Supporting National Development Banks to Drive Investment in the Nationally Determined Contributions of Brazil, Mexico, and Chile

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Abbreviations

ALIDE	Latin American Association of Development Financing Institutions
BB	Banco do Brasil S.A.
BCDB	Banco Central Do Brazil
BDMG	Banco de Desenvolvimento de Minas Gerais S.A.
BNDES	Banco Nacional de Desenvolvimento Econômico e Social
BRDE	Banco Regional de Desenvolvimento do Extremo
CAIT	Climate Analysis Interactive Tool
CEPAL	United Nations Economic Commission for Latin America and the Caribbean
CIF	Climate Investment Fund
CMF	Connectivity, Markets, and Finance Division of the Inter-American Development Bank
COFIDE	Corporación Financiera de Desarrollo
CORFO	Corporación de Fomento de la Producción
CPI	Climate Policy Initiative
DFI	Development Finance Institution
ESI	Energy Savings Insurance
FIRA	Fideicomisos Instituidos en Relación con la Agricultura
FND	Financiera Nacional de Desarrollo Agropecuario, Rural, Forestal y Pesquero
GCF	Green Climate Fund
GFLAC	Climate Finance Group of Latin America and the Caribbean
GHG	greenhouse gases
IDB	Inter-American Development Bank
IDFC	International Development Finance Club
IFC	International Finance Corporation
IIC	Inter-American Investment Corporation
INDC	Intended Nationally Determined Contribution
KfW	Kreditanstalt fuer Wiederaufbau
LAC	Latin America and the Caribbean
MDB	Multilateral Development Bank
NAFIN	Nacional Financiera
NDB	National Development Bank
NDC	Nationally Determined Contributions
NRDC	Natural Resource Defense Council
SEBRAE	Serviço Brasileiro de Apoio às Micro e Pequenas Empresas
SHF	Sociedad Hipotecaria Federal
UNFCCC	United Nations Framework Convention on Climate Change
WRI	World Resources Institute

Executive Summary

The unprecedented global goals for climate change mitigation and adaptation established by the Paris Agreement in December 2015 will be pursued largely through domestic plans submitted by the 197 participating countries. These plans, known as Nationally Determined Contributions (NDCs), outline how each country will fight and adapt to climate change, including key goals and priority sectors.

Thirty-two of 33 countries in Latin America and the Caribbean (LAC), representing more than 99 percent of LAC emissions, signed the Paris Agreement, and 25 countries, representing more than 77 percent of LAC emissions, have ratified it so far (WRI, 2016a; UNFCCC, 2017).[1] Implementing NDCs will require large amounts of investment, and the Paris Agreement recognized the need to mobilize flows of finance toward low emission and climate-resilient development. Climate investment needs in LAC are forecast to rise to around $80 billion a year in the next decade—almost three times what the region invests today. As part of these efforts, at its annual meeting,[2] the IDB Group committed to focus on projects that will help LAC countries implement their commitments to reduce greenhouse gas (GHG) emissions and to build resilience to climate change, and pledged to increase the share of climate finance to 30 percent of the portfolio by 2020.

This study examines 12 national development banks (NDBs) and other domestic development finance institutions (DFIs) in Brazil, Mexico, and Chile to explore their current and potential roles in financing NDC implementation. These three countries represent more than 56 percent of LAC emissions. Domestic DFIs occupy a unique position in development landscapes, as connectors of international finance, domestic governments, and local private sector actors. They have the institutional support from governments and nuanced understanding of local sectors needed to provide finance and technical support and to mobilize climate investments that can help to meet NDC objectives.

This is the first study of its kind to focus on what domestic DFIs in three large LAC countries are doing to mobilize investments for NDCs, the barriers they face in increasing climate finance, and opportunities they have to overcome them. It builds on and complements previous research from the IDB and the Climate Policy Initiative (CPI) on the roles of NDBs in catalyzing climate finance (Smallridge, Buchner, Trabacchi, et al., 2013), as well as analysis from the International Finance Corporation (IFC) on NDC financing needs in LAC (IFC, 2016a).

The Investment Gap

The shortfall between current climate finance flows and identified NDC investment needs in these three

[1] As of June 2, 2017.

[2] The IDB's Board of Governors annual meeting was held in The Bahamas in 2016.

countries is large. Even with conservative estimates of NDC financing needs—which cover only a limited fraction of climate change mitigation objectives in the renewable energy, industrial energy efficiency, and infrastructure sectors—this gap is billions of dollars per year in Chile, tens of billions annually in Brazil and Mexico, and is particularly significant in the energy efficiency and urban infrastructure sectors (IFC, 2016a, b; Buchner, Mazza, and Falzon, 2016).

The gap between tracked current adaptation spending and NDC adaptation objectives in these three countries is likely to be significant. Adaptation goals form an important part of all three countries' NDCs but are often high-level goals and are not yet quantitatively defined. So far, there are no reliable estimates of the financing needs to achieve these goals. The challenges to domestic DFIs in identifying and structuring adaptation projects are reflected in a lack of investment—less than 2 percent of their climate finance flows went toward adaptation.

Despite these challenges, surveyed domestic DFIs made more than US$11 billion in climate finance commitments in 2015. The vast majority of this financing (98 percent) went toward mitigation projects. Virtually all tracked climate financing came in the form of concessional or market-rate lending, most financing went to private-sector recipients (85 percent), and the predominant sector for climate financing investment was renewable energy (43 percent).

Opportunities to Support Domestic DFIs in Increasing Climate Financing

- **Develop appropriate investment frameworks and translate NDCs into bankable investment plans.** National and multilateral development banks (MDBs) can have a critical role in supporting governments in translating NDC aspirational goals into tangible investment objectives and, accordingly, develop an appropriate investment framework that creates a bankable deal flow, especially in areas such as resilient infrastructure and transport where business models are not yet established. Brazil's, Mexico's, and Chile's current NDCs do not specify the roles of domestic DFIs in implementation, and institutions have expressed a desire for greater guidance from governments on their roles and greater involvement in the planning process. Governments can use the capacity and experience of NDBs in both the NDC update process and in ongoing efforts to create national climate financing strategies and plans, ensuring that domestic DFIs' mandates and capabilities are well aligned with well-defined, quantitative NDC goals.
- **Incorporate comprehensive climate finance tracking throughout portfolios.** Governments and MDBs can work alongside DFIs to mainstream tracking of climate finance throughout portfolios. Most surveyed institutions do not systematically track climate finance across their portfolios, citing particular difficulties with adaptation investments. Support for tracking would help them identify climate-relevant projects in sectors that they are less familiar with and to measure progress over time as NDC goals are further defined.
- **Enhance understanding of the risks and financial structuring of different types of climate financing projects, particularly for adaptation, energy efficiency, and urban infrastructure projects.** Surveyed institutions cited difficulties in financially structuring climate-relevant projects as among the most common barriers they face. Their perception that climate-relevant projects offer poor risk-adjusted returns was another key barrier revealed by the survey. National and multilateral development banks can work together to employ risk mitigation instruments such as insurance and guarantees to improve perceived risk-adjusted returns of climate projects and drive investment to fill key NDC financing gap sectors while demonstrating the viability of these investments and building the technical capacities of NDBs. (Institutional and individual capacity building reduce perceived risks.)

- **Develop new climate finance instruments.** Bilateral and multilateral development institutions can partner with domestic DFIs and private sector actors to explore, develop, and pilot the innovative financial instruments that will allow them to scale up investments in climate finance. This effort can build on public–private partnership models that blend concessional and commercial investment, such as the *Global Innovation Lab for Climate Finance,* but focus on developing financing vehicles specific to individual countries and NDC sector goals, for which there are yet no viable private investments (see Box 6 for an example). Also, NDBs could consider going one step further and putting in place climate or environmental strategies and action plans and having a better and more consistent disclosure of what NDB finance is needed.
- **Pursue new forms of concessional and grant financing while building technical capacities.** MDBs can support domestic DFIs in pursuing new forms of concessional and grant financing from major climate funds. Insufficient access to long-term or low-cost financing was among the most commonly cited financial barriers to greater climate finance investment. Partnerships with MDBs, where the MDB initially acts as an intermediary accredited entity to Climate Funds, can help NDBs build the kinds of project track records that are needed for eventual accreditation with an entity like the Green Climate Fund (GCF). Grant and concessional financing can also help domestic DFIs explore climate finance sectors where they still need to grow the institutional capacities in order to fulfill NDC objectives. This financing can also be used to help create local markets and to build awareness of the business case for climate-relevant investments among financial institutions, local manufacturers and suppliers, consumers, and others.

1 Introduction

The Paris Agreement combats climate change through country-defined sustainable development plans, aiming to align financing flows with low-carbon climate resilient growth. National development banks and local financial institutions can play key roles in providing climate financing and supporting implementation of these plans.

The Paris Agreement and its Implications for Financing Climate Action in LAC

In 2015, governments around the world set collective climate and development goals that far exceeded anything agreed to in the past (Netto and Gomes, 2015). The Paris Agreement, reached at the 21st Conference of the Parties in December 2015, reinforced and elaborated on these objectives while setting unprecedented new targets for climate change mitigation and adaptation based on nationally determined proposals (Carlino, Netto, Suarez, et al., 2017).

NDCs are a key foundation of the Agreement. They are devised by each participating country and outline that country's post-2020 plans to fight and manage climate change. NDCs reflect a country's capabilities, economic and political context, circumstances (i.e., the magnitude and structure of sources of GHGs), national priorities, and ambitions for setting its economy on a low-carbon development path (UNFCCC, 2016; WRI, 2015). They encompass existing and future national actions toward achieving the Agreement's overarching goal of limiting global temperature rise this century to well below 2° Celsius (C) above pre-industrial levels and pursuing efforts to limit the temperature increase even further to 1.5°C (UNFCCC, 2016).

Countries that have submitted an initial plan for their NDC[3] represent 98.9 percent of global emissions (WRI, 2016a) and the 144 countries that have officially ratified the Paris Agreement[4] represent 81.9 percent of global emissions (UNFCCC, 2017; WRI, 2016b).

However, even under the most optimistic scenarios, current NDC commitments alone will not be sufficient to meet goals to limit global temperature rise. Realizing NDC ambitions would represent a significant improvement over business-as-usual emissions but collectively would still fall short of the Paris Agreement's 2°C target by 0.8°C–1.5°C (CAT, 2016a; Climate Interactive, 2016).

Two of the primary keys to achieving these goals are the commitment of all parties to the Paris Agreement to significantly ramp-up ambition over time and to align finance flows to a low-carbon,

[3] These initial plans are known as Intended Nationally Determined Contributions (INDCs). Once a country ratifies the Paris Agreement its INDC converts to an NDC. For simplicity, the paper refers to these as NDCs going forward.
[4] As of June 2, 2017.

Box 1 NDC Diversity and Variables

NDCs vary significantly in both their structure and the content of their objectives in part because of how goals are defined or measured. These variables significantly change the overall climate ambition of an NDC and its path for implementation. Common variables include the following:

- **Economy-wide versus sector-specific objectives:** Certain NDCs set emissions reduction goals that apply to the country's entire economy, while others have goals that are specific to certain sectors.
- **Types of GHG emission targets:** Some NDCs set absolute targets (emission reductions as measured against emissions in a baseline year), while others contain business-as-usual targets (reductions relative to projected future emissions under a business-as-usual scenario), intensity targets (emissions reductions as a proportion of economic output), or no emission targets at all.
- **Unconditional versus conditional targets:** Some NDCs set unconditional targets without regard to what other nations do, while others have conditional goals that depend on the provision of financial or technological support from other nations.
- **Financing:** Relatively few NDCs specify where the financing for meeting their goals will come from (Amin, 2016) and their financial needs are not specified in detail.

climate-resilient future. The Agreement provides for progress to be reassessed every five years when countries will re-submit updated NDCs that reflect even greater steps to prevent and manage climate change. However, it is also critical that countries identify where the finance for meeting their goals will come from and that they mobilize far greater private investment to achieve their current NDC objectives and to catalyze economic transformations essential to a sustainable, long-term future. To date, relatively few NDCs specify where the financing for meeting their goals will come from (Amin, 2016).

