments create critical incentives, behaviors, and market forces that lower emissions and mobilize urban climate finance. They also help increase energy savings, inform climate related risks, prepare and position cities for a just and green transition, and attract more international climate finance as well as national transfers that may be linked to “Building Back Better.”

Cities can be categorized into four general stages of mainstreaming climate change considerations based on their enabling environment profiles: initial awareness, reactive, increasingly incorporated into planning, and mandated and mainstreamed. There is a large opportunity for rapidly urbanizing cities to leap frog these phases, over the carbon intensive urban forms and energy sources. This will require national governments to support mainstreaming through setting the regulatory structure, finance arrangements, built environment, and capital investment contexts when this power is not invested in local governments.

To mobilize urban climate finance at scale the enabling environment framework (Figure 2) needs to be vertically integrated (from local to national levels) and horizontally integrated (across urban systems, processes, and planning). This includes integrating city, country and climate specific enabling elements as well as the dual roles city governments play as providers and stewards of climate smart outcomes. Building the foundation for mobilizing more urban climate finance and achieving climate impact requires an understanding of local level urban systems and municipal planning and an understanding of global level climate finance and policy. As this report has shown both cities and urban systems as well as climate policy and finance are cross sectoral in nature and requires a pluralistic systems-based approach and national and global actors recognize this.

Strengthening the enabling environment and mainstreaming climate considerations at the city, country and global levels will be critical to allow more cities, especially in developing and emerging markets. Actions that officials at all levels can take include:

- Invest in data and monitoring to understand urban GHG sources and sinks dynamically as well as associated urban heat islands and air pollution.
- Invest in data and monitoring to understand urban climate vulnerabilities and risks dynamically.
- Introduce scenario planning to account for the dynamic nature of climate change, technology development and human behavior.
- Develop city climate strategies embedded in time horizons that are linked to climate science, supported, or anchored in country-level climate strategies.
- Begin viewing urban areas as “interactive landscapes” rather than as “jurisdictional islands.”
- Empower city and local governments to identify, enable and fund green project pipelines.
- Create intergovernmental incentives to mainstream climate considerations in a holistic governmental approach and channeled towards urban areas, including through mandated laws or conditional green fiscal transfers.

Urban areas are critical systems and city governments are critical stakeholders in, and implementers of, the global climate-smart transition. International and national policy decision makers should invite city and local leaders to the table when designing national climate strategies and contributions. Urban areas concentrate a large amount of people, economic activity, and consumption (food, energy, mobility, and products) and act as the economic powerhouses and economic innovators. However, if not planned, managed, prepared, and empowered to address climate change, urban areas will continue to contribute to GHG emissions and the human vulnerability and GDP risks that this concentration presents.

7.2 RECOMMENDATIONS

Policymakers and stakeholders at all levels of government must help create enabling conditions to achieve meaningful climate impact, mobilize urban climate finance at scale and help cities advance towards net zero and climate resilient urban development. This section offers recommendations for city, country, and international officials to achieve transformative, well-planned, and well-financed climate-smart action in cities and urban systems. These interventions must be tailored to address country-specific, city-specific, and climate-specific enabling elements.

The following are the top recommendations that country-level government officials and stakeholders can pursue to help achieve mobilizing urban climate finance at scale.

- **Support national and city-level climate policy alignment both top down and bottom up.** For example, national governments should incorporate and incentivize the efforts of cities when developing and updating their NDCs and National

Adaptation Plans as well as during their implementation. City government level climate ambitions can provide valuable inputs given that they are closest to the people, are key stakeholders, and can activate their five roles to mobilize climate finance and deliver climate impact.

