



Enhancing the Role of National Development Banks in Supporting Climate-Smart Urban Infrastructure

A Policy Brief for the Cities Climate Finance Leadership Alliance
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**CITIES CLIMATE
FINANCE
LEADERSHIP
ALLIANCE**



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ABOUT THE CITIES CLIMATE FINANCE LEADERSHIP ALLIANCE

The Cities Climate Finance Leadership Alliance (the Alliance) is a coalition of leaders committed to deploying finance for city level climate action at scale by 2030. It is the only multi-level and multi-stakeholder coalition aimed at closing the investment gap for urban subnational climate projects and infrastructure worldwide. Climate Policy Initiative (CPI) serves as Secretariat for the Alliance. Funding for the Alliance's activities is jointly made available through two German government ministries: The Federal Ministry for Economic Cooperation and Development (BMZ) and the Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety (BMU).

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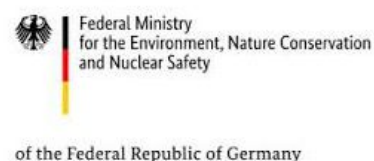
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ABOUT FELICITY

Financing Energy for Low-carbon Investment- Cities Advisory Facility (FELICITY) is an initiative of GIZ and the European Investment Bank (EIB) to support low-carbon urban infrastructure projects . FELICITY offers technical assistance to cities in designing and developing their infrastructure investment projects. FELICITY prioritizes the interest of cities and incorporates the perspective of international financiers. FELICITY is funded by the International Climate Initiative (IKI) of the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMU).

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ABSTRACT

National Development Banks are generally well positioned to support climate-smart urban infrastructure investments, and to address larger systemic challenges facing cities in their efforts to contribute to the Paris Agreement goals as well as broader development objectives. This paper focuses specifically on enhancing the role that National Development Banks play in supporting the acceleration of climate-smart urban infrastructure investment. With more than USD 5 trillion in assets and several comparative advantages relative to other financiers, NDBs are well-positioned to lead this shift. However, maximizing their potential will require strengthening the enabling environments of urban institutions, as well as making some strategic adjustments at the NDB institutional and financing levels.



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1. BACKGROUND

There is an urgent need to transition to low-emission, climate-resilient pathways and to avoid locking in high-emission, unsustainable infrastructure. This has been affirmed in international agreements such as the Paris Agreement, captured in the UN's global Sustainable Development Goals (SDGs), and recently highlighted by more than 11,000 scientists in a declaration that planet Earth is unequivocally facing a climate emergency (Ripple et al., 2019).

Cities, as growing population hubs and drivers of economic growth, are important focal points in the global response to climate change (Box 1). At the same time, the concentration of people, assets, and economic activity make cities particularly vulnerable to climate change (CUT, 2019).

The planning and infrastructure investment decisions made in cities in the years ahead will determine their adaptive capacity and emissions profiles for decades to come. A key factor will be the extent to which cities and their urban institutions (e.g., local and municipal governments; regional boards; provincial/state enterprises; etc.) can access the necessary finance for climate-smart urban infrastructure development.

Research has estimated that the global need for urban infrastructure investment is USD 4.1-4.3 trillion per year from 2015 to 2030, and that making this infrastructure low-emissions and climate-resilient (i.e., climate-smart) will require a premium of USD 0.4-1.1 trillion per year (the Alliance, 2015). Researchers have made a compelling case for pursuing the climate-smart approach. For example, a recent study by the Coalition for Urban Transitions (CUT) showed that deploying technically feasible low-carbon measures could cut emissions in urban areas by almost 90% by 2050, and generate a net savings of USD 23.9 trillion in Net Present Value (NPV) terms (CUT, 2019).

This paper is developed under the framework initiative Leadership for Urban Climate investment (LUCI) that is hosted by the Cities Climate Finance Leadership Alliance. LUCI identifies the need to increase the understanding of National Development Banks' (NDBs) experiences and challenges with financing urban infrastructure projects. The initiative was developed under the leadership of the German Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) and launched at UNSG Climate Action Summit 2019. LUCI provides a framework to close gaps in the subnational financial architecture by addressing along four integrated components, the key structural constraints of the entire investment value chain.^{1,2} One of these components relates to the capacities and mandates of NDBs.

1 LUCI has the objectives until 2025 to capacitate 2000 cities in project preparation, to make 1000 urban projects bankable and linked to finance as well as to deploy 100 new financing mechanisms.

2 Component 1 focuses on creating a strong global architecture for subnational climate finance and its tracking; Component 2 will create bankable projects and coherent pipelines at scale (Project Preparation Action Group); Component 3 will improve financing options and approaches for cities and urban infrastructure projects (Financial Toolbox Action Group); Component 4 focuses on favorable national framework conditions and strong national development banks (Enabling Frameworks Action Group).

Thus, this paper focuses specifically on enhancing the role that National Development Banks (NDBs) play in supporting the acceleration of climate-smart urban infrastructure investment. With more than USD 5 trillion in assets and several comparative advantages relative to other financiers, NDBs are well-positioned to lead this shift. However, maximizing their potential will require strengthening the enabling environments of urban institutions, as well as making some strategic adjustments at the NDB institutional and financing levels.