The need for greater climate finance is particularly pressing in LAC, where estimates suggest that reaching NDC targets for countries' renewable energy (wind, solar, small hydro, biomass, and geothermal), urban infrastructure (building energy efficiency, waste management, and sustainable urban transport), and industrial energy efficiency goals alone will require investment of more than US$176 billion per year between 2016 and 2030 (IFC, 2016a).[5] Current climate finance flows fall well short of this amount. Based on data from CPI's most recent update to the *Global Landscape of Climate Finance* series—which tracks climate finance to a significantly greater number of climate finance sectors—climate finance invested in LAC countries totaled approximately US$32 billion in 2014 and public-sector institutions provided at least US$24 billion of this (Buchner et al., 2016).[6]

As of March 2017, 23 of the 33 LAC countries, including Brazil, Mexico, and Chile, had ratified the Paris Agreement (UN, 2014; UNFCCC, 2017).

Objectives and Scope of the Study

This study focuses on NDBs and other domestic development finance actors[7] in LAC based

[5] Annualized estimate based on needs of US$2.64 trillion over the 15 years from 2016 to 2030 for renewable energy, urban infrastructure, and energy efficiency. IFC (2016a) does not provide estimates of industrial energy efficiency financing needs for Mexico or Chile.

[6] These totals include Mexico and Chile. Under the *Landscape* methodology used in Buchner et al. (2016), Mexico and Chile are classified within the Americas and, thus, reported LAC climate finance figures cited in that report are lower (US$27 billion total and US$22 billion from public institutions). It is also important to note that, with the exception of BNDES, the climate finance contributions of the institutions featured in this report are not captured in the *Landscape* series of reports.

[7] In this paper, we use the term domestic DFIs as shorthand for the group of actors studied, which includes traditional national and regional development banks, as well as other types of DFIs we surveyed. See Table 1 for details.

on the key roles that they play in domestic economic development and their potential to scale up climate-relevant investment and support for NDC implementation. They occupy a unique position within the climate finance landscapes of their respective countries thanks to their proximity to, understanding of, and nuanced relationships with governments and local private sector actors, and their ability to obtain and channel finance from international sources. These institutions have been and remain key players in infrastructure investment and economic development throughout Latin America and many other developing countries around the world (Smallridge et al., 2013).

NDCs articulate countries' goals to increase climate-relevant support, but they also present domestic DFIs with potential investment opportunities. Estimates suggest that reaching NDC targets in LAC will require investment of more than US$176 billion per year from 2016 to 2030 (IFC, 2016a). This study aims to identify how domestic DFIs operating in LAC can help scale up climate finance investments domestically and help implement their respective countries' NDCs under the Paris Agreement. To evaluate this, we did the following:

- Synthesized the NDCs of Brazil, Mexico, and Chile and provided estimates of financing and other needs to implement them (Section 2).
- Assessed the current roles of a set of domestic DFIs in their respective countries' domestic climate financing landscapes (Section 3).
- Investigated the possible constraints and barriers to increasing support by NDBs for NDC implementation and scaling up climate finance (Section 4).
- Explored opportunities and options to enhance the abilities of NDBs to support their respective countries' NDC objectives (Section 4).

To achieve this evaluation we sought inputs from a diverse array of institutions in Brazil, Mexico, and Chile (see Table 1) to understand their contributions within domestic financial systems and potential roles they could play to better support NDCs. We sought differentiation among institutions in terms of the following:

- The variety of roles they play in the financial system (e.g., as providers of finance on a national and regional level, as well as providers of technical assistance).
- The array of products and services they offer (e.g., loans, guarantees, and capacity building).
- The range of clients they target (e.g., households, small and medium enterprises, project developers, corporate actors, and local and regional governments).
- The range of sectors they target (e.g., energy, housing, agriculture, and industry).

We surveyed institutions affiliated with the Latin American Association of Development Financing Institutions (ALIDE),[8] allowing the study to potentially do the following:

- Benefit from ALIDE's knowledge of and relationships with these institutions, given the project's need for significant input from institutions studied in the report.
- Foster joint action and coordinated participation of development banks and financial institutions in LAC's socioeconomic progress. This is of particular relevance to achieving the NDCs' goals, which will require large-scale support and the engagement and coordinated action of multiple stakeholders.

The 12 final institutions were chosen because of their diverse array of roles and experience relevant to climate action, their relative importance within their local financial systems,[9] and their availability to participate in the study.

[8] Serviço Brasileiro de Apoio às Micro e Pequenas Empresas (SEBRAE) is a collaborating member of ALIDE; all other surveyed institutions are active members.

[9] UN DESA (2005) and Smallridge et al. (2013), for instance, highlight the role and potential of domestic DFIs, as well as constraints that may prevent them from taking a more central role in advancing the climate agenda.

TABLE 1 List of Surveyed Institutions

Country	Financial Institution	Type of institution
Brazil	Banco de Desenvolvimento de Minas Gerais S.A. (BDMG)	NDB
	Banco do Brasil S.A. (BB)	Commercial government-owned bank with development mandate
	Banco Nacional de Desenvolvimento Econômico e Social (BNDES)	NDB*
	Banco Regional de Desenvolvimento do Extremo Sul (BRDE)	NDB
	Serviço Brasileiro de Apoio às Micro e Pequenas Empresas (SEBRAE)	Technical assistance provider
Chile	Corporación de Fomento de la Producción (CORFO)	Government organization
	BancoEstado	Commercial government-owned bank with development mandate*
Mexico	Banco Nacional de Obras y Servicios Públicos S.N.C. (Banobras)	NDB
	Fideicomisos Instituidos en Relación con la Agricultura (FIRA)	NDB
	Financiera Nacional de Desarrollo Agropecuario, Rural, Forestal y Pesquero (FND)	NDB
	Nacional Financiera S.N.C. (NAFIN)	NDB*
	Sociedad Hipotecaria Federal (SHF)	NDB

Source: Authors.
* Members of the International Development Finance Club (IDFC).

This inquiry aims to highlight challenges and opportunities for NDB support of NDCs that may be relevant throughout LAC and other parts of the developing world. Brazil, Mexico, and Chile were chosen for this initial case study because of the significant size of their economies, large potential to reduce emissions, diverse policy and regulatory contexts relevant to climate change action, and important NDBs operating within these contexts.

The methodology adopted for this study involves a combination of qualitative and quantitative approaches encompassing the following:

- A desk-based review and analysis of relevant literature.
- An analysis of climate finance flows to LAC based on the data collected in the context of the *Global Landscape of Climate Finance Update* report (Buchner et al., 2016).
- The development and assessment of a survey completed by 12 domestic financial institutions in Brazil, Mexico, and Chile between September 2016 and February 2017 providing NDB-level data on climate finance activities and perspectives on constraints to and options for expanding NDB climate actions.[10]
- Interviews with six representatives from bilateral finance institutions, domestic DFIs, ALIDE, and country-level representatives from the IDB.[11]

[10] Two of the institutions did not include tracked climate finance flows in their survey responses. Unless otherwise specified, references to "surveyed domestic DFIs" in the observations and analysis below refer to all 12 institutions.
[11] See list of interviews in References for additional information.

2

Financing and Other Needs of the NDCs of Brazil, Mexico, and Chile

Key Objectives of the NDCs of Brazil, Mexico, and Chile

The NDCs of Brazil, Mexico, and Chile vary in their sectoral priorities, levels of detail, and levels of ambition. However, across countries and NDCs there is a common need to mobilize finance at scale and to engage multiple public and private sector actors under a coherent and coordinated framework to achieve NDC objectives.

Many NDCs provide a high-level outline of country objectives and targets related to climate adaptation and mitigation. The NDCs of Brazil, Mexico, and Chile, in particular, share common sectoral emphasis on both mitigation and adaptation relevant sectors, namely renewable energy, energy efficiency, waste and wastewater, biodiversity, and resilient infrastructure. Table 2 aggregates common NDC sectors and objectives wherever possible. Goals with quantitative targets are included, as are more abstract priorities and objectives that do not yet have quantified targets.

Context and Potential of the NDCs of Brazil, Mexico, and Chile

Brazil, Mexico, and Chile share certain common sectors of focus in their NDCs and future climate actions. However, their governments are also operating in various contexts and have made progress through different approaches to climate action. Reflecting on national contexts and current progress with NDCs can help clarify what is needed and how NDBs and other domestic financial institutions can help.

While Brazil, Mexico, and Chile are positioned for progress on certain NDC objectives, progress is not uniform across all NDC sectors and achieving 2025 and 2030 goals will depend significantly on domestic economic contexts.

Brazil has been a leader in climate finance in LAC; however, macroeconomic challenges and carbon-intensive energy investments could jeopardize the country's climate targets. While Brazil is set to meet its hydro energy investment targets, it is also growing its fossil energy investments, which are forecast to be 71 percent of energy investments in the coming decade. This is a faster rate of investment than in the past and will increase energy-related emissions. Macroeconomic challenges could also reduce available capital for climate finance projects. The country remains the largest GHG emitter in Latin America—with a majority of its emissions coming from agriculture, land use, and forestry—and emissions are projected to continue to rise due to growth in agriculture, industry, energy, waste, land use, and deforestation. Overall,

TABLE 2 NDC Objectives in Brazil, Mexico, and Chile

Brazil	Chile	Mexico
GHG Emission Reduction Targets by 2030		
Economy-wide mitigation targets: 37% below 2005 levels in 2025; 43% below 2005 levels in 2030	30% reduction of GHG emissions-intensity of GDP below 2007 levels by 2030 (equivalent to 75% above 2010 GHG emission levels)	22% below 2030 business-as-usual[a] levels
Conditional Objectives		
No conditional objectives	Up to 45% reduction of GHG emissions intensity of GDP compared to 2007 by 2030 (equivalent to 62% above 2010 GHG emission levels)	Up to 36% of 2030 business-as-usual emission reductions with international support
Mitigation-Relevant Sectors and Country Objectives		
Brazil	**Chile**	**Mexico**
Energy		
Renewable energy generation	• 45% of total energy mix[b] from renewable sources • 28%–33% of total energy mix from renewable energy other than hydro by 2030 • 18% of energy mix from biofuels by 2030 • 23% use of renewables other than hydropower in the power (electricity) supply by 2030	• 20% of energy supply generated from non-conventional renewable energies by 2025	• Clean energy[c] targets of 25% of power generation by 2018, 30% by 2021, and 35% by 2024[d]
Lower carbon generation	• N/A	• N/A	• Co-generation (gas) is included in Mexico's definition of clean energy[e]
Energy Efficiency			
Energy	• 10% efficiency gains in energy sector by 2030	• 20% reduction in energy consumption by 2025	• No energy efficiency target but the mention of energy, industry, agriculture, waste, and land-use as opportunities for GHG emissions reduction
Industry	• Promote standards for clean technology	• Improve energy intensity in agriculture, waste, chemical industry, and mining	
Other sectors (incl. buildings)[f]	• N/A	• Housing	
Urban Infrastructure			
Sustainable transport	• Promote efficiency and improve access to sustainable public transport in urban areas	• Reduce diesel transport	• N/A
Water security, wastewater, and municipal and solid waste management	• Promote water conservation and sustainable use	• Integrate sustainable waste and water into the construction sector • Reduce waste emissions	• Promote water security and waste and wastewater management • Promote solid waste disposal, reduce waste emissions by managing waste incineration
Other mitigation			
Agriculture, forestry, and land use	• Reforest 12 million hectares by 2030 • Restore 15 million hectares of agricultural land by 2030 • Reduce illegal deforestation to 0% by 2030	• Recover 100,000 hectares of forest land by 2030	• Reach deforestation rate of 0% by 2030 • Reduce agricultural-related GHGs