- **Prioritize cities as partners in designing country-level climate policy objectives and implementation.** Climate action should not be seen merely as a country priority to be tackled by national governments through central ministries of energy, transport, environment, housing, and industry. Rather, climate action should be understood as a “whole-of-government” priority that requires that climate considerations are vertically and horizontally integrated and that cities and local governments be activated as both *providers* and *stewards* of the climate agenda.
- **Include city and subnational governments, along with other stakeholders, early in the climate policy process to better assess their potential to also contribute.** For example, cities need energy policies at the national scale to enable and incentivize the urban transition away from fossil fuels to carbon-free sources of electricity (Fay et al., 2015).⁴⁴ The next steps for countries should be two-fold: first, establish climate-forward governance of national and regional infrastructure systems within cities, and, second, enable and promote subnational climate action for cities and locally-governed or locally-provided systems and services.
- **Strengthen national level standards, regulations, and data that support low carbon and climate-resilient urban planning and development, with an eye for synergies across urban and spatial systems.** Such standards would help city governments to identify optimal compact urban expansion and reduce transportation-related carbon footprints by helping them to manage the built environment and urban form through land use regulation and urban planning. Control over urban form and the built environment, particularly at the nexus of land use and transportation, can have significant positive impacts on emissions reduction, population density, service delivery, costs and per capita emissions (Kennedy et al., 2009). Supporting alternatives to private vehicle use, such as pedestrian systems, active and micro mobility systems and mass transit systems, combined with density and diversity of land uses can reduce the overall vehicle kilometers traveled. In parallel, transit-oriented design principles, combined with land value capture tools and incentives can mobilize private investment around transportation corridors.
- **Prioritize regulations and incentives that promote the replacement or retrofit of buildings and infrastructure with resilient and less carbon-intensive materials, designs and technologies.** Low carbon and resilient construction, design and engineering standards and regulations, along with training and certification systems can be adopted at the national level and implemented and enforced locally.⁴⁵ These can be aligned with incentive and rebate programs to encourage adoption of technologies and materials by the construction and development sectors. The

⁴⁴ Policies should establish multiple mechanisms to promote carbon-free energy choices for cities that include: 1) the provision of clean electricity directly from existing grid; 2) grid-neutrality for cities to engage in independent, bilateral agreements with large-scale providers of carbon-free energy; 3) local development of microgrids on a community scale on and off the grid; 4) net metering to pay individual firms or households for surplus solar or wind energy redistributed back to the grid; and 5) opportunities for local electrification of transportation assets and building energy systems.

⁴⁵ This includes for example, the IFC’s Excellence in Design for Greater Efficiency (EDGE) certification program, which assesses buildings based on construction materials and energy consumption.

adoption of a framework to guide green procurement standards for acquisition and management of climate-smart assets and equipment by local governments and public sector entities can also channel investment to reduce carbon emissions.

- **Provide incentives to cities to incorporate circular economy principles and build or retrofit low-carbon and resilient green urban infrastructure and services for solid waste and waste water management.** These include programs that reduce or eliminate household, construction, commercial, and industrial waste and harness the beneficial properties of solid waste and wastewater treatment systems (e.g., waste-to-energy for power generation and biosolid applications for carbon sequestration). The largest demand for these systems comes from cities, and the benefits that accrue go beyond city boundaries to rural, agricultural, and coastal areas. These retrofits and green infrastructure improvements can be done through incentives and transfers to cities to preserve and increase natural carbon sinks, such as forested areas, wetlands, peat bogs, and mangroves. National policies along with subsidies and transfer mechanisms, such as payments for ecosystem services that support the preservation of green spaces reinforce city policies to limit urban sprawl by placing spatial boundaries on urban growth.
- **Invest in national-level data systems for joint monitoring and data disaggregation.** This would better equip local agencies to understand and manage carbon emissions and climate change risks and national governments would also benefit from the assessment of potential reductions and progress (CCA 2021). Such data systems would ideally include geographic information systems with historic and projected magnitude and frequency of extreme events exacerbated by climate change.
- **Increase local capacity to update data systems to reflect changing local conditions.** This data can be used in the development of capital investment planning, setting benchmarks and targets, and other measures of effectiveness. National investments should introduce data systems for enhancing adaptation and resilience beyond the urban or city boundaries such as watersheds, and programs for disaster response and recovery. Cities also need to be able to monitor and manage real-time change to best address and adapt to climate change. Therefore, a critical foundation for all cities is access to climate data and the expert staff to analyze, monitor, and manage the data to inform city climate strategies for low-carbon, climate resilient urbanization.
- **Integrate and leverage climate criteria in intergovernmental and fiscal transfer systems.** National governments should review municipal finance revenue assignment structures, fiscal transfer mechanisms, and subnational borrowing frameworks to ensure they align to climate-smart criteria. These frameworks should be established for services that underpin planning and financial capacity-building particular to climate as well as climate-smart capital investment. This recommendation follows recommendations presented in Part 1 of the State of Cities Climate Finance Report.
- **Direct green recovery stimulus funds to urban areas which have borne the brunt of COVID-19 cases and face continued economic uncertainty.** Also direct green stimulus funds to areas that are urbanizing rapidly in an unmanaged way and at risk of locking in carbon intensive and climate vulnerable pathways, especially in

developing economies. National governments should bolster conditional fiscal transfers to local governments for climate-smart activities, especially in developing countries that may have significant barriers for channeling climate finance. Cities need stable, reliable flows of fiscal transfers to allow multi-year commitments to meet climate-smart capital and infrastructure investment needs. As such, current strategies for distributing transfers need to be modernized to incentivize low carbon, climate resilient planning, investment, and services through conditional or performance-based transfer systems.