Cities

- Population: More than 50% reside in urban areas. By 2050, this is expected to rise to 70%.
- Energy: Consume 60-80% of global energy.
- Emissions: Responsible for roughly 70% of total greenhouse gas emissions.
- Economic growth: Generate 80% of global gross domestic product.
- Government spending: In some countries, responsible for more than half of spending and investment in sectors that have a direct implication for climate change (cities and regions in 30 OECD countries; 2000-2016).
- Nationally-Determined Contributions (NDCs): About two-thirds of NDCs mention cities, with the bulk focusing on adaptation actions in cities.

2. CLIMATE-SMART URBAN INFRASTRUCTURE

There is no universally accepted definition of “climate-smart urban infrastructure,” but most research defines it as low-emissions and climate-resilient infrastructure located in urban areas in sectors such as energy, transport, telecom, waste management, and water. Some point to specific “climate-smart” sectors: green buildings, sustainable transport, renewable energy, and energy efficiency. The New Climate Economy (Rydge et al., 2015) suggests two high-level principles for climate-smart infrastructure, specifically that all infrastructure policies, plans, and projects should:

1. Build in resilience to the risks of climate changes projected during their lifetimes
2. Be consistent with countries’ adopted climate targets and policies and long-term ambitions, and are able to be justified in the context of the global long-term goal of holding average global warming to under 2°C

2.1 CHALLENGES TO CLIMATE-SMART URBAN INFRASTRUCTURE INVESTMENT

There are compelling and wide-ranging reasons to prioritize adaptation and mitigation measures into city planning and infrastructure investment. However, translating this into action has been fraught with challenges.

First, local and municipal governments face enormous pressures to provide basic services (e.g., education and healthcare) and address urgent infrastructure deficits. At the same time, they often face a range of barriers that limit their ability to access and deploy finance. Fiscal decentralization has presented challenges, especially for low and medium-income countries, where subnational governments may account for 10% or less of public expenditures (Smoke, 2019). Furthermore, many cities, especially in developing economies, lack access to international credit markets. In fact, only 4% of the 500 largest cities in emerging economies are deemed creditworthy in international markets and less than 20% in local markets (World Bank, 2013). As a result, cities generally rely on local revenue sources (e.g., property and sales taxes, tariffs, and fees), intragovernmental transfers (e.g., cash transfers from the national government for general or specific use), and local public and private financial institutions. Municipal governments report financing 64% of their emissions reductions from their own funds, 7% from grants or specific subsidies, 14% from the private sector, and less than 1% from development banks (CDP, 2012).

Second, infrastructure of all forms has been an area of chronic under-investment for decades due to a number of challenges: it requires a large upfront investment and includes a long payback period; uncertainty around revenue generation potential makes

raising financing difficult; and the benefits of infrastructure projects often accrue to citizens rather than to the operator (i.e., create positive externalities) (Bielenberg et al., 2016; OECD, 2018). Urban settings often exacerbate these challenges due to high levels of urban risk (e.g., location/exposure to hazards; increased vulnerability due to poor local governance). Further barriers to climate-smart urban infrastructure investment are shown in Table 1.

Table 1. Approaches of Selected Countries and Institutions to Define Green Finance

CATEGORY	BARRIERS
Framework Conditions	Limited incentives/weaker policy environments relative to incumbent technologies.
	High (perceived) risks of (new) low-emissions technologies.
	Behavioral and data biases that favor conventional practices over innovation.
	Lack of capacity to integrate climate in infrastructure planning/assessment.
	National regulations often prohibit/hamper direct lending to cities/municipalities.
Project Level	Lack of bankable project pipelines.
	Timing mismatch: high upfront construction costs but long payback periods.
	Limited capacity to structure urban infrastructure projects.
Investment Level	High development/transaction costs (e.g., limited data on new technologies).
	Insufficient risk-adjusted returns.
	Lack of suitable investment instruments.

Sources: Bielenberg et al., 2016; Meltzer, 2016; McKinsey Global Institute, 2016; OECD, 2018; OECD/The World Bank/UN Environment, 2018; World Bank, 2018c.

3. NATIONAL DEVELOPMENT BANKS AND URBAN INFRASTRUCTURE

National Development Banks are generally well positioned to support climate-smart urban infrastructure investments, and to address larger systemic challenges facing cities in their efforts to contribute to the Paris Agreement goals as well as broader development objectives (e.g., Sustainable Development Goals and the Addis Ababa Action Agenda).

While estimating the number of NDBs in operation varies depending on the methodology utilized, there are believed to be more than 250 and possibly as many as 442 (Studart and Gallagher, 2016; Xu et al., 2019). Sixty percent are found in middle-income countries, while only 8% are located in low-income countries, and around 30% in high-income countries (Xu et al., 2019). Most are reasonably small but collectively they hold at least USD 5 trillion in assets, considerably more than the just under USD 1 trillion held by Multilateral Development Banks (MDBs) (Studart and Gallagher, 2016)(Table 2).

Table 2. NDBs by Assets in 2015

CATEGORY	ASSETS (US\$)	NDBS (%) OF TOTAL	ADDITIONAL INFORMATION
Small	< 1 billion	38%	NDBs in China, Germany, Brazil, India, and South Africa hold roughly three-fifths of all NDB assets and double the amount of MDB assets.
Medium	1 - 9.9 billion	35%	
Large	10 - 99 billion	21%	
Mega	> 100 billion	2%	

National Development Banks

National Development Banks (NDBs), often referred to as National Development Finance Institutions (NDFIs), public banks, policy banks, or promotional banks, are ‘any type of financial institution that a national government fully or partially owns or controls and has been given an explicit legal mandate to reach socioeconomic goals in a region, sector, or market segment’ (World Bank, 2018b).