(continued on next page)

TABLE 2 NDC Objectives in Brazil, Mexico, and Chile *(continued)*

Adaptation-Relevant Sectors and Country Objectives			
	Brazil	**Chile**	**Mexico**
Biodiversity and agriculture	• Create resilient agriculture • Maintain forest biodiversity	• Design a biodiversity plan covering diverse measures across multiple sectors • Forestry and agriculture and biodiversity plans have been approved, others are in development	• Protect biodiversity
Climate-resilient infrastructure	• Develop built environment, including housing, health, sanitation, and transport infrastructures • Create early warning systems for extreme rainfall	• Focus on energy, infrastructure, cities, tourism, health • Improve resilience of population against extreme events (droughts and floods) while minimizing threats to social and economic development	• Build climate-resilient cities, infrastructure, industries, tourism, agriculture, forestry, wildlife, fisheries, etc. • Strengthen resilience of municipalities[g]

Sources: Brazil (2016); Chile (2017); Mexico (2016); CAT (2016b,c).
[a] Baseline 2030: 1110 $MtCO_2e$ (973 GHG and 137 BC / 152,332 metric tons) (Mexico, 2016).
[b] Energy mix includes transport fuels, electricity feedstock, heating fuels, and other energy consumption throughout the economy, whereas power supply is just electricity generation.
[c] Clean energy refers to wind, solar, marine, geothermal, bioenergy, waste-to-energy, hydrogen, hydropower, nuclear, efficient cogeneration, and thermal plants with carbon capture and storage (NRDC, 2016a).
[d] As stated in the country's Energy Transition Law (CAT, 2016c).
[e] Analysis suggests that co-generation could be 9% of energy mix by 2030 and could reduce the share of renewables in the 2024 clean energy target to 29% (CAT, 2016c).
[f] It is important to note that for IFC (2016a) estimates of NDC financing needs by sector, building energy efficiency is included within IFC's "urban infrastructure" sector and is separate from estimates of industrial energy efficiency.
[g] Reduce the number of municipalities in the category of "most vulnerable" in Mexico's Special Climate Change Program (PECC) by 50% from 2014 to 2018 and avoid any other municipalities falling into this category.

Brazil needs to ramp up climate actions in forestry, agriculture, and energy (NRDC, 2016b).

Mexico has significant potential for climate action and early indications of policy and government support that can help in meeting NDC objectives are in place. The country's vast solar energy potential has been largely untapped thus far. Mexico, like Brazil, is a major non-OPEC oil producer and is the second largest emitter of GHGs in Latin America after Brazil. The country's heterogeneous geography makes the fight for climate resilience especially complicated. And indeed, Mexico's NDC puts significant focus on improving climate resilience on a community level—with tools such as the National Vulnerability Atlas and the National Risk Atlas—by improving the resilience of ecosystems and by improving infrastructure that is critical to productive sectors of the economy, rather than solely focusing on disaster response. Mexico aims to develop an insurance market against hydro-meteorological and catastrophic risks and to deploy a national carbon pricing system in 2018 that is currently being piloted (Mexico, 2016). According to the Natural Resource Defense Council (NRDC), the country needs to focus on energy and transport to reduce emissions further and to define monitoring approaches to meet mitigation targets (NRDC, 2016a).

Chile invested heavily in preparing for its NDC. Reducing economic dependence on high-emissions and climate-vulnerable sectors will be key to achieving long-term goals. Chile has been one of the LAC region's fastest growing economies, but growth has slowed in recent years and GDP per capita has fallen steadily since 2013. Chile's economy depends on extremely climate-relevant sectors and has a great deal to gain or lose from climate action or inaction. Mining accounts for more than 50 percent of Chile's exports and is highly GHG-emissions intensive, and its agriculture sector remains a significant source of employment and is vulnerable to climate change

Box 2 Future Climate Action from Domestic DFIs Depends on Countries' Economic Growth Trends and Macroeconomic Fundamentals

Macroeconomic circumstances and, in some instances, political uncertainty and resulting budgetary instability have implications for NDBs' abilities to plan ahead. Representatives of multiple domestic DFIs surveyed identified political and macroeconomic instability in LAC countries as significant obstacles to long-term planning for climate finance investments and, therefore, achieving NDC objectives.

In Brazil, the sub-investment–grade credit rating of the institutions surveyed, recession, and a concentrated funding structure have had a direct impact on funding costs, availability, and the operating environment of Brazilian domestic DFIs. Interviewees stated that an extremely volatile macroeconomic environment and capital constraints on domestic DFIs necessitate innovative financing mechanisms that can be deployed both to raise capital and to manage project and portfolio level risks.

Further, the relatively high interest rates and significant economic volatility common in Brazil and elsewhere in LAC can make the low risk-adjusted returns on long-term assets less attractive relative to other high-yield, short-term loan segments (Rezende, 2015). This may influence the attractiveness of climate change mitigation and adaptation investments. For instance, some interviewees noted that Mexican domestic DFIs can be so market oriented that they seek out profits and solid project financials in ways that can close them off to new markets and new opportunities.

As this report focuses on how national governments and international DFIs can support domestic DFIs to support NDC implementation, we do not address this important barrier.

(Santander, 2016). While the country is on track to meet its unconditional NDC targets, it will have to spur significant economic growth to meet its conditional pledge, which is predicated on both international support and certain economic targets (CAT, 2016b; Zevallo and Figari, 2015). While overall financing needs are not yet clear, Chile had significant input from across its government in preparing its NDC. Further, the country analyzed 96 different potential mitigation measures in detail when considering sectoral mitigation strategies, which could provide a valuable framework to address next steps (World Bank, 2015).

NDC Financing Needs and Gaps in Brazil, Mexico, and Chile

Implementing NDCs and achieving NDC targets in Brazil, Mexico, and Chile will require tens of billions of dollars in new climate finance investments each year.

One of the biggest challenges for NDC implementation remains the task of mobilizing sufficient investment toward low-carbon and climate-resilient sectors. Evidence suggests that the financing gap between current levels of climate finance and the investment needs associated with implementing NDCs in Brazil, Mexico, and Chile is significant (IFC, 2016a,b; Buchner et al., 2016).

Across the LAC region, US$2.6 trillion in investment is estimated to be needed for renewable energy, industrial energy efficiency, and urban infrastructure from 2016 to 2030 to meet NDC objectives. IFC estimated that financing LAC's combined NDCs offers the second largest climate investment opportunity globally after China's NDC. LAC countries have rapidly growing and urbanizing populations that will require large investments in sustainable transport infrastructure (US$1.5 trillion) and energy efficiency buildings (US$901 billion). Renewable energy (US$232 billion) also offers significant financing opportunities, alongside other sectors (IFC, 2016a).[12]

[12] IFC estimates are used because of their detailed coverage of Latin America in general, and Brazil, Mexico, and Chile specifically. Alternative NDC financing estimates from The World Bank are not used due to a lack of coverage of these countries (World Bank, 2016).

Box 3 Enhancing Our Understanding of Investment Needs for NDCs

More work is needed to turn NDCs into concrete strategies that can help mobilize investment. Brazil, Mexico, and Chile share a number of common NDC sectors and have articulated certain concrete NDC targets, but many goals remain high-level goals and objectives are not yet quantitatively defined or precise. This means that the financing needs of these NDCs as a whole are still vague. This is common to NDCs in LAC countries and around the world (Amin, 2016).

At the current stage, reliable estimates of financing needs for Brazil, Mexico, and Chile—along with financing needs for most other LAC NDCs—are limited to certain mitigation sectors. There is a lack of precise, quantitative adaptation goals specified in NDCs, which makes understanding the size and ambition of the objective—much less estimating the cost of achieving it—extremely challenging. In addition, the heterogeneity of adaptation sectors across these three countries and around the world can make it difficult to provide estimates without more detailed surveying of regional needs (Sabelli and Spensley, 2012).

Brazil, Mexico, and Chile provided little or no detail on how much and who will finance achieving their NDC objectives and do not yet specify the precise roles of domestic DFIs. None of these countries specified either the volume or exact sources of finance intended for NDC implementation. This is common to many NDCs in LAC and around the world. The NDCs of Mexico and Chile state that meeting more ambitious goals is conditional on financial support from developed countries, while Brazil's does not. In addition to this financial support, Chile's NDC establishes that more ambitious climate goals are also contingent on economic growth. However, Chile also mentions a future cross-sectional National Finance Strategy for Climate Change that will provide greater insight into financial institutions, instruments, and strategies to achieve climate goals, as well as current climate financing baselines. Chile is currently advancing work on this National Strategy with support from the IDB's NDC Invest platform (IDB, 2016).

No comprehensive estimate exists for investment needs in each country in LAC for the 2016–2030 timeframe. However, it was estimated that to meet NDC needs between 2016 and 2020, US$324 billion will need to be invested in Brazil, US$188 billion in Mexico, and US$24 billion in Chile (IFC, 2016a).[13] It is important to note that these estimates understate total NDC financing needs in LAC because they only cover renewable energy, urban infrastructure, and industrial energy efficiency NDC objectives. They do not include mitigation objectives like forestry and agriculture, nor estimates of adaptation financing needs. In some cases, there are synergies between investing, such that total investment would be lower than if both needs were calculated separately (i.e., in urban efficient and climate resistant buildings).

Comparing needs estimates to current climate mitigation investment levels, we determined that the annual investment gap was likely greater than US$48 billion in Brazil, US$36 billion in Mexico, and US$2.7 billion in Chile, and that gaps are likely to be particularly large for urban infrastructure sectors (IFC, 2016a; Buchner et al., 2016).[14]

NDC needs estimates and current finance tracking estimates contain assumptions and methodological asymmetries that render estimates that are indicative of the financing gap and preliminary at best.[15] In the absence of more precise NDC objectives for adaptation sectors, these estimates further represent only a fraction of the story. However, even with these caveats, it is clear that closing climate finance gaps of this scale is likely to require significant action from both public and private sectors to increase investment.

[13] The estimate for Chile is an elaboration based on IFC's (2016a) estimated needs of US$48 billion through 2025.

[14] Buchner et al.'s (2016) mitigation finance data captures a greater breadth of mitigation finance sectors than IFC's (2016a), which includes land use and agriculture, hence gaps are likely greater than the amounts provided. It is important to note that Buchner et al. (2016) captures 2014 data and includes certain regional climate finance flows from which the estimates for Brazil, Mexico, and Chile have been derived.

[15] See IFC (2016a) for a detailed discussion of the methodology and data challenges in estimating climate investment gaps and potential.

3

The Current Role of NDBs in Financing Low-Carbon, Climate-Resilient Investments in Brazil, Mexico, and Chile

With US$11 billion of annual climate finance investments and stated interest in greater climate-relevant activities in the future, surveyed domestic DFIs are demonstrating their potential to significantly advance the climate agendas of Brazil, Mexico, and Chile.