The following are the top recommendations that city-level government officials and stakeholders can pursue to help achieve the goal of mobilizing urban climate finance.

Urban planning and built environment:

- **Cities should review and strengthen existing urban development standards and regulations to promote optimal compact urban growth and provide resources for climate-smart buildings, housing, and construction practices.** These regulations can serve as an entry point for development fees or tradeable permits as means to encourage private investment in green buildings and infrastructure at the site or project level.
- **Strategic and long-term planning should include capacity building to improve the monitoring, analysis, and management of GHG emissions data and climate change vulnerabilities.** Improved data capabilities can inform future city-level strategies, long-term urban development plans, and capital investments.
- **City climate action plans need to account for the dynamic nature of climate change and evolving climate science, climate risks, and clean technologies.** By remaining responsive to changing conditions, the climate plans can be built into agile, iterative, and modular approaches for developing, designing, and financing projects and services.

Capital Investment Planning:

- **There is a need for integrated urban capital investment planning to develop cross-sectoral solutions that reduce investment need and increase climate impacts.** This requires cities to coordinate across sectors for investment planning including the support for transport-oriented, mixed use development patterns, energy and waste efficiency across value chains in urban areas, and the use of smart technologies for data collection, monitoring and reporting.
- **City governments should introduce carbon-pricing mechanisms, climate data systems, and criteria for assessing capital investments to help prioritize climate-smart investment options.** The first steps would include applying an internal price on carbon, using data systems on cost alternatives, developing procurement guidelines, and feasibility of climate impacts to inform a pipeline of climate investments that can be funded directly on-budget or leveraging other sources of finance.
- **In larger metropolitan areas, cities should establish a dedicated climate-smart team or agency for government affairs and outreach to help coordinate the regional implications of climate investment and action plans.** The climate-smart

team should include advocacy for vertical and horizontal coordination across levels of government and service providers in the urban area to ensure that plans are integrated, well-funded, and that fiscal transfers and other types of financial instruments (such as subsidies or tax credits) are well-deployed.

- **City governments should also seek support from regional, national, or international city networks and alliances as well as from international and multilateral organizations to facilitate coordination.**

Municipal Finance:

- **City governments should ensure the fundamentals of municipal finance, such as budgeting, financial management, contract management, and procurement, lay the foundation for increasing private investment in climate finance, efficiently deploy city funds, and mobilize additional climate finance.**
 - To the maximum extent possible, cities should seek to invest their fiscal transfers and own source revenues into climate-smart investments and to structure public-private partnership concessions to incentivize climate objectives.
 - Cities should review land zoning, taxation, and fee policies to ensure alignment with climate goals and mobilize additional urban climate finance from investors, developers, businesses, and households.
- **Where the enabling conditions allow, cities should prioritize effective and innovative own source revenue collection and explore different types of land value capture instruments and development fees.** With appropriate study and design, additional revenue sources could include property taxation, special assessments, and leveraged finance instruments.

International organizations, multilateral development banks, and development finance institutions have an important role to play to support cities and national governments in accelerating the transition towards low carbon, climate resilient urbanization. The following are the top recommendations that international development partners can pursue to help achieve the goal of mobilizing urban climate finance.

- **Development partners can help mobilize enabling conditions for urban climate finance by providing technical support and policy guidance.** In particular, given their cross-sectoral and vertical client engagements and entry points, international organizations, such as MDBs, can leverage their convening power to engage and coordinate horizontal and vertical levels of government, provide technical assistance to countries to understand systems-level urban climate dynamics and to help build city-level technical and institutional capacity. Development partners can also provide cities with upstream technical assistance to provide greenhouse gas, vulnerability, and financial analytics, including reducing risk for investors and the private sector by helping develop robust climate-smart investment pipelines in urban areas.
- **The World Bank and other multilateral and bilateral donors have extensive experience providing support for strengthening municipal governance and finance systems, both at the city level as well as in the design and reform of national level programs and schemes.** This includes direct technical assistance,

as well as training and exchange programs for knowledge sharing. The World Bank and IFC also have advisory experience for the development of planning and building guidelines (including the IFC's EDGE certification program for green buildings) and standards to promote compact urban form, TOD and energy efficient buildings and structures that are critical elements for achieving climate impact.