Notes: Figures based on responses from 64 NDBs (78% from middle-income countries, 19% from high-income countries and 3% from low-income countries).

Sources: World Bank, 2018b; Studart and Gallagher, 2016.

While NDBs share some commonalities as a group, they differ along several dimensions, including:

- Ownership structure (fully vs. partially government owned);
- Mandate (narrow vs. wide);
- Business lending models (first tier and/or second tier);
- Credit conditions (subsidized vs. market rates);
- Size (assets); and
- Governance (independent vs. government-controlled boards) (de Luna-Martinez and Vicente, 2012).

3.1 COMPARATIVE ADVANTAGES

NDBs possess a number of comparative advantages relative to other financiers. First, due to their generally singular domestic focus, they understand and often inform their country's development planning efforts and have extensive knowledge of the barriers and opportunities to investment (Griffith et al., 2020; IDB, 2012). Their close proximity to the market has enabled them to cultivate long-standing relationships with local public and private sectors, and in many cases they have developed strong sectoral expertise (Griffith et al., 2020; IDB, 2012).

Second, they can utilize a range of funding sources to support their business activities. Most can borrow from international capital markets or institutional investors (85%) and obtain official development assistance (77%), while some can receive direct budget transfers from their governments (29%) (World Bank, 2018b). At the same time, they can access international climate finance (e.g., from the Green Climate Fund and the Global Environment Facility (OECD, 2019)).

Third, they can provide finance in local currency and assemble tailored financing packages to meet specific project needs (OECD, 2018) within the constraint of their funding sources. For infrastructure projects, they can provide grants and technical assistance during the pre-construction phase and then debt, equity, and/or guarantees during the construction and operational phases (Griffith et al., 2020). In the case of cities, they can intermediate MDB/IFI, multilateral climate fund, and bilateral funding (IDB, 2013; IDB, 2017). Furthermore, NDBs can lend directly to municipalities who often lack access to long-term commercial financing options (Bradlow and Humphrey, 2016).

Finally, they can pool different types of funding in blended finance structures and catalyze private sector investment. For example, they can deploy a portfolio approach (i.e., aggregate several small-scale projects) when assessing credit risk and streamlining application processes; and they can take on riskier positions in the financing structure (IDB, 2012; IDB, 2013).

3.2 ROLE IN INFRASTRUCTURE INVESTMENT

Given the heterogeneity of NDBs, their ability to support infrastructure investment varies. The World Bank’s 2017 Survey of NDBs showed that approximately half of NDBs have narrow policy mandates, while the other have a broad mandate. Only 13% were specifically set up to support infrastructure. However, a large number of NDBs recognize that infrastructure is necessary for sustained, inclusive growth, and at least 59% of the NDBs surveyed offer infrastructure finance instruments, including loans, guarantees, and support for public-private partnerships.

Due to data limitations and a lack of standardized reporting methodologies, it is difficult to assess how much of each NDB’s support for infrastructure is climate-smart, or to know the proportion going to urban versus rural settings. According to research by Studart and Gallagher (2016), very few NDBs have explicit infrastructure goals and even fewer focus on “sustainable infrastructure.” Nonetheless, several of the largest NDBs allocate a significant percentage of their overall portfolio to infrastructure, and most focus at least in part on the sustainability of this infrastructure (Table 3) (See Box 3 for examples from Brazil and China).

Table 3. Major NDBs and Infrastructure Finance

COUNTRY	BANK NAME	TOTAL ASSETS AS % OF GDP	% OF PORTFOLIO IN INFRASTRUCTURE	INFRASTRUCTURE FINANCE	
				PRIORITY?	SUSTAINABLE?
Brazil	BNDES	15.76%	40%	Yes	Limited
China	CDB	18.65%	69%	Yes	Limited
Germany	KfW	16.62%	42%	Limited	Yes
India	IIFCL	3.12%	100%	Yes	Yes
South Africa	DBSA	1.78%	83%	Yes	Limited
	IDC	3.06%	34%	Yes	Limited

Notes: Portfolio data from 2015.

Sources: OECD, 2017; Studart and Gallagher, 2016.

NDB Involvement in Urban Infrastructure: Examples from Brazil and China

Brazilian Development Bank (BNDES)

The BNDES has four priority areas for infrastructure investment: electricity generation, sanitation, urban mobility, and railroads. In 2018, infrastructure projects supported by BNDES exceeded R\$30.4 billion (US 6.6 billion). BNDES also provides specific financing lines for states and municipalities including for urban infrastructure (e.g., sanitation, drainage, mobility, and public lighting), public facilities (e.g., health, education, social assistance, leisure), and other interventions aimed at improving quality of life. Through its Modernization Program for Tax Administration and Management of Basic Social Sectors (PMAT), it supports 56 municipalities and has enabled an increase in municipalities' tax revenue and a reduction in the time required to provide information to citizens.

China Development Bank (CDB)

The CDB aligns its business focus with China's major medium- and long-term economic development strategies. One of its eight key focus areas is "urbanization, urban-rural integration, and balanced regional development." Its extensive efforts to support urban areas and to input to policies (e.g., the National New Urbanization Plan [2014–2020]) has positioned the CDB as a leading force behind China's overall urbanization efforts. For example, Yichun City, part of the national pilot program for a new model of urbanization, received a total of RMB24.786 billion (US\$3.6 billion) from the CDB Heilongjiang branch by the end of 2018. This covered urban infrastructure projects such as water supply, power, and heating, "green" development, public transport, and educational infrastructure. In China, "green" infrastructure usually refers to investments that support its goals for low-carbon development, help create a circular economy, and contribute to the achievement of specific environmental objectives (e.g., reduction of SO_x emissions, site remediation, etc.).