Climate finance data for 2015 provided by 10 Brazilian, Mexican, and Chilean domestic DFIs[16]—that together hold US$1,017 billion in total assets and represent 90 percent of the total assets of the domestic DFIs[17] of these countries—show that these institutions are already supporting advancement of the climate agenda in their respective countries (ALIDE, 2016).[18] Their support is demonstrated by the following:

- **Climate investments:** Domestic DFIs invested US$11 billion in climate finance: US$983 million in Chile, US$9,294 million in Brazil, and US$641 million in Mexico.
- **Climate mandates:** 8 of 12 responding institutions reported having a mandate to provide finance or another form of support for climate change–related activities.
- **Consideration of their country's NDC:** 8 of 12 institutions declared that they were aware of or were taking initial steps to incorporate NDCs into their future planning or portfolio.[19]

While these are promising signals, having an institutional mandate or goal to support climate-relevant measures does not necessarily translate into allocating sufficient resources toward mitigation or adaptation activities to meet NDC targets. There are multiple economic, political, institutional, and other variables that might significantly influence an

[16] Two additional institutions we surveyed (SEBRAE and FND) were unable to provide climate finance disbursement figures but participated in the qualitative components of the survey.

[17] Based on the total assets of ALIDE's member institutions in Brazil, Mexico, and Chile.

[18] ALIDE member domestic DFIs from these countries not covered by the study include Banco do Nordeste, Banco Nacional de Comercio Exterior S.N.C., and Banco da Amazonia. Most data reported are for 2015, but NAFIN's climate finance figures are for 2016.

[19] See Appendix C for details on the survey questions posed to domestic DFIs, definitions of climate finance, and instructions on how to respond.

institution's ability to provide climate finance. We investigate these challenges in Section 4.

Many institutions do not track climate finance systematically, particularly for adaptation.

It is also important to acknowledge limitations in climate finance data obtained through surveys from domestic DFIs. At least 5 of the 12 surveyed institutions reported that they did not track climate finance investments at all. In addition, the approaches used by institutions that track some finance to climate-related activities are not necessarily comprehensive across their portfolios and may also vary widely between institutions. There is no clear reporting standard across NDBs, which makes it very difficult to understand what the banks support in terms of sectors, instruments.(OECD, 2017). Adaptation projects are also more difficult to identify and report and are therefore likely to be underreported in climate finance data (Buchner et al., 2016).

Sectors, Instruments, and Recipients of NDB Climate Finance

Ninety-eight percent of the climate finance provided by surveyed NDBs supported mitigation actions. Finance went to some but not all of the priority sectors in the NDCs of Brazil, Mexico, and Chile and did not necessarily target these countries' largest sources of emissions or climate vulnerability.

Our survey results suggest that the climate finance flows of NDBs went to some but not all of the priority sectors of the NDCs of Brazil, Mexico, and Chile and were not necessarily directed to the sources of greatest emissions or climate vulnerability.

For instance, in Brazil, energy (45 percent) and transport (43 percent) dominate climate finance flows mainly due to the size of BNDES' investments in these sectors. Even though the bulk of Brazil's GHG emissions come from land use and agriculture (Gebara and Thuault, 2013), these sectors attracted just 11 percent of surveyed climate finance.

In Mexico, a country in which 79 percent of the population already lives in urban areas and urbanization is growing (Martinez, Dralisch, Escolero, et al., 2015; UN DESA, 2014), we note that only 10 percent of climate finance was focused on waste and wastewater management. Another 14 percent targeted agriculture, but the bulk of surveyed climate finance went to the energy sector (63 percent). While current levels of renewable energy investment are needed, urban infrastructure investment needs to be significantly increased to meet Mexico's NDC objectives.

In total, US$10.7 billion or 98 percent of surveyed NDBs' resources targeted mitigation activities.[20] Of this mitigation finance, 52 percent went toward low-carbon energy generation, renewable energy, and energy efficiency; 36 percent to transport; and 10 percent to agriculture, forestry, and land use (see Figure 1).

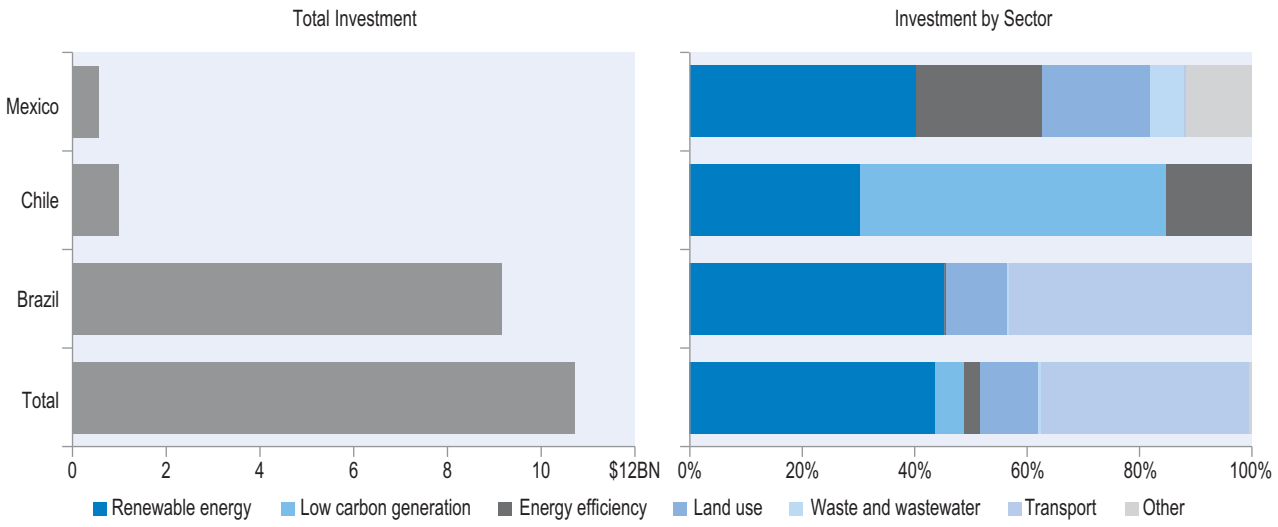
Adaptation measures received a much smaller share of institutions' annual climate financing (US$213 million or 2 percent), targeting the entire range of vulnerabilities in the agriculture (63 percent) and water (37 percent) sectors.

Study surveys and interviews highlight a need to enhance NDBs' technical abilities to identify and undertake adaptation projects.

There are several explanations for why mitigation represents a relatively larger share of reported climate finance than adaptation. The survey of domestic DFIs suggested that a clear government mandate, target, and policy framework is essential to ensure that they scale up investments to the needed level. Chile, for example, set long-term targets for a 20 percent share of renewable energy in

[20] We based the definition of mitigation and adaptation climate finance sectors on the IDFC's Green Finance Mapping approach (IDFC, 2015). For details on the methodology adopted, see Appendix B.

FIGURE 1 Annual Mitigation Investments of Surveyed Domestic DFIs in Brazil, Mexico, and Chile (US$ millions)



Source: CPI analysis based on data from surveyed domestic DFIs.

energy supply by 2025. Investments are expected to surpass the target, which is attributable to the clear government mandate, ambitious targets, and policy incentive schemes (Climatescope, 2015). The government targets for adaptation finance have not been as quantitatively defined, which might make it more difficult for institutions to follow up.

Perhaps the most important reason, however, is that adaptation activities are more difficult to implement. They often rely on the availability of the data and technical capacities necessary to both undertake climate vulnerability assessments and design financial structures to address identified vulnerabilities (EUFIWACC, 2016). In fact, survey answers and interviews highlight a need to enhance the technical abilities of NDBs for adaptation projects (see Section 4).[21]

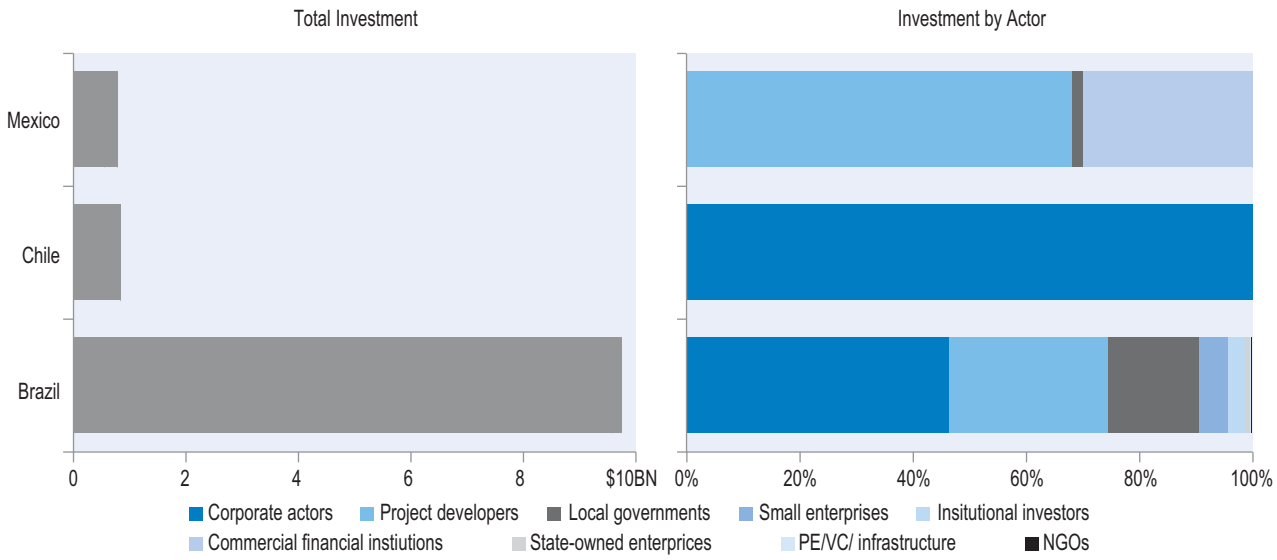
The disparity between mitigation and adaptation flows may also partially reflect that it is significantly easier to track climate finance flowing toward some mitigation sectors than toward many adaptation sectors. The heterogeneity of adaptation projects, and the fact that adaptation investments can often be incremental additions to traditional infrastructure projects, can make it extremely difficult to systematically track adaptation finance (Buchner et al., 2016). Even though over the years investors have improved data collection for mitigation investments, it will take time for adaptation to achieve parity in terms of data collection and tracking.

Adaptation sectors received only US$214 million in tracked climate finance. These activities represented less than 2 percent of total climate finance from surveyed institutions in 2015. Chilean domestic DFIs did not report any adaptation finance; Brazilian institutions reported US$135 million for adaptation in agriculture and land use and US$1 million for other adaptation sectors; and Mexican institutions tracked US$78 million for water-related adaptation projects.

Well-established instruments like market-rate (17 percent) and concessional loans (82 percent) financed almost the entirety of NDBs' climate finance activities. Climate finance tracked for other instruments, including direct equity investments and technical assistance, represented a minuscule

[21] This need is reflected in the breakdown of instruments provided by domestic DFIs where grants for technical assistance make up only 1 percent of total finance.

FIGURE 2 Breakdown of Domestic DFIs' Climate Finance in 2015 by Recipient (US$ millions)



Source: CPI analysis based on surveyed domestic DFI data.

fraction of the total.[22] Risk mitigation financing (predominantly insurance) also represented a total exposure of only US$216 million or less than 2 percent of NDBs' total tracked climate finance activities.[23] This suggests that some domestic DFIs may be averse to the risks of non-debt financial instruments, may not yet have fully realized the benefits of other potential financing approaches, and/or they may not be able to track all climate finance activities in their portfolios (Frisari, Herve-Mignucci, Micale, et al., 2013). However, surveyed institutions demonstrated an interest in experimenting with new approaches for sharing risks with other project stakeholders and alternative means of raising capital for climate-relevant projects (see Section 4 for more information). Also, these DFIs might face regulatory limits or barriers that favor debt instruments over equity or non-traditional investment mechanisms. It would be necessary to explore these barriers or regulations to determine whether DFIs can play a meaningful role in financings that are non-debt related. In addition, it would be a positive move to open conversations with domestic investment funds, pension funds, and foundations that might be able to invest in some of these non-debt instruments or mechanisms.