- **There are also a growing number of technical assistance initiatives and funding windows to support cities at all stages of planning that support climate action.** International development organizations can provide technical assistance for diagnostics, risk assessments, piloting and scaling up these systems. For example, the City Climate Gap Fund provides upstream grants for climate-smart planning, including emissions benchmarking and tracking and the development of climate-smart strategies and investment programs. The City Climate Gap Fund also supports downstream needs including project identification and prefeasibility analyses, support for designing financing arrangements and matchmaking for financing sources. Similarly, the City Resilience Program works with cities to undertake diagnostics to identify, and screen a pipeline of resilient and climate-smart infrastructure investments to ready them for support from donor and private finance entities. Initiatives such as the UNCF's LoCAL program has experience in both the design and enhancement of performance based fiscal transfer systems for climate adaptation.
- **Many donors and international financial institutions provide credit enhancement and partial guarantee instruments that can facilitate access to private finance under appropriate conditions.** USAID for example provides technical assistance and funding for credit enhancement facilities under its Development Credit Authority (now under the Development Finance Corporation) to support domestic credit and lending markets, which cities can engage.

8. ANNEX 1: KEY DEFINITIONS

“City” and “urban area” are often used interchangeably. However, this can confuse discussions of city climate finance, as the term “city” can be used to either refer narrowly to the city government and jurisdictional boundaries, or more broadly, to the city as a spatial, economic and functional urban area, including not only the city government, but an entire metropolis comprised of multiple jurisdictions, residents, businesses as well as transit, energy and waste systems and job markets (EC & OECD 2019). Similarly, the term ‘climate finance’ can include many different sources of finance. In order to ensure a common understanding of key terms, the following key definitions are proposed below. Please note that Part 1 considers the term “city” from the perspective of climate finance flows into urban areas, irrespective of its source and is therefore more closely linked to the built environment and urban geographic area. Part 2 on the other hand considers the term “city” from the perspective of the city government (or mayor) and is therefore more closely linked to the jurisdictional boundary and agency of the city government, unless expressed otherwise. Both parts of the report adopt the same definition for urban climate finance, as developed by CPI and the Alliance.

8.1.1 URBAN AREA

The term “urban area” may be defined very differently by region, geographic scope, population size and legal and governing authority and can include terms such as “city, town, district, municipality, local government or metropolitan area.” For the purposes of this report – and its objective to shift investment in an urban area towards low carbon, resilient infrastructure, service delivery and investment - the term “urban area” is all encompassing and refers to a comparatively more densely populated, non-rural area.⁴⁶

8.1.2 CITY GOVERNMENT

For the purpose of Part 2 of this report, the term “city” (unless otherwise indicated) refers to the city government, being the general-purpose government entity established for managing city affairs within delineated administrative boundaries. The exact nature, legal status, organization, and functional responsibilities of city governments are quite different across and within countries.⁴⁷ This is in contrast to “urban area” which aligns more closely with the concepts of the continuity of built up area and population densities, including Functional Urban Areas and ‘degree of urbanization’ (which may cross different types of local government administrative entities) as discussed in Part 1 of the report. The core of the city government (or municipal government) is formed by its

⁴⁶ The definition of urban area varies widely in application; every country defines and reports statistics for urban areas differently. With advances in modeling techniques and the application of remote sensing data, however, there is a growing agreement on a globally comparable functional definition of urban areas. This method, the Degree of Urbanization, was recently adopted for use by the UN’s Statistical Commission. <https://unstats.un.org/unsd/statcom/51st-session/documents/BG-Item3j-Recommendation-E.pdf>

⁴⁷ In fact, cities may be referred to by different names: city, city corporation, municipality, urban authority, urban council, or by some other name.

leadership—often a mayor (or other executive) and/or council—and the city (or municipal) administration. For the purposes of the current discussion, unless noted otherwise, the city government is understood to include not only the city government’s own core organization and budget, but also any municipal companies or entities owned and controlled by the city government, such as municipally-owned water companies, and other such entities.⁴⁸