Notes: Exchange rates as of March 5, 2020.

Sources: BNDES, 2018; CDB, 2018; Gilbert and Zhao, 2017.

3.3 COMMON BARRIERS TO NDB INVESTMENT IN CLIMATE-SMART URBAN INFRASTRUCTURE

Generally speaking, the ability for NDBs to support climate-smart urban infrastructure investments at scale is currently constrained by a number of existing barriers (Table 4).

Table 4. Common Barriers to NDB Investment in Climate-Smart Urban Infrastructure

CATEGORY	BARRIERS
Institutional	Lack of clear mandate to promote climate change programs (or even, sometimes, infrastructure), let alone climate-smart urban infrastructure.
	Short political and electoral cycles can lead to shifting priorities.
	Lack of capacity to mainstream climate objectives into their portfolios.
	Limited access to international concessional climate finance.
	Lack of capacity to identify/assess climate-smart urban infrastructure projects.
	Limited resources/capacity to provide support to cities in project preparation.
Financial	Size of investment portfolio, even if large, is likely significantly dwarfed by the overall urban infrastructure investment needs in a country.
	Smaller NDBs cannot afford to invest in major infrastructure investment requiring significant upfront capital.
	Lack of financial instruments to attract a wide range of investor types, especially private investors.

Sources: Studart and Gallagher, 2016; OECD, 2017; OECD, 2018; Griffith-Jones et al., 2020; Bradlow and Humphrey, 2016..

4. ENHANCING NDB SUPPORT FOR CLIMATE-SMART URBAN INFRASTRUCTURE

There are a number of ways to enhance the role of NDBs as supporters of climate-smart urban infrastructure. Some of these opportunities can be pursued by NDBs themselves, while others require the involvement of, and support by, other actors (e.g., national and local governments, bilateral cooperation agencies, MDBs/International Financial Institutions (IFIs), etc.) These opportunities generally fall into three categories:

1. Urban institution enabling conditions: Develop the capacity of urban governments to access finance and develop climate-smart urban programs and projects, pre-conditions for NDB and other public and private investment;
2. NDB institutional level: Strengthen necessary NDB internal factors (e.g., policies, capacities); and
3. NDB financing level: Target NDB investments in areas that capitalize on their comparative advantages and address existing barriers to investment at scale.

Collectively, the goal of these opportunities is to increase support for climate-smart urban infrastructure directly, by positioning NDBs as key domestic supporters, and indirectly by ensuring that NDB support maximizes the potential to catalyze additional local and international public and private investment (Table 5).

Table 5. Opportunities to Increase NDB Support for Climate-Smart Urban Infrastructure

CATEGORY	OPPORTUNITY	PRIMARY OBJECTIVE	IMPLEMENTATION PARTNERS
Urban Institution Enabling Conditions	1. Enhance financial capacity and situation	Improve urban institution access to finance	Local and national government, MDBs/IFIs, bilateral cooperation agencies, multilateral funds
	2. Improve capacity for developing climate-smart projects	Improve urban institutions' ability to mainstream climate risks and develop robust project pipelines	
NDB Institutional Level	1. Develop or strengthen climate mandates, policies and targets	Ensure that NDB mandates and policies prioritize or at least do not preclude climate-related investments, including for climate-smart urban infrastructure	NDB governance bodies
	2. Increase engagement with domestic government agencies	Enhance NDB involvement in development of relevant climate and urban plans, and support translation of plans into concrete project pipelines	Government agencies
	3. Seek accreditation and support from multilateral funds and MDBs/IFIs	Enable access to concessional international climate finance to support project preparation and NDB capacity building efforts	Multilateral funds and MDBs/IFIs
	4. Build internal capacity to identify, structure and finance climate-smart urban infrastructure	Strengthen internal capacities required for increasing NDB investment	MDBs/IFIs, bilateral cooperation agencies, multilateral funds

NDB Financial Level	1. Build bankable project pipelines through project preparation support	Address one of the main barriers to large scale investment and influence project design	Project developers and financiers, government agencies
	2. Increase use of risk mitigation instruments	Address perceived technology and financial risks to catalyze private investment	MDBs/IFIs, bilateral cooperation agencies, multilateral funds
	3. Adapt and deploy financing instruments to mobilize institutional investors	Enable and increase institutional investor involvement	MDBs, bilateral cooperation agencies, multilateral funds

4.1 URBAN INSTITUTIONAL ENABLING CONDITIONS

4.1.1 ENHANCE FINANCIAL CAPACITY AND SITUATION

Primary Objective: Improve urban institution access to finance.

Implementation Partners: Local and national government, MDBs/IFIs, bilateral cooperation agencies, multilateral funds.

Overview: Recognizing that NDB investment alone will not be sufficient to address the climate-smart infrastructure needs in most countries, it is important to enhance urban institutions’ financial capacity/situation. This could include, for example, improving creditworthiness, developing local bond capital markets, and securing mandates to raise revenue and funds (e.g., through tax and fees, municipal bond issuance)for climate-smart urban infrastructure. The specific interventions will vary by city depending on their respective circumstances and needs as cities exhibit huge variation in terms of their size, maturity, economic development, infrastructure, environment, governance models, and local priorities (World Bank, 2018c).