The majority of the finance provided by NDBs supported the climate actions and projects of private actors. Of the climate finance captured in this report, US$9.6 billion (85 percent) went to private sector entities, and more than half of this went to corporate actors and project developers (see Figure 2).

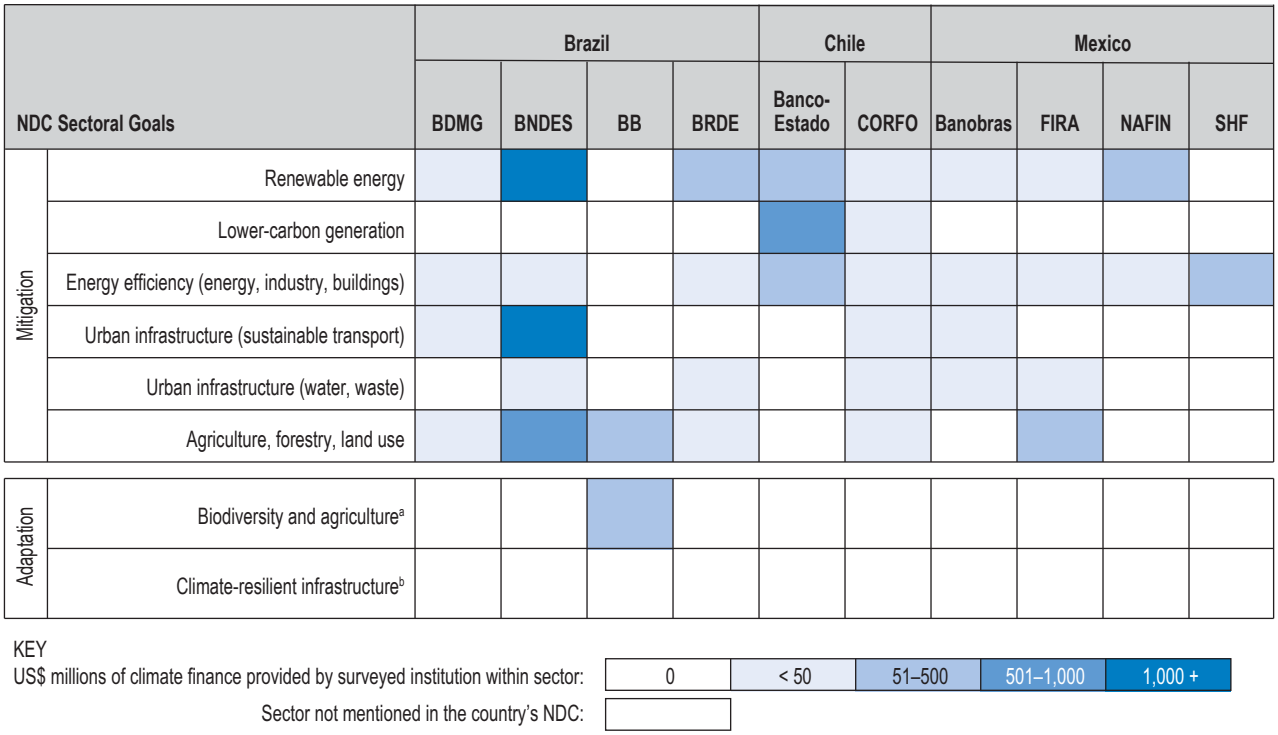
Predominant types of recipients vary by country, likely reflecting surveyed NDBs' different mandates, domestic environments, target clients or, in some cases, regulatory limits on lending to public entities such as municipalities. For example, in Brazil, the *Fiscal Responsibility Law* and the Central Bank set out fiscal restrictions that often prevent domestic DFIs from making new loans or that limit the overall amount to be loaned to the public sector, according to BDMG.

In Chile, corporate actors, including small and medium enterprises, dominated NDB borrowing,

[22] See Appendix C: Climate Finance Surveys Sent Out to NDBs for additional information on instruments surveyed.

[23] This is not counted toward climate finance totals to avoid double-counting per the climate finance tracking methodology of Buchner et al. (2016).

FIGURE 3 **Domestic DFI Climate Finance Activity and NDC Goals for Brazil, Mexico, and Chile**



Sources: CPI elaboration based on survey results[c] and Brazil (2016); Chile (2017); Mexico (2016).
[a] Including forestry, fisheries, and ecosystems.
[b] The lack of climate financing traceable to resilient infrastructure may be due largely to abstract NDC goals in this area, as well as challenges in climate finance tracking and a lack of universally agreed on definitions, which is particularly challenging in adaptation sectors. See Appendix B for additional information.
[c] It is important to note that surveyed climate finance data only represents 2015 financial commitments. For example, additional feedback from CORFO and NAFIN suggests that their climate finance activities may have increased significantly in 2016. In addition, two surveyed institutions are not featured in the table because they did not provide climate finance data.

reflecting the target clients of CORFO—the Chilean economic development agency—and BancoEstado.

In Mexico, FIRA provided most of the climate finance through commercial financial institutions. Banobras and SHF, key lenders for Mexico's infrastructure and housing sectors, provided finance to project developers. NAFIN provided finance only to project developers.

Brazil's totals are heavily influenced by BNDES' very significant climate finance activities. BNDES reported the majority of financing going toward corporate actors and project developers, as well as significant finance to local governments. Other Brazilian institutions reported smaller amounts of climate finance to corporate actors, institutional investors, and local governments.

Alignment of Mandates and Current Climate Finance Commitments of Individual NDBs with the Priorities of the NDCs of Brazil, Mexico, and Chile

The institutions we surveyed have different priorities and take different approaches to supporting climate action. Figure 3 shows the breakdown of spending by priority NDC sector, thus highlighting which institutions might be best placed to increase their support in particular areas, either alone or in partnership with other institutions.

Institutions surveyed have different priorities and take different approaches to climate finance. In Mexico, for example, SHF, the federal mortgage society, is supporting the development and

construction of energy- and water-efficient houses (SHF, 2016). FIRA, the agricultural financing arm of the Mexican government, is meanwhile promoting more efficient energy and water use in the country's food processing industry. In Brazil, BDMG, is investing in sustainable transport (ICLEI, 2015; CIF, 2014; KfW, 2016).

Comparing the financing activities of surveyed institutions with high-level NDC sectors, we found that:

- NDC financing needs for urban infrastructure (sustainable transport, and waste and wastewater management) are so large, that technical and financial support enabling necessary urban infrastructure projects across all institutions should be a priority for donors and MDBs.
- Finance for adaptation is minuscule. Governments need to give domestic DFIs more specific adaptation mandates and policy frameworks for action. Donors and MDBs should focus on raising abilities to track adaptation finance to learn more about specific technical capacity and finance needs for adaptation. In addition, a proper adaptation policy framework is needed to enable lenders and investors to envision revenue streams to repay loans or recoup non-debt investments and deploy innovative mechanisms that support sound lending.
- There may be opportunities for actors currently at the margins of climate action to take greater roles. For example, sector-focused banks such as SHF (housing) and FND (agriculture) can use their technical depth to partner with other actors on complex or market-specific energy efficiency and agriculture projects. Likewise, BB, which is the largest bank in Latin America based on its assets and which often invests alongside BNDES (BB Americas, 2017; Bevins, 2010), did not report climate finance outside of the agriculture and forestry sectors. Supporting BB to identify and track green projects throughout its portfolio could give useful insights on potential opportunities to provide more climate finance via commercial banks.

4

Barriers and Opportunities to Increasing NDBs' Climate Investments

A lack of clear government mandates, institutional capacity, and experience, and adequate finance and risk mitigation instruments are major obstacles to domestic DFIs doing more to meet NDCs.

A lack of long-term and low-cost capital, insufficient risk-adjusted returns, and the high costs of imported equipment are the most commonly cited financial constraints limiting NDBs' abilities to increase climate finance.

Domestic DFIs in Brazil, Mexico, and Chile have important roles to play in financing and supporting the implementation of their countries' NDCs. At the same time, they face many internal and external barriers preventing them from increasing finance flows to climate-relevant projects.

We interviewed domestic DFIs, as well as experts from the IDB, KfW, and ALIDE, about financial, governance, technical, and other barriers preventing them from increasing support for climate change mitigation and adaptation projects. This section examines those barriers and explores opportunities for overcoming them and enhancing NDBs' abilities to support their countries' NDCs.

Financial Constraints and Opportunities

Financial Constraints Limiting NDBs' Abilities to Provide Climate Finance

A variety of barriers prevent domestic DFIs from increasing climate finance. Access to low-cost, long-term capital is a major barrier to domestic DFIs supporting the implementation of NDCs. Six of the 12 responding institutions emphasized that a shortage of low-cost debt or sufficient long-term capital limited their ability to increase climate finance activities. The projects needed to achieve NDC goals in many sectors, such as renewable energy, sustainable urban infrastructure, and energy efficiency, can often have long payback periods. For example, renewable energy investments currently make up 79 percent of total global mitigation finance (Buchner, Trabacchi, Mazza, et al., 2015). The upfront capital costs for wind, photovoltaic, and hydro make up 84–93 percent of total project costs, while they make up only about 24–37 percent for gas and 66–69 percent for coal. These higher upfront costs increase the need for stable long-term capital for renewable energy to remain competitive with conventional power (Nelson and Shrimali, 2014). The IDB also highlighted the challenge of lending to institutions

that are not backed by a clear guarantee from their government.[24]

For many domestic DFIs, climate-relevant projects often do not offer the returns needed for the institutions to consider investing. Six of 12 surveyed domestic DFIs reported that climate-relevant projects do not offer the risk-adjusted returns that they seek (or are not "bankable"). High transaction costs, misalignment of financial incentives due to cash flows (the Mexican government subsidizes the agricultural sector's energy use, keeping energy efficiency investments in the sector low [OECD, 2016]), or high real or perceived risks increase the costs of finance for such projects. This is especially important for infrastructure projects as they may generate cash flows only after a substantial time, are complex due to the large number of stakeholders involved, and in some cases are not expected to generate revenue sufficient to cover individual project costs. At the same time, these infrastructure projects are more beneficial to the economy as a whole than to individual investors (Ehlers, 2014). CORFO, BancoEstado, Banobras, FIRA, FND, and NAFIN highlighted their interest in risk-mitigation instruments such as guarantees and insurances that are tailored to cover sector-specific technology, counterparty, or market risks.

BNDES, for example, stated that counterparty risk for indebted municipalities and state governments can constrain their climate finance activities. BB, SEBRAE, Banobras, FIRA, NAFIN, and SHF reported the need to lower risks, increase profits, or improve the timing of cash flows from climate finance projects to increase investor demand and to provide finance to potential projects at a lower cost.

Conservative investment mandates and risk perception in climate finance investments may present obstacles to scaling up climate finance.[25] Risk perceptions might be influenced by NDBs' lack of familiarity, capacity, and tools to adequately assess a project's financial merits and risks. NAFIN mentioned that financial instruments that address risks and market failures would enable them to provide more finance to green projects while keeping portfolio risks low by ensuring the profitability of projects and repayment of financing.

NAFIN also pointed to a current lack of sufficient secure long-term off-taker agreements—also known as power purchase agreements—for renewable energy projects in Mexico. This lack deters developers and investors from increasing their number of new projects, although the market is expected to become more favorable as uncertainties surrounding energy reform become clearer. Power purchase agreements reduce the off-take and energy price risks of renewable energy projects and are crucial for renewable energy investment.