8.1.3 ENABLING ENVIRONMENT

An enabling environment consists of conditions for achieving an objective where risks are minimized and well managed and where the rights, roles and assets of all stakeholders are established. The enabling environment for climate-smart cities includes the framework conditions that facilitate and support the adoption of low carbon, climate resilient urban development, investment, and service delivery. Developing an enabling environment requires consistent and complementary policies, legal frameworks, governance structures, implementation capacity and financing and investment structures, including various forms of municipal finance such as own source revenues, intergovernmental fiscal transfers, borrowing and public-private partnerships. It also requires having in place sound urban plans and capital investments plans that are predictable and give comfort to potential financiers.

8.1.4 COUNTRY CLASSIFICATIONS

Country income and development classifications vary by international organization and are based on a series of economic, social and development indicators. For the purpose of PART 2 of this report, three main country categories are considered using a mix of [OECD](#), [DAC](#), [UN](#) and [WB](#) country classifications. These include: developed or high income countries; emerging markets or transition or middle income countries and; developing or lower income countries, including least developed countries and fragile and conflict-affected countries.

8.1.5 CLIMATE MITIGATION AND ADAPTATION AND RESILIENCE

Climate change is one of the most complex and critical global issues today. It cuts across sectors and disciplines - science, environment, economics, society, politics, and moral and ethical questions – and is a global problem, felt on local scales. The slow onset of climate change refers to the impacts associated with protracted risks of increasing temperatures; desertification; loss of biodiversity; land and forest degradation; glacial retreat; ocean acidification; sea-level rise; and salinization (UNFCCC 2021). Climate change disasters refers to extreme weather events that have a clear end point such as floods, droughts, fires, snow storms, extreme heat or cold, hurricanes and tornadoes. Both types of events may have significant impact on food, water and land, diseases and

⁴⁸ Care should be taken in defining what falls within the realm of city governments. In many (particularly developing or transition) countries, “local” utilities or authorities are actually (de jure or de facto) owned and controlled by national government authorities.

animal migrations, human health, infrastructure, and economy in the short, medium, and long term (S Boukerche & R Mohammed-Roberts 2020). Responding to climate change involves two critical approaches:

1. Climate change mitigation refers to actions that
 - Reduce green-house gases (e.g. less reliance on the use of fossil fuels for electricity, transport, cooking, heating and cooling as well as methane type emissions from waste and agriculture);
 - Absorb emissions (e.g. increasing forest cover, green spaces and surfaces and materials that absorb carbon dioxide and heat) or
 - Remove emissions (e.g. carbon capture and storage) in the earth's atmosphere that trap heat and warm the planet, land and seas and
2. Climate change adaptation and resilience refers to actions that :
 - Prepare and respond to adapt to climate impacts that are already here.
 - Prepare and respond to build resilience to future risks related to climate change and allow people, businesses, cities and countries to function through, or recover quickly from a shock or stress.

Mitigation and adaptation efforts can be as complex as a plan for a new city that considers compact, low carbon and resilient urbanization, investment, and service delivery, or as simple as improvements to a cook stove design.

8.1.6 CLIMATE-SMART CITIES

Although definitions vary, in general climate-smart cities aim to minimize environmental damage, reduce air pollution and GHG emissions, and maximize opportunities to enhance urban resilience, improving the natural environment and overall livability of the city. On both the demand and supply sides, climate-smart cities are energy efficient; reduce reliance on nonrenewable energy sources; actively encourage waste reduction; and promote the circular economy, resilient low carbon infrastructure, low carbon transport, water management, green spaces, and nature-based solutions. Climate-smart cities must consider themselves as complex systems with interrelated dimensions (UNEP and UNISDR 2015; GFDRR 2015): functional (e.g., municipal revenue generation), organizational (e.g., governance and leadership), physical (e.g., infrastructure), and spatial (e.g., urban design). All these interventions require an integrated, systems-based urban and spatial planning framework to improve the quality of life of all residents (IPCC 2019; IEA 2017; WBG and UNDP 2019)

8.1.7 URBAN CLIMATE FINANCE

As described in PART 1 of this report, climate finance is defined in its broadest sense to include all resource flows channeled to finance or fund low carbon and climate resilient investments or services, as outlined by the Climate Policy Initiative (CPI) in the Global