4.1.2 IMPROVE CAPACITY FOR DEVELOPING CLIMATE-SMART PROJECTS

Primary Objective: Improve urban institutions’ ability to mainstream climate risks and develop robust project pipelines.

Implementation Partners: Local and national government, MDBs/IFIs, bilateral cooperation agencies, multilateral funds.

Overview: Project preparation is critical for creating bankable projects. However, many countries are often unable to adequately translate their infrastructure gaps into well-defined and prioritized project pipelines (GIH, 2019)(see Section 4.3.1). At the same time, urban institutions often lack capacity to integrate climate risk information and to mainstream climate resilience measures into infrastructure planning, and would benefit from further assistance (OECD, 2018).

In many cases, NDBs are well-positioned to provide technical assistance for urban institutions (see Box 4 for an example). Involvement of national/federal-level entities (e.g., Finance, Treasury, and Planning agencies) would be beneficial to prompt cooperation between various domestic actors

La Financiera de Desarrollo Nacional (FDN): Catalyzing private finance in Colombian infrastructure

Colombia's National Development Finance Corporation, FDN, was setup to catalyze private investment in Colombian infrastructure. In addition to offering products necessary for infrastructure (e.g., long-tenor loans, subordinated debt, guarantees and credit enhancements), it offers technical assistance on project structuring and financing to state and local governments as well as domestic financial institutions. In order to sufficiently address capacity gaps, especially at the sub-national level, FDN partnered with the International Finance Corporation (IFC) to establish a public-private partnership advisory facility that will focus on building public sector capacity.

4.2 NDB INSTITUTIONAL LEVEL OPPORTUNITIES

4.2.1 DEVELOP OR STRENGTHEN CLIMATE MANDATES, POLICIES, AND TARGETS

Primary Objective: Ensure that NDB mandates and broader policies prioritize, or at least do not preclude, climate-related investments, including for climate-smart urban infrastructure.

Implementation Partners: NDB governance bodies.

Overview: Few NDBs have mandates, goals, or targets related to infrastructure or climate, let alone to climate-smart urban infrastructure. This is not necessarily intentional; most NDBs do not periodically review their mandates (World Bank, 2018b), and many have been in place for decades. This needs to change. NDB governance bodies, typically comprised of government representatives, may consider adjusting the institution's mandate and/or mission statements. Adjustments could include, for example, making reference to contributing to low-emissions and climate-resilient development pathways and the Paris Agreement itself (CPI, 2019).

Of course, having a mandate to support climate adaptation and mitigation efforts, generally, or climate-smart urban development, specifically, does not necessarily guarantee that sufficient resources will be allocated (IDB, 2017). Setting climate finance targets (e.g., a doubling by 2025; a certain percentage of the overall portfolio; etc.) are one way to translate a qualitative mandate into a measurable time-bound goal. If possible, targets or sub-targets could be developed to further specify goals related to climate-smart urban infrastructure.

NDBs can also adopt other climate-related policies. These could include mainstreaming climate considerations across NDB operations; prioritizing certain financing instruments for climate-smart urban infrastructure (see Section 4.2); and evaluating urban infrastructure investments for climate risks (e.g., transition risks, physical risks and liability risks) (see Box 5 for an example). Small policy adjustments often yield large impacts. For example, committing to only supporting climate-smart infrastructure after

Industrial Development Corporation (IDC): Climate Change Response Strategy

The IDC, the largest NDB by assets in South Africa, revises its mandate annually and reviews its green investments policy every four years. In recent years, the IDC has undertaken a number of steps to embed climate change and environmental sustainability issues and opportunities into its operations. For example, IDC:

- Established a centralized climate change department to streamline all climate related business (e.g., to coordinate with government and private sector clients); and
- Developed and began implementing a strategy to ensure that climate change is mainstreamed and addressed in Bank operations, and is in line with South African climate commitments.

Sources: World Bank, 2018b; Pauthier et al., 2017.

disasters could save billions: The World Bank estimates that “building back better” after disasters could save up to USD 173 billion per year globally (Hallegatte, Rentschler and Walsh, 2018).

4.2.2 INCREASE ENGAGEMENT WITH DOMESTIC GOVERNMENT AGENCIES IMPLEMENTATION PARTNERS: GOVERNMENT AGENCIES.

Overview: The degree to which NDBs are involved in the domestic policy process related to climate and urban planning impacts the extent to which they can effectively contribute to financing climate-smart urban infrastructure. Unfortunately, NDBs have not always participated in policy dialogues, or received visibility in strategies and plans; to date, very few Nationally Determined Contributions (NDCs) have recognized the role of NDBs (Griffith-Jones et al., 2020).

Nonetheless, members of the International Development Finance Club (IDFC)³ have committed to supporting country-led climate related policies, including developing technical capacities to enable the translation of NDCs and longer-term climate strategies into policies, investment plans and projects (IDFC, 2018). This type of commitment sends a positive signal, but it’s the implementation of such commitments that will ultimately develop robust pipelines of bankable climate-smart urban infrastructure projects (see Section 4.2.1). NDBs need to increase their engagement with relevant domestic government agencies to ensure that NDCs, urban development plans, and other relevant strategies are translated into concrete climate-smart urban infrastructure projects. (See Box 6 for an example).

³ The IDFC is a group of 26 national and regional development banks from all over the world, collectively representing the largest provider of public development finance globally, with USD 4 trillion in combined assets and annual commitments of more than USD 600 billion.