Many banks mentioned that imported equipment cannot be financed or adequately obtained. Six of 12 domestic DFIs stated that high costs of imported equipment and constraints on foreign financial transactions can also make domestic climate finance investments less attractive. In many cases, needed technology might only be available through imports as domestic industries were still emerging. However, this can lead to bottlenecks. Chile, for example, limits the import of certain equipment and also constrains the abilities of NDBs to obtain financing from foreign investors.

Opportunities to Overcome Financial Constraints and Increase Climate Investment

There are a variety of opportunities for national governments and bilateral and multilateral development partners such as MDBs to support domestic DFIs in overcoming the financial constraints preventing them from increasing climate finance.

- Green bonds and risk mitigation instruments can help domestic DFIs access needed capital and better manage the risks of climate projects.

[24] Based on interview with representative from the Connectivity Markets and Financial Division, Institutions for Development, of the IDB on October 5, 2016.

[25] Based on interview with representative from the Connectivity Markets and Financial Division, Institutions for Development, of the IDB on October 5, 2016.

Box 4 Examples of National Governments and Development Partners Working with Domestic DFIs from LAC to Increase Access to Concessional Finance

Within Latin America, there are a number of examples of NDBs that, in collaboration with the IDB, have engaged with and benefited from international climate fund resources. Mexico's NDBs—NAFIN, SHF, FIRA, and FND—all gained support from the Climate Investment Fund (CIF) (IDB, 2014a; IDB, 2014b; CIF, 2014). El Salvador's NDB, BANDESAL, recently gained access to the resources of the GCF to improve access to financing for small and medium enterprises for energy efficiency investments (GCF, 2016) through collaboration with the IDB. At present no LAC NDB is an Accredited Entity of the GCF (GCF, 2017b). Therefore there is an opportunity for international development organizations and other agencies to support interested domestic DFIs to get accredited to the GCF by helping them strengthen fiduciary standards, and social and environmental safeguards, and creating the monitoring and verification systems that are key for the application.

- Government guarantees can reduce the cost of capital for NDB projects.
- Coordination with multilateral institutions can support access to these instruments and other needed financing.

Support Domestic DFIs to Access Grants and Concessional Climate Finance from International Climate Funds

Concessional climate finance and grants from international climate funds can be used for a wide array of NDB climate finance projects. There is clearly strong interest from domestic DFIs in increasing access to grants and concessional finance. Since these financial resources are limited, they may prove most useful for projects in NDC goal sectors where future cash flows are uncertain, such as in adaptation projects in managing flood and drought, building resilience ecosystems, and managing natural resources (GCF, 2017a; CIF, 2017).

NAFIN, FIRA, and BRDE, in particular, pointed to the lack of access to grants and concessional finance for climate projects. Institutions have expressed interest in working with major climate funds, for example by achieving accreditation with the GCF, but have highlighted difficulties in this process. MDBs can also partner with domestic DFIs for projects seeking GCF[26] and other major climate fund financing. Such finance providers often place great emphasis on the track record of organizations and may be reluctant to accredit or approve projects by less-experienced domestic DFIs on their own.

Support the Development of Local Supply Chains or Reduce the Cost of Imports

National governments and MDBs can lower the cost of importing equipment either by providing programmatic support for local supply chains when designing climate policy or programs or by working with domestic DFIs to lower the costs of importing equipment.

Provide Risk Management Instruments to Unlock NDB Finance

Risk management instruments can help improve the risk/return profiles of climate finance projects, which typically involve perceived high risks and/or long payback periods. Risk management can help NDBs build a track record of success and kick-start larger private investment in a given sector. Past examples point to energy efficiency investments as particularly suited to risk management instruments; however, other sectors could also benefit.

[26] For example, the IDB CMF convened a workshop in Mexico City with ALIDE, CEPAL, and a number of domestic DFIs that was focused on opportunities and modalities to access the Green Climate Fund (LGF, 2015).

Box 5 EcoCasa: Energy Efficiency for Low-Income Housing

The EcoCasa program—an energy efficiency program developed by SHF, the IDB, and KfW in conjunction with the Clean Technology Fund—provides an example of how program design can reduce the cost of energy efficiency projects while building local supply chains by creating markets for energy efficient local materials (KfW, 2016). In Mexico, EcoCasa used concessional loans and technical assistance and provided low-cost credit to housing developers to build energy efficient housing. The program targeted small-scale housing developers and provided them with an array of possible strategies, technologies, and materials that they could use to make houses more energy efficient. The small size of the developers and the list of possible strategies to make energy efficiency improvements provided developers with the flexibility to adopt a low-cost approach that widely used local materials.[a]

[a] Based on interview with representative from the Connectivity, Markets, and Finance Division of the IDB on October 5, 2016.

Such instruments can be beneficial particularly when there are barriers related to:

- Uncertainties in licensing and permits.
- Uncertainties in the power market.
- The technical risk of the project (e.g., resource assessment, construction and operational use, or hardware purchasing and manufacturing).
- A lack of clear responsibility of various agents involved in the climate project.
- Uncertain financial returns associated with performance or technical risk.
- Investors' and/or utility's creditworthiness, including lack of track records.
- The availability of long-term debt.
- Uncertainties related to limitations in grid management and transmission infrastructure
- Investment cost barriers (initial procurement and installation costs).
- Social acceptance risk.
- Inertia in demand for projects.

To address many of these barriers in the context of energy efficiency projects,[27] a coalition of actors designed Energy Savings Insurance (ESI) as part of the *Global Innovation Lab for Climate Finance*, and the IDB piloted the instrument in Mexico as a major tool for domestic DFIs to use in mitigating risks (Micale and Deason, 2015).

Support Domestic DFIs to Access International Green Bond Markets

As a potential provider of longer term financing for green projects, green bonds[28] are particularly well suited to financing NDC goals related to renewable energy and sustainable urban infrastructure projects. At the same time, they allow domestic DFIs to support capital market development. Of the 12 domestic DFIs surveyed, six highlighted their interest in the growing green bonds market[29] as

[27] Some barriers and risks are associated with renewable energy investments.

[28] A green bond is a fixed income debt instrument that differentiates itself from a regular bond by committing to exclusively using the proceeds (i.e., the principal) to finance or re-finance "green" projects, assets, or business activities (OECD, 2015). Either the issuer itself or other entities, such as independent verifiers, can designate a bond green. There are several types of green bonds, such as use of proceeds bonds, green project bonds, and green securitized bonds. The main difference between them is in the collateral backing up the debt. In the event of default, lenders have access to the issuer's assets in the case of use of proceeds bonds, to the project's assets and balance sheet for project bonds, and to a group of projects for securitized bonds. The majority of green bonds issued are use of proceeds bonds (CBI, 2016b).

[29] The market for green bonds reached US$44 billion in 2015, almost four times the 2013 issuance (CBI, 2016a). Preliminary 2016 data indicate the market's growth has been sustained, with issuance topping US$92 billion in 2016 (CBI, 2016b).

Box 6 Energy Savings Insurance Manages Investment Risks to Enable LAC Domestic DFIs to Invest

ESI overcomes several of the barriers to energy efficiency investment by providing the following:

- Standardized contracts to reduce transaction costs, including a clause transferring part of the underperformance risk to the technology solution provider.
- Third-party verification to ensure the quality of energy service providers and their projects.
- Credit lines from development banks, which could provide long-term capital and reduce the cost of financing projects.
- Grant support to sustain market demand.

Standardization of contracts does not just lower the initial costs of energy efficiency projects, it also distributes risks across the involved actors that are best suited to carry them (e.g., technology risk is carried by the technology provider). Third-party verification of service providers reduces the risk of underperformance of the installation. The credit lines from development banks are earmarked for energy efficiency projects and enable the bank to gather experience in the sector without carrying too much credit risk, and build awareness of energy efficiency potential in financing projects in which they already have a track record. By minimizing the risks for the different stakeholders, ESI allows the market to gain experience in the sector, reducing the perceived and actual risks through learning (Micale and Deason, 2015; IDB, 2017).

In collaboration with the IDB and other partners, including insurance companies, the Mexican NDB, FIRA, is piloting ESI in Mexico (a parallel pilot has been implemented by Bancoldex in Colombia). The pilot aims to stimulate US$25 million of investment in 190 energy efficiency projects in the agro-industry sector through 2020. To build and finance a pipeline of projects, FIRA provides loans covering up to 80 percent of upfront investment project costs for up to eight years. The tenor of the loans is compatible with the technical payback period of the technologies covered.

Currently, the mechanism is being replicated by eight banks in at least seven countries in LAC. FIRA and BRDE are the only two of the institutions reviewed that are part of this group. Since Bancoldex in Colombia and FIRA in Mexico kicked off the first pilots, ESI has started replication in Brazil, Colombia, El Salvador, Paraguay, Peru, and Nicaragua. Currently, ESI is being structured together with COFIDE to target hotels, hospitals, food processing, and fisheries, among others (Global Innovation Lab, 2017).

a vehicle to increase access to long-term and/or lower-cost capital for green projects.

Generally, an institution can only access international capital markets if its investment-grade credit rating shows low risk of default on its debt obligation. The typical thresholds for investment grade are BBB- or Baa up to an AAA maximum rating. Thus, those who can access green bonds may have already been able to issue conventional bonds in the international markets, in which case the benefits of green bonds may come as much from diversification of their investor base as from expanded access to capital (Oliver, 2016).

International DFIs and other actors can support domestic DFIs in understanding the key requirements for green bonds issuance. These include high credit rating, robust monitoring, reporting and verification systems, as well as upfront and ongoing transaction costs (OECD, 2015). International DFIs can support interested domestic DFIs in improving their creditworthiness by structuring green bonds, providing credit enhancement through guarantees, or building capacities in the necessary due diligence to buy a substantial portion of a bond and thereby increase other buyers' confidence to do likewise.

International DFIs can also engage those domestic DFIs whose credit rating is too low to access the markets directly to source and aggregate a number of smaller scale projects from, for example, municipalities or small and medium enterprises that provide secure enough cash flows to attract international

Box 7 Green Bonds an Effective Way to Raise Money for Climate-Relevant Projects in LAC

In 2015, NAFIN issued Mexico's first green bond of US$500 million in the international market. The bond was for renewable wind energy generation projects. Investor demand was five times the size of the US$500 million offering, suggesting green bonds can be an effective way to raise money for mitigation projects in the LAC region. At the time of issue, the bond provided better returns than the five-year US dollar Mexican Government bond and the five-year US Treasury bond (CBI, 2015; Sustainalytics, 2015; NRDC, 2016a; Ridley, 2016; Environmental Finance, 2016).

In light of this success story, in September 2016 NAFIN issued a second offering of green bonds in the local currency, worth 2 billion in pesos or about US$100 million with a 7-year maturity (Notimex, 2016; Ridley, 2016; NAFIN, 2016).

investment when default risk is diversified across projects (Oliver, 2016). This approach would further decrease transaction costs if it included a standardized approach to the aggregation of projects.

Any support provided by international institutions to DFIs in tapping opportunities for green bonds should be accompanied by a rigorous evaluation of the green credentials of the underlying projects to reduce the risk of negatively impacting the long-term track record and reputation of the instrument with investors. A short-term rush of poorly executed green bond issuances would damage the ability to raise funds with this instrument in the long term.

Technical Capacity Constraints and Opportunities

Technical Capacity Constraints Limiting NDB Climate Finance

Domestic DFIs need more guidance on best practices regarding the tracking, risk assessment, and financial structuring of climate-relevant projects.