Landscape of Climate Finance (CPI, 2019)⁴⁹. Climate finance refers to local, national, or transnational financing— from public, private, or other sources—that seeks to support mitigation and adaptation actions that will address climate change (UNFCCC). This encompasses development finance from MDBs and DFIs, dedicated climate finance from Trust Funds, public finance from national governments or local governments as well as international and domestic private and household finance channeled towards climate activities. To determine what constitutes “urban” Part 1 of the report uses the Functional Urban Areas (FUA) boundaries developed by the OECD in partnership with the European Commission, which includes both urban and its nearby commuting areas to define physical boundaries for a city. The general definition adopted in this report is the following:

Urban climate finance refers to resources directed to activities limiting city-induced GHG emissions or aiming to address climate-related risks faced by cities, contributing to low carbon development or resilience.

From a municipal finance point of view, urban climate finance, irrespective of its source, can be understood from both expenditure and revenue perspectives from local governments and also other stakeholders and finance entities. From an expenditure perspective, it refers to financing, regardless of type, that is used for low carbon and/ or climate resilient investment in the urban area. For example, whatever fraction of the proceeds of a general-purpose municipal bond which is then spent specifically on climate investments would count as urban climate finance. The strategies, tools and activities to mobilize urban climate finance on the expenditure side are discussed in sections 5.1-5.3 of this Report. From a revenue perspective, urban climate finance refers to the various financing modalities and instruments that are, because of their inherent characteristics, directly linked to climate mitigation and resilience activities and objectives. In this sense, a municipal green bond which is entirely dedicated to low carbon urban infrastructure investment would constitute urban climate finance. The revenue aspects of urban climate finance, and what can be done to enhancing these sources, are discussed at various points throughout this report, most exhaustively in section 5.4.

⁴⁹ CPI’s definition of climate finance is based on the tracking and reporting methodologies developed by the joint group of Multilateral Development Banks (MDBs), members of the International Development Finance Club (IDFC), the OECD’s Development Assistance Committee (DAC) and the group of Multilateral Climate Funds that reports commitments through the Climate Funds Update (MDB, 2019; OECD, 2018; ODI & HBF, 2020). See CPI’s Global Landscape methodology for more details on the approach adopted by CPI (CPI, 2019).

9. ANNEX 2: DIMENSIONS OF INTERGOVERNMENTAL STRUCTURES

Different intergovernmental systems define the degree of empowerment of city governments over city affairs, including over climate-related efforts. The degree to which intergovernmental systems empower city governments to manage local affairs is often influenced by institutional factors and socio-economic conditions but is ultimately a national policy choice driven by political economy considerations. Although it is quite common for city governments in developed economies to be relatively empowered over all three dimensions, it is not unusual for local governments in other development contexts to have a more limited scope of functions and authoritative decision-making and be much less empowered over city government administration and finances. For instance, in many parts of the world, it is not unusual at all for city governments to be prevented from hiring or firing their own administrative officers or staff; to lack control over local-level utility companies; or to lack the authority to determine urban land use plans.

The extent to which city governments are empowered over the management of city affairs often differs greatly from country to country. The intergovernmental systems that constrain or empower local governments are often grouped into three broad dimensions:

(i) subnational governance arrangements (sometimes also referred to as political decentralization); political decentralization (or subnational governance) refers to the institutional, political, and electoral arrangements at the subnational level, as well as the interlinkages between political and governance arrangements at different levels.

(ii) intergovernmental administrative systems (or administrative decentralization), Administrative decentralization refers to the administrative powers assigned to subnational actors as well as the prevailing intergovernmental administrative systems, for instance, dealing with human resource management, procurement, as well as subnational regulatory powers.

and (iii) intergovernmental fiscal systems (or fiscal decentralization). This refers to the types of expenditures that subnational governments are allowed to make, the types of revenue they can collect, the fiscal transfers they can receive and the permitted latitude to borrow.

10. ANNEX 3: MAINSTREAMING CLIMATE CHANGE CONSIDERATIONS IN KEY URBAN SYSTEMS

TRANSPORTATION

National level: Governments can set vehicle emissions standards to reduce and discourage the production and use of high-emission vehicles. Tax exemptions for alternative fuels and incentives for electric vehicle purchase can also encourage greater consumption. National governments can also encourage deeper private sector investment in clean energy public transportation investments (along with other green infrastructure in water and solid waste) through the provision of Viability Gap Funding to PPPs and operators, with notable examples in India.