Development Bank of South Africa (DBSA): Engagement with government entities

The DBSA serves as a financier along the entire infrastructure service value chain and plays a key role in South Africa's shift to climate-smart infrastructure. Based on its mandate to work with underserved municipalities on infrastructure issues, it has been assisting poorer municipalities to develop long-term infrastructure plans. The DBSA also engages with national-level government. For example, the DBSA worked with the Department of Energy and the National Treasury to setup the independent power producer office, the implementer of the Renewable Energy Independent Power Producer Procurement (REIPPP) program, a state-run nationwide competitive reverse auction mechanism for renewable energy projects.

Source: OECD, 2019b.

4.2.3 SEEK ACCREDITATION AND SUPPORT FROM MULTILATERAL FUNDS AND MDBS/IFIS

Primary Objective: Enable access to concessional international climate finance to support project preparation and NDB capacity building efforts.

Implementation Partners: Multilateral funds and MDBs/IFIs.

Overview: Many NDBs face challenges in securing low-cost and/or long-term financing (e.g., NDBs that do not receive fiscal support from their governments; NDBs located in countries that require significant adaptation investment but which have restricted or decreasing access to concessional development finance, such as those in the Small Island Developing States (SIDS)(Griffith-Jones et al., 2020). This in turn limits their ability to provide grants for project preparation, to provide guarantees, to lend at concessional rates and for longer durations, and to mobilize additional private investment. For these NDBs, it will be important to secure accreditation and support from multilateral funds such as the Green Climate Fund (GCF) and the Global Environment Facility (GEF).

The GCF accreditation process can be slow, resource intensive, and challenging. However, getting through the process allows access to additional finance and can yield significant co-benefits. NDBs that have successfully navigated the process have found that it “greatly improved internal systems, transparency, and reporting” and can have positive reputational effects (Griffith-Jones et al., 2020). For example, DBSA's engagement with the GCF and the GEF led to a complete overhaul of the Bank's Environmental and Social Safeguard Standards and reporting frameworks as well as contributed to mainstreaming climate change within DBSA and creating the bank's climate change policy framework (OECD, 2019b).

Accreditation from multilateral funds may also bring new opportunities for NDB capacity building as well as opportunities to share lessons and information with other institutions.

4.2.4 BUILD INTERNAL CAPACITY TO IDENTIFY, STRUCTURE, AND FINANCE CLIMATE-SMART URBAN INFRASTRUCTURE

Primary Objective: Strengthen internal capacities required for increasing NDB investment in climate-smart urban infrastructure.

Implementation Partners: MDBs/IFIs, bilateral cooperation agencies, multilateral funds.

Overview: Most NDBs hold a multi-sectoral mandate and may not possess sufficient internal capacity to identify, structure, and finance climate-smart urban infrastructure. These NDBs should develop the necessary technical and financial intermediation skills. While specific capacity gaps will vary among NDBs, the technical side is likely to include improving sectoral expertise (e.g., energy, energy efficiency, transport, water systems, waste management, etc.) and developing environmental and social risk management capacities (GIZ, 2018). The financial side may require strengthening capacities to prepare projects and project pipelines and deploy certain instruments (e.g., guarantees). At the same time, NDBs should develop guidance and sound eligibility criteria for urban institutions to enable them to prepare robust climate-smart urban infrastructure projects.

4.3 NDB FINANCING LEVEL OPPORTUNITIES

4.3.1 BUILD BANKABLE PROJECT PIPELINES THROUGH PROJECT PREPARATION SUPPORT

Primary Objective: Address one of the main barriers to large scale investment in climate-smart urban infrastructure and influence project design.

Implementation Partners: Project developers and financiers, government agencies, MDBs/IFIs, bilateral cooperation agencies, multilateral funds.

Overview: One of the main barriers to scaling climate-smart urban infrastructure projects is a lack of bankable projects. There are two interconnected issues that must be addressed. First, government plans, including those articulated in NDCs, need to be translated into concrete climate-smart urban infrastructure projects (see also Section 4.1.2). Second, these projects need to be further developed to ensure sufficient risk-adjusted returns for commercial capital. Project preparation costs can be significant, ranging from 5-10% of the total project investment in developing countries, and about 3-5% of project costs in developed countries (GIH, 2019). Certain technical complexities require additional resources. For example, in certain countries and cases where infrastructure projects would benefit from a Public-Private Partnership (PPP) structure, expertise and resources will be required to setup the PPP project finance structure. Given that project preparation represents the highest-risk phase of an infrastructure project's life cycle, the potential for project preparation facilities (PPF) to reduce

Infrastructure Project Preparation Support Options in Brazil and India

Brazil

Brazil offers several options for infrastructure project preparation support. For example, Brazil's largest NDB, BNDES, established a project development division with the objective "to foster, structure, and coordinate infrastructure projects, both public concessions and public-private partnerships (PPPs), at the federal, state and local government level." Other options include budgetary allocations and access to independent facilities by multilateral entities (e.g., the World Bank, IFC, and the Inter-American Development Bank (IADB)). At the sub-national level, the Supporting Fund for Partnerships Structuring (FEP), administered by Caixa Econômica Federal (CAIXA), a Brazilian Government-owned bank, contributes 70-80% of project preparation costs with the remainder originating from the sub-national government. However, if the sub-national government decides to not take a supported project forward, it must reimburse the FEP.