Of 12 surveyed institutions, seven cited limited capacity to identify and assess risks, and to structure financing for climate-relevant projects. In particular, domestic DFIs expressed the following challenges:

- **Lack of ability to identify and classify climate-relevant (or green) projects.** This is significant in that it can keep institutions from identifying the appropriate projects that will help to achieve either institutional climate objectives and/or larger national NDC sectoral goals (e.g., identifying the right projects that promote healthcare adaptation goals within their country's NDC).
- **Challenges in assessing the financial, technological, and other risks of climate-relevant projects.** This is particularly true for energy efficiency, renewable energy, urban infrastructure, and adaptation projects**.** These challenges limit the appetite of NDBs to engage in such projects and/or raises the costs to finance projects.
- **Need for greater understanding of and expertise in financing structures for climate-relevant projects, specifically highlighting innovative finance instruments.** Applying sound financial structures to projects and employing appropriate instruments for their financing can make or break the project, rendering it unbankable or economically unfeasible.

Further, at least five of 12 institutions reported that they do not have a climate finance tracking system in place. Also, it is likely that as many of 75 percent of institutions do not track climate finance programmatically across portfolios or specifically for adaptation projects in their internal

accounting. This limits both their ability to understand, define, and engage with many types of climate finance projects, and their ability to account for these types of projects and understand current levels of financing.

Opportunities to Overcome Technical Capacity Constraints and Increase Climate Finance

All surveyed institutions highlighted their interest in learning more about climate finance and climate-relevant sectors. Technical assistance, such as advice for policymakers, support for project development, preparation of funding proposals, provision of data, coordination of larger umbrella programs, and building capacity of national institutions, can be a highly cost-efficient approach to driving climate finance flows from domestic DFIs (Stadelmann and Falconer, 2015).

Depending on the level of knowledge of individual institutions, workshops and specific training for domestic DFIs can help address the following challenges (in rough order of increasing complexity):

- Strategies and tools to identify and track green projects.
- Strategies and tools to assess the perceived risks of energy efficiency projects.
- Financial structures for relevant projects, including best practice and adequate risk mitigation instruments.
- Innovative financial instruments such as risk mitigation instruments or green bonds.
- Financial structures for adaptation projects in cooperation with domestic DFIs (e.g., the *Global Innovation Lab for Climate Finance,* which develops innovative financial instruments together with proponents from the finance and development community).

Several international development organizations are already working together to strengthen NDB capabilities along these lines. For instance, the IDB is working with the Danish government to provide ttechnical support to FIRA to build capacity to structure, finance, and monitor energy efficiency projects with the aim of promoting enhanced investment by agro-industrial firms (IDB, 2014c).

Tracking and reporting climate finance needs to be expanded. Establishing a system to track and report finance provided for climate-relevant projects is a critical building block to ensure targeted and efficient use of resources. As NDCs are refined and the financing needs to meet NDC goals across sectors become better known, tracking finance will be a critical way of measuring progress, highlighting investment gaps, and identifying blockages in the flow of finance.

Few of the surveyed domestic DFIs have a comprehensive tracking and reporting system in place that covers entire portfolios and captures adaptation. Over the past years, the International Development Finance Club (IDFC) has engaged a number of LAC NDBs in adopting approaches for mapping relevant finance. Among the institutions surveyed in Brazil, Chile, and Mexico, only BNDES, NAFIN, and BancoEstado are members of IDFC and are, therefore, familiar with its Green Finance Mapping activities and methodology. Existing efforts must continue and extend their reach.

Governance, Regulatory, and Policy Constraints and Opportunities

Sector-specific government mandates or investment quotas for renewable energy, energy efficiency, or other NDC sectors could be viable tools to ensure that domestic DFIs are reallocating finance from business-as-usual investments toward developing climate-relevant markets.

Improve Regulatory Frameworks, Set Technology Deployment Targets, and Revise NDB Mandates

Governments need to provide adequate regulatory frameworks for NDC sectors and sufficient

mandates and guidance to domestic DFIs to ensure NDC targets can be met. Five of 12 domestic DFIs highlighted the importance of governments providing the right incentives for climate investment. For example, institutions from Brazil, Mexico, and Chile mentioned restrictions on interactions with foreign investors and foreign capital as a key constraint to their climate activities. Further, governments need to provide tailored regulation for every NDC sector. BNDES and NAFIN both reported that more specific regulation and targets on individual energy technologies would help to diversify investments within the renewable energy sector.

Coordinate Action for NDC Implementation

Governments need to take a more integrated approach to involving public and private actors on national, state, and municipal levels in the effort to meet NDCs. BNDES and CORFO highlighted that domestic DFIs have often not been involved in developing their country's NDC or have not received guidance on how they could play a role in its implementation. Involving stakeholders on multiple levels of government and across various regions and giving them the independence to tackle local climate risk in a viable way can facilitate needed coordination while allowing the flexibility to achieve climate mitigation and adaptation across regions. Adaptation projects, for instance, will vary significantly based on geographies, and more heterogeneous countries will face greater obstacles in launching comprehensive adaptation strategies.

By giving new mandates to NDBs or setting economy-wide deployment targets for particular technologies, national governments could drive increased climate finance investment. Existing NDB mandates and operations are not aligned to NDC goals. While seven out of 12 institutions surveyed have considered their country's NDC or planned future activities based on it, none of them indicated that their financing strategies were currently aligned with NDC priorities and goals. In interviews with individual domestic DFIs, they highlighted that they would only become more active in their pursuit of climate-relevant investments when a sector-specific investment mandate or target was given by their governments.

Coordinating action between government and domestic DFIs within a country can be a significant challenge. Donors and MDBs can help address challenges by working with individual governments and supporting research that enables coordinated government action. The first steps should focus on the following:

- Creating guidelines on best practices for NDC sector-specific regulation.
- Strengthening the climate mandate of domestic DFIs by leading dialog and coordination between them and key government agencies, such as environment, energy, and transport ministries.
- Standardizing climate finance tracking and accounting across institutions in the same country to measure progress against NDC goals.
- Developing strategies to determine NDC targets and engage key stakeholders to meet them, and coordinating domestic finance institutions to align each institution's activities with its areas of competence.

There are also several examples of emerging partnerships and platforms that support NDC coordination and implementation:

- **The NDC Partnership:** A partnership between a number of developed and developing countries and international institutions that provides technical support and helps countries locate financial and other assistance programs to help them achieve NDC targets. The Partnership supports knowledge sharing and global coordination of efforts (NDC Partnership, 2017).
- **The Global NDC Implementation Partners (GNIplus):** A consortium that helps selected countries develop and enhance the legal,

policy, financial, institutional, and governance frameworks needed to drive economy-wide transformations in energy and land use. It supports governments in mobilizing private investments aligned with NDCs and Sustainable Development Goals. GNIplus' first cooperation project will be with the Kenyan government to plan and mobilize finance for projects that build resilience, contribute to mitigation goals, and create a foundation for sustainable and inclusive development (CPI, 2016).

- **The IDB's NDC Invest:** A platform that aims to offer countries a comprehensive package of resources to implement NDCs (Box 8).

Box 8 The IDB Group's NDC Invest Platform

NDC Invest represents the IDB's collective effort (both technical and financial) to assist countries in aligning their national portfolios to meet both their international commitments and national development goals. Transitioning toward a low-carbon, climate-resilient economy requires effective joint work by diverse sectors and stakeholders, including the private sector. In this light, NDC Invest acts as a one-stop shop that matches country requests with the best possible expertise and resources of the IDB Group, from support for planning an investment strategy to preparing portfolios and projects; from access to climate finance funds to direct financing with ordinary capital and co-financing sources.

NDC Invest has four components specifically designed to address the range of obstacles and areas of work that countries need to tackle to implement their NDCs. These can be accessed in parallel or as modules depending on country-specific needs and context.

- **NDC Programmer** focuses on constructing investment plans and creating environments that enable policies and regulations.
- **NDC Pipeline Accelerator** allows for the use of donor resources to finance activities needed to prepare sustainable infrastructure projects or portfolios.
- **NDC Market Booster** is designed to help overcome market failures by designing and promoting innovative financial instruments in partnership with the private sector.
- **NDC Finance Mobilizer** focuses on leveraging private finance investments at scale by blending the IDB and Inter-American Investment Corporation capital and/or other concessional resources.

NDC Invest is developing partnerships with NDBs across the four components, supporting NDB institutional capacity to develop an investment framework aligned with the NDCs, developing pipeline projects by providing technical assistance to assess financial viability of new business models and to test new financial instruments, and providing access to both concessional and ordinary sources of capital (IDB, 2016).

5 Conclusions

This report examines the current roles, limitations, and opportunities of 12 Brazilian, Chilean, and Mexican domestic DFIs in supporting investments that help to achieve the goals of their countries' NDCs under the Paris Agreement.

The sector-specific expertise and current climate financing activities of the DFIs surveyed demonstrate that they have the capacity to play a crucial role in implementing NDC objectives. The institutions in Brazil, Mexico, and Chile already provide climate finance to all major NDC mitigation sectors in their respective countries.[30] However, they face several barriers to increasing climate finance to the levels needed to meet mitigation targets. Reported data suggest that their financial contributions to meeting many of the adaptation targets outlined in their NDCs remain limited.

This study highlights a large number of financial, technical, and governance approaches that can enable domestic DFIs to increase and mainstream climate finance within their operations and many ways in which donors, governments, MDBs, and other international actors can support them in doing this. We suggest the following near-term steps that governments, donors, and MDBs can take to help domestic DFIs in Brazil, Mexico, Chile, and LAC countries deliver on NDC objectives:

1. Governments and international DFIs can help domestic DFIs develop appropriate investment frameworks and translate NDCs into bankable investment plans. National and multilateral development banks can have a critical role in supporting governments in translating NDC aspirational goals into tangible investment objectives and, accordingly, develop an appropriate investment framework that creates a bankable deal flow, especially in areas—such as resilient infrastructure and transport—where there are not yet established business models. Policy frameworks and institutional capacity are critical. Governments can use the capacity and experience of NDBs in both the NDC update process and in ongoing efforts to create national climate financing strategies and plans, ensuring that domestic DFI mandates and capabilities are well-aligned with quantitative and well-defined NDC goals.
2. Governments and international DFIs can support domestic DFIs in Brazil, Mexico, and Chile implement a standardized approach to identifying and tracking investments relevant to mitigation and adaptation sectors.[31] All three countries have significant large-scale adaptation goals within their NDCs, particularly in

[30] See Figure 3 for current NDB-specific NDC sector coverage.
[31] The development of the Common Principles for Climate Mitigation and Adaptation Finance Tracking by the group of MDBs jointly reporting on climate finance and the International Development Finance Club (IDFC) could provide a model. In 2015, this group of MDBs and IDFC members established these common principles and invited other institutions to adopt them with the aim of further increasing the transparency and credibility of finance reporting.

biodiversity, agriculture and forestry, and climate-resilient infrastructure. But, currently, surveyed domestic DFIs track exceptionally little climate finance for adaptation projects helping to meet these NDC goals. Adaptation finance makes up only 2 percent of overall climate finance provided from surveyed institutions. Providing support to increase NDB ability to identify adaptation projects and understand how adaptation goals fit within other development objectives can help domestic DFIs finance more adaptation projects. Further, as NDC goals are refined and updated over time, and as the financial goals for NDC implementation become clearer across sectors, effective climate finance tracking can be an important piece of a larger climate finance mobilization strategy that can serve as a

- **diagnostic tool** to understand what action is taking place and where, and identify gaps, blockages, or opportunities;
- **planning and monitoring tool** to provide a basis for better coordination among partners; and
- **accountability tool** to measure progress, learn, and report back.

Comprehensive climate finance tracking across NDB portfolios will help both domestic DFIs and governments measure progress against clearly articulated climate-relevant investment goals and effectively evaluate and overcome shortcomings.