Private sector: Private investors have developed green bonds as finance sources to transportation providers and PPPs for bus and light rail system development and extension, as well as clean fleet/rolling stock upgrading and retrofitting.

City level: At the local level, cities can adopt and utilize green procurement standards for vehicles and equipment they use, along with the siting of charging stations for electric vehicles. Cities can also regulate parking both as a revenue source, but also to better manage the supply of parking and to de-couple parking requirements from new housing construction. Congestion pricing approaches also have the effect of reducing unnecessary trips and lowering congestion and emissions. These tools, if coupled with an integrated and multimodal transportation plan can further enhance climate benefits for cities in the transport sector.

BUILDINGS

National level: The adoption of standards for energy efficient building materials and appliances will have important consequences in reducing GHG emissions in new and retrofitted construction. Incentives for developers to adopt and implement green building materials and appliances can also encourage greater uptake.

Private sector: Lenders have begun offering green mortgage products that allow households to purchase or retrofit homes in order to meet energy and resource efficiency targets. The availability of these products incentivizes demand for green buildings, appliances, and energy systems.

City level: Local governments have an important role in enforcing these standards on new development, and through the promotion principles of compact development and TOD in newly growing and redeveloped areas of the city. Development plans and zoning

instruments can also be paired with payments for ecosystem services to preserve fragile or protected open spaces and habitats, with funding provided from private sector or nonprofit services. Property tax reductions can also be applied to qualifying green buildings to further induce demand in the construction sector.

ENERGY

National level: Laws and policies can shape the dynamics of the energy sector. For urban areas, the introduction of greater latitude for cities to access and identify green energy sources for distribution is critical. Subsidy and rebate programs can encourage households and firms to install and use solar panels. This can be further enhanced through adoption of grid neutrality policies to encourage additional sources of green energy provision to the grid.

Private sector: New financing sources can help to unlock investment in green energy generation and distribution in cities. Green bonds can finance capital investments in green energy generation facilities and distribution networks. On-bill repayment, where capital outlays by a private investor to a utility are collected through subscriber repayments are another mechanism for facilitating investment in green energy sources.

City level: With appropriate legal and regulatory frameworks, cities can identify green energy sources for distribution. Net metering can allow firms and households to contribute excess solar energy to the grid for consumption elsewhere. The adoption of green procurement standards can also ensure that city vehicles, equipment and buildings are also climate-smart. A growing number of cities have also begun to utilize solar powered streetlights to further lower energy expenditures.

SOLID WASTE

National level: Governments can set waste disposal and recycling guidelines and standards for local governments to adopt and enforce. Programs for deposit/refund schemes can also incentivize uptake of recycling and reuse for recyclable waste, further reducing flows to landfills or waste incinerators.

Private sector: Waste management and recycling providers can access green bonds for facilities upgrades or service expansion. Investors can also tap environment funds through government or private sources for financing capital improvements to waste management facilities or for environmental remediation efforts.

City level: Many cities provide waste collection and management services and have developed programs to encourage sorting and recycling of household waste through the provision of various output-based incentives (World Bank 2014). An integrated solid waste management plan can enable cities to reduce the vulnerability to contamination, waterlogging, disease transmission and additional GHG emissions caused by improper disposal of solid waste. Several cities have also implemented bans or taxes on plastic bags, primarily to discourage their use and disposal in landfills.

INDUSTRY

National level: Governments set parameters and regulations for emissions standards and wastewater quality and can levy penalties on polluters. Subsidies and tax credits can be used to support upgrading of industrial facilities to meet or exceed these standards. National governments are also at the center of developing pricing and regulatory structures to support carbon emissions markets for industries to trade emissions credits and discourage additional pollution.

Private sector: Developers and firms may be able to leverage green bonds for supporting industrial estate development, particularly wastewater and solid waste processing and disposal facilities. Private financing sources such as environmental funds can also be used to retrofit or upgrade existing manufacturing facilities to reduce emissions footprints or restore contaminated areas and water bodies.

City level: Cities can provide incentives for attracting green industries including reducing or waiving different types of permitting fees, expediting reviews, or providing property tax abatements for new green buildings. Cities also have an important role in enforcement and monitoring of pollution and emissions from industrial activity in coordination with environmental regulators.

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