India

Several sub-national governments have established project development facilities, some specifically targeting the urban infrastructure sector. For example, the government of Orissa established a state level project development fund to support city development plans and pre-feasibility studies for infrastructure projects.

Source: GIH, 2019; CAIXA.

transaction costs and increase overall investment, including by the private sector, is high (Bielenberg et al., 2016; Griffith-Jones et al., 2020).

NDBs are generally well-placed to develop project preparation and pipeline development facilities – including advisory and financing services related to structuring PPPs – given their strong domestic experience and relationships. In fact, the NDBs that have been most successful in promoting sustainable infrastructure projects are those that have been most involved in identifying and supporting project development (Stuart and Gallagher, 2016). Developing a pipeline of and/or investing in demonstration projects can also show private banks and investors the commercial viability of new technologies and sectors (Griffith-Jones et al., 2020). Finally, early involvement allows more direct oversight over project design; once projects reach a later stage of development, modifications are difficult (CPI, 2019).

However, many NDBs may not have sufficient internal resources to adequately address project preparation and pipeline development needs. These NDBs will need to prioritize these efforts within their existing budgets, access concessional climate finance from international sources (see Section 4.1.3), or partner with international entities or domestic government agencies that provide project preparation support. (See Box 7 for an examples from Brazil and India)

4.3.2 INCREASE USE OF RISK MITIGATION INSTRUMENTS

Primary Objective: Address risks inherent in climate-smart urban infrastructure to catalyze private investment.

Implementation Partners: Project developers and financiers, government agencies, MDBs/IFIs, bilateral cooperation agencies, multilateral funds.

Overview: Risk mitigation instruments (e.g., credit and project guarantees, insurance, first-loss mechanisms, and other credit-enhancement schemes) can be an effective way to target project, policy, and regulatory risks inherent in climate-smart infrastructure and thus mobilize private capital and more risk-averse investors. (See Box 8 for an example). Guarantees, for example, are one of the most catalytic instruments: Official

The DBSA Climate Finance Facility (CFF)

The DBSA Climate Finance Facility (CFF) is the first-of-its-kind climate finance facility in Africa using a Green Bank model. With an initial capitalization of around USD 110 million, including USD 56 million from the GCF and the remainder from DBSA's balance sheet, the CFF aims to de-risk and increase the bankability of climate projects in order to crowd-in significant investments from commercial banks and projects sponsors. Specifically, the CFF will provide credit enhancements such as subordinated debt and tenor extensions for infrastructure projects and businesses that mitigate or adapt to climate change (e.g., off-grid power, mini-grid solar, urban distributed solar farms, energy and water efficiency). It will target four countries: South Africa, Namibia, Lesotho, and Eswatini. The CFF aims to catalyze five dollars of private investment for each dollar directly invested.

Sources: Convergence, 2019; Smart Cities World, 2019.

development finance interventions from 2012-2018 mobilized USD 205.2 billion from the private sector, with the most (40%) originating from guarantees (OECD, 2020). However, guarantees have not been a priority for NDBs. The IDFC reported that nearly all of their 2018 member commitments for green finance was deployed in the form of loans (96%), while guarantees represented less than 1% (IDFC, 2019).

In addition to mobilizing private investment, increasing the use of guarantees can generate significant financial and non-financial benefits. For example, NDBs that provide credit guarantees to local banks who lend to climate-smart infrastructure projects would allow project developers to access debt at a reasonable cost and build the capacity and track record of the local banks (Blended Finance Task Force, 2018).

It is worth noting that deploying more risk mitigation instruments is not necessarily appropriate or applicable to all NDBs or climate-smart urban infrastructure investment opportunities. Additional considerations include, for example, how the increased use of guarantees would affect the NDBs' balance sheets and whether updated methodologies for calculating guarantees' balance sheet impacts in line with expected risks would be required (CPI, 2019).

4.3.3 ADAPT AND DEPLOY FINANCIAL INSTRUMENTS TO MOBILIZE INSTITUTIONAL INVESTORS

Primary Objective: Enable and increase institutional investor involvement.

Implementation Partners: MDBs/IFIs, bilateral cooperation agencies, multilateral funds.

Overview: Achieving the scale of climate-smart urban infrastructure investment needed will require robust private sector investment. Direct investment in climate-smart urban infrastructure, however, is not necessarily an appealing or even possible option for certain investor classes. For example, institutional investors represent a large yet under tapped source of potential capital for climate-smart urban infrastructure.

Mexico's Experience with Green Bonds

Mexico has been at the forefront of the Green Bond movement. Mexico's state-owned development bank Nacional Financiera S.N.C., or NAFIN, issued the first green bond in Mexico in 2015. Investor demand was high; the issuance was five-times oversubscribed, meaning that investors were willing to buy more bonds than NAFIN had to sell. The proceeds from the USD 500 million five-year Green Bond are being used to finance eligible wind energy generation projects in Mexico. In 2016, NAFIN issued the first peso-denominated green bond on the local market, selling seven-year bonds for 2 billion pesos (USD 101 million). The proceeds will go to finance hydroelectric and wind power projects in Mexico.

These issuances paved the way for more recent green bonds. For example, in 2017 Mexico City became the first city in Latin America to issue a green bond. The USD 50 million issuance, which was 2.5 times oversubscribed, will pay for energy-efficient lighting, transit upgrades and water infrastructure.

Notes: Exchange rate at time of bond issuance.

Sources: NAFIN, 2018; Bonds & Loans, 2016; Swope, 2017; C40, 2017.