3. MDBs can work with domestic DFIs to enhance understanding of the risks and financial structuring of different types of climate finance projects, particularly in sectors where financing currently falls particularly short of needed investment. For instance, the gap between the needs and supply of finance for sustainable urban infrastructure projects is large in Brazil, Mexico, and Chile, in part because public infrastructure financing is complex, with long payback periods and low returns. MDBs, based on national demand and the NDC mandate, could coordinate with municipalities and NDBs to strategically address the biggest sustainable infrastructure needs across Brazil, Mexico, and Chile, providing adequate financing and possibly innovative design of tariffs to use public utilities such as water, wastewater, and public transport. The known NDC financing needs of Brazil and Mexico will also require billions of dollars more investment in energy efficiency in coming years to meet larger industrial energy efficiency and urban infrastructure financing targets by 2030. MDBs have a unique opportunity to help domestic DFIs implement ex-ante evaluation tools that will permit risk assessment of these projects and adoption of potential financing structures in pursuing significantly greater investments.
4. International DFIs and governments can support domestic DFIs in accessing concessional financing and gaining greater experience in financing climate adaptation projects. Lack of low-cost, long-term finance is a major barrier for domestic DFIs looking to increase climate action. MDBs can help domestic DFIs strengthen fiduciary standards, and social and environmental safeguards, and develop the monitoring and verification systems needed to secure financing from major climate funds. MDBs can also partner with domestic DFIs for projects seeking finance from the GCF and other major climate funds. These funds highly value the track records of organizations. Working on projects with support from climate funds alongside a more experienced international DFI implementation partner can also help domestic DFIs gain experience in financing and implementing mitigation and adaptation projects that will be key to achieving their countries' NDC objectives. As their experience and systems evolve, domestic DFIs should be more likely to secure accreditation to access finance directly from the funds in the future.
5. As domestic DFIs build capacities, they can also begin to partner with MDBs and private sector actors to explore the new financial instruments and business models needed to

scale up these investments. This could take the form of public–private partnerships targeting, for example, domestic private-sector adaptation projects. New approaches to de-risking to help private sector actors manage the risks of policy and regulatory uncertainty are also important. Finally, new business models will be needed that can better finance and capture the value added from climate compatible technologies such as energy efficiency.

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Appendix A: Glossary

Adaptation finance	• Climate change adaptation refers to activities that reduce the vulnerability of human or natural systems to the impacts of climate change and climate-related risks by maintaining or increasing adaptive capacity and resilience. • Adaptation finance includes the following sectors: water preservation; agriculture, natural resources, and ecosystem-based adaptation; and coastal protection. See Table 3 for additional detail.
Climate finance	• For this project, climate finance refers to financial commitments for climate change mitigation or adaptation projects or activities. Climate finance can take the form of traditional private sector investments, concessional- or market-rate public financing, or risk management instruments, as well as technical support or capacity building. See Appendix C for detailed definition.
Development finance institution (DFI)	• DFIs are financial institutions that address market failures and imperfections in the private capital markets that slow down economic development (Levere, Schweke, and Woo, 2006).
Domestic DFIs	• Domestic DFIs are all the financial institutions from Brazil, Mexico, and Chile that we surveyed. These institutions have development mandates but can be publicly or privately owned. The majority of the domestic DFIs that we examined are national development banks or regional development banks. However, domestic DFIs can also include government-owned commercial banks with development mandates, government agencies, or technical assistance providers. See Table 1 for additional detail.
Low-carbon climate-resilient	• Low-carbon climate-resilient is a summary term for that describes climate change-related activities that help prevent climate change by reducing emissions (i.e., low-carbon activities) and/or activities that facilitate adapting to and withstanding the effects of climate change (i.e., climate-resilient activities). The term is used as shorthand for both mitigation and adaptation activities.
Mitigation finance	• Climate change mitigation refers to activities that either reduce or avoid GHG emissions or that increase GHG sequestration by enhancing sinks and reservoirs. • For a list of sectors and definitions see survey definitions in Table 3.

National development bank (NDB)	• Characteristics of NDBs:
	  • Focus on long-term financing to projects that foster development.
	  • Financial intermediaries that supply long-term funds to bankable economic development projects and provide related services.
	  • Financial institutions primarily concerned with offering long-term capital finance to projects generating positive externalities that are underfinanced by private investors. (UN DESA, 2005; Smallridge et al., 2013).

(continued on next page)

APPENDIX A *(continued)*

Sectors for Nationally Determined Contributions (NDCs)	• Though the following sectors often include much more types of projects and activities than could be defined here, the list provides an overview of our understanding of the different sectors when we grouped them into eight high-level NDC sectors to enable us to better compare and analyze investment needs: 1. **Renewable energy generation:** wind, solar, biomass, geothermal, and small-scale hydro 2. **Lower carbon generation:** gas plants, and transmission and distribution 3. **Energy efficiency in industry/energy/other:** energy efficiency improvements in existing infrastructure and in new build environment 4. **Sustainable transport:** urban transport and inter-urban transport projects that lower emissions compared to business as usual 5. **Water security and wastewater management:** urban waste and wastewater infrastructure upgrades 6. **Solid waste management:** waste collection and treatment, recycling, and incarceration activities that lower CO_2 7. **Agriculture, forestry, and land use:** afforestation, biosphere conservation, agricultural land use, conservation agriculture, fishing techniques, etc. 8. **Climate-resilient infrastructure:** all types of activities that make infrastructure less vulnerable to catastrophic events such as storms, extreme rainfall, drought, or extreme temperatures For further information see Table 2.
Technical assistance (TA)	• Technical assistance can be any form of non-financial support (e.g., workshops, research, and consulting activities)

Appendix B: Survey Methodology

To gather qualitative and quantitative insights relevant to identifying the role(s) NDBs can play in scaling up climate finance investments in LAC countries, we structured the survey in the following main areas:

- The NDBs' current state of climate finance investments, covering (i) institutions' climate change relevant mandates and objectives; (ii) NDBs' climate finance commitments in 2015 or most recent year available and related breakdowns; (iii) methodology used to account for climate finance commitments.
- Barriers to increasing climate finance, covering financial, governance (legal and political), and institutional barriers preventing increased investment in climate change mitigation and adaptation projects.
- Support needed to enhance NDBs' climate action, whether from other development finance actors or using innovative financing strategies and instruments.

The methodology of the *Global Landscape of Climate Finance* (Buchner et al., 2015) and of the IDFC's Green Finance Mapping approach informed the accounting framework and breakdowns adopted in this study, including the sectors of climate finance presented.[32]

[32] See IDFC (2015) for detailed activity descriptions and examples for mitigation subsectors.

TABLE 3 Mitigation and Adaptation Sectors Used in NDB Climate Finance Survey

Sector	Subsector
Mitigation	
Renewable energy	• Electricity generation • Heat production or other renewable energy applications • Measures to facilitate integration of renewable energy into grids
Lower-carbon and efficient energy generation	• Transmission and distribution systems • Power plants
Energy efficiency	• Energy efficiency in industry in existing facilities • Energy efficiency improvements in existing commercial, public, and residential buildings • Energy efficiency improvements in the utility sector and public services • Vehicle energy efficiency fleet retrofit • Energy efficiency in new commercial, public, and residential buildings • Energy audits

(continued on next page)

TABLE 3 Mitigation and Adaptation Sectors Used in NDB Climate Finance Survey *(continued)*

Sector	Subsector
Agriculture, forestry, and land use	• Agriculture • Afforestation and reforestation, and biosphere conservation • Livestock • Biofuels
Non-energy GHG reductions	• Fugitive emissions
Waste and wastewater	• Waste and wastewater
Transport	• Urban transport modal change • Transport-oriented urban development • Inter-urban transport
Low-carbon technologies	• Products or equipment • Research and development
Cross-cutting issues	• Support to national, regional, or local policy through technical assistance or policy lending
Miscellaneous	• Other activities with net GHG reduction
Adaptation	
Water preservation	• Improve catchment management planning (to adapt to a reduction in river water levels due to reduced rainfall) • Install domestic rainwater harvesting equipment and storage (to adapt to an increase in groundwater salinity due to sea level rise) • Rehabilitate water distribution networks to improve water resource management (to adapt to increased water scarcity caused by climate change)
Agriculture, natural resources, and ecosystem-based adaptation	• Conserve agriculture, for example, by providing information on crop diversification options (to adapt to increased vulnerability in crop productivity) • Increase production of fodder crops to supplement rangeland diet (to adapt to a loss in forage quality or quantity caused by climatic change) • Adopt sustainable fishing techniques (to adapt to the loss of fish stocks due to changes in water flows or temperature) • Identify protected ecosystem areas (to adapt to a loss of species caused by sudden temperature changes) • Improve management of slope basins (to adapt to increased soil erosion caused by flooding due to excess rainfall)
Coastal protection	• Build dykes to protect infrastructure (to adapt to the loss and damage caused by storms and coastal flooding, and sea level rise) • Plant mangroves (to build a natural barrier to adapt to increased coastal erosion and to limit saltwater intrusion into soils caused by sea level rise)
Other Environmental Objectives	
Other disaster risk reduction	• Develop early warning systems for extreme weather events (to adapt to increase in extreme weather events by improving natural disaster management and reduce related loss and damage)
Water supply	• Municipal, industrial, agricultural
Wastewater treatment	• Municipal, industrial, agricultural
Industrial pollution control	• Reduce fluid and air pollutants from industry
Soil remediation and mine rehabilitation	• Clean up hazardous waste sites
Waste management	• Collect, treat, and recycle solid waste
Biodiversity	• Protect forest species and biodiversity
Sustainable infrastructure	• Improve general transport logistics (e.g., reduce empty running)

Appendix C: Climate Finance Surveys Sent to NDBs

Instructions

Instructions and guidance:

- Please fill out all mandatory questions to the best of your ability. If the information needed to answer a given question is not possible to obtain, please write in "cannot answer." If a given question does not apply to your institution please write in "not applicable." In either case, please continue on to the subsequent questions that you can answer.
- In Section B of the survey, please provide the most recent data available. We welcome data from 2015, as well as 2014 and 2013. If data from these periods is not available, please feel free to share whatever is most recently available.
- In Section C of the survey, please provide as detailed responses as you can. Barriers to increasing climate finance are the key components of this project. Comprehensive descriptions and specific examples would be valuable.
- Please indicate estimates. If you are not able to provide precise figures for a given question, estimates are an acceptable substitute—however, please add a comment letting us know that a given answer is an approximation and, if possible, insights on the approach used to derive the estimate.

Project context:

This survey is part of a project being carried out by Climate Policy Initiative (CPI) for the Capital Markets and Financial Institutions Division (CMF) at the Inter-American Development Bank (IDB). The project focuses on efforts to support the implementation of Intended Nationally Determined Contributions (INDCs) in Brazil, Mexico, and Chile using financing from their National Development Banks (NDBs).

INDCs represent the national-level commitments that form the foundation of the COP21 climate change agreement achieved in Paris in December of 2015: "The Paris Agreement". An INDC lays out a country's vision for climate action, and this vision will drive policy and investment at the local, national and global level for years to come. The successful implementation of INDCs will largely determine whether the world transitions toward a low-carbon, climate-resilient future. To achieve this end, and support developing countries to meet their climate goals, climate finance investments for mitigation and adaptation activities will have to scale up significantly from current levels.

The project research will culminate in both a framework report, and an NDB workshop that will be conducted by IDB in May of 2017.

Purpose of the Survey:

This particular project focuses on 16 financial institutions in Brazil, Mexico, and Chile as one of the key vehicles for providing financing and support to achieve these countries' INDCs. The survey explores the following:

- The current role of each institution in providing climate finance and related support domestically.
- Financial and non-financial constraints and barriers to selected institutions increasing climate finance and support.
- Possible internal changes that could better-support the achievement of country-level INDC