Historically, institutional investors have not focused on or prioritized infrastructure investment. First, they are unlikely to be in a position to undertake the extensive due diligence or to secure the specialized expertise required to assess direct infrastructure investments, let alone climate-smart urban infrastructure investments. Second, they are generally attracted to liquid instruments (e.g., bonds, equities) as opposed to those with the longer-term lock in periods common to infrastructure investments. In other words, making climate-smart urban infrastructure a compelling opportunity for most mainstream institutional investors will require the use of more familiar financial instruments (e.g., bonds, green bonds) (McKinsey Global Institute, 2016).

NDBs operating in countries with more developed capital markets can play a role in adapting and deploying financial instruments to attract mainstream investors (e.g., institutional investors) with different capabilities and requirements. (See Box 9 for an example). This could include pooling and transferring climate-smart urban infrastructure assets into a Special Purpose Vehicle which could then issue bonds in tranches (Griffith-Jones et al., 2020) or increasing loan syndication efforts (McKinsey Global Institute, 2016; CPI and Institute for Climate Economics, 2019). NDBs can also increase their own capital through bond issuance, including use of proceeds green bonds specifically targeting climate-smart urban infrastructure.

5. RECOMMENDATIONS

Enhancing the role of NDBs in scaling up climate-smart urban infrastructure necessitates a concerted effort by NDBs and a range of supporting actors. It requires improving the underlying framework and financial conditions in place in cities, as well as strengthening NDBs' institutional and financing capacities. The following are some of the steps different actors can take.

5.1 NATIONAL DEVELOPMENT BANKS

- Assess the current status of key institutional factors (e.g. mandate and policies; financial product offerings and other support for infrastructure) and, as necessary, adjust to prioritize or at least not preclude climate-related investments, including for climate-smart urban infrastructure.
- When necessary, seek accreditation and support from international climate funds, MDBs/IFIs, and international networks to develop additional capacities and/or to secure concessional climate finance (e.g., for project preparation);
- Develop and deploy additional product offerings (e.g., project preparation facilities; risk mitigation instruments; other financial instruments) with the aim of addressing barriers to climate-smart urban infrastructure investment and catalyzing private investment; and
- Enhance collaboration with relevant national and local government entities involved in key planning efforts such as NDCs and city climate action plans.

5.2 NATIONAL AND LOCAL GOVERNMENTS

- Assess the current status of regulatory framework conditions necessary for robust climate-smart urban infrastructure investment, improving as possible and accessing support from international entities and networks when necessary.
- Ensure that NDBs are included in relevant policy and planning efforts.
- Provide TA support to project sponsors, either through national multi-sectoral facilities, national sectoral agencies or within NDBs to pipeline, prioritize and conduct rigorous feasibility studies for climate projects to facilitate financing by NDBs.

5.3 INTERNATIONAL PUBLIC FINANCE

For multilateral, regional, and bilateral development banks, and multilateral climate funds.

- Provide support to local governments to improve framework conditions and to NDBs to enhance capacities related to scaling up climate-smart urban infrastructure (e.g., capacity to identify/assess climate-smart urban infrastructure projects; capacity to develop innovative financing instruments and issue green bonds); and
- Collaborate with NDBs to extend credit lines, concessional financing, and other financing approaches to climate-smart urban infrastructure projects in order to address market failures and share the risks.

5.4 TECHNICAL AND CAPACITY-BUILDING SUPPORT

For bilateral and international cooperation agencies, city networks, multi-stakeholder initiatives.

National Enabling Frameworks

- Build coalitions of bilateral agencies, national governments, and other stakeholders which can provide resources for:
 - Knowledge products on best practice in climate finance for NDBs in respect of both internal operations and enabling frameworks;
 - Strengthening NDBs capacity to support upscaled pipelines of climate urban projects and their financing;
 - Support to national governments to strengthen the mandate of, and widen the scope for resource mobilization by NDBs operations in the urban climate finance space.

Project development

- Coordinate and utilize existing initiatives to upscale their support to viable urban climate investments through assistance to NDBs that strengthen both staff capacity and systems, such as assessment systems and MRV systems, that underpin their facilitation of city agencies in their formulation and development of climate-positive projects.

Capital markets and institutional participation in urban climate finance

- Additional bilateral and other resources need to be sought to build NDB capacity to link to national and international capital markets and to strengthen their ability to utilize institutional finance – both at the national and international levels. Institutional

finance has both the large quantum of resources needed and the long term investment perspective appropriate for climate projects, but is constrained in its application to climate projects both by government regulatory frameworks and the need to achieve investment-level credit ratings. To unlock these funds, more effective regulation, risk reduction mechanisms as well as guarantees are needed.

Advocacy and dissemination of best practice

- The activities of networks of NDBs such as the International Development Finance Club and the Global Alliance for Subnational Development Banks should be supported as they can play a valuable role in increasing the capacity of NDBs directly and through peer-to-peer learning.

Role of the Cities Climate Finance Leadership Alliance (the Alliance) and LUCI

By hosting LUCI, the Alliance can play an important role in:

- a. convening key players, including NDBs, national/local governments, and MDBs/IFIs and other relevant stakeholders, to motivate action, enhance cooperation and share best practices;
- b. raising awareness of urban climate financing needs and opportunities, and the role of NDBs in addressing these;
- c. motivating action by setting clear, quantifiable targets for action on NDBs under LUCI;
- d. tracking and analyzing the contribution of NDBs to urban low carbon climate resilient development.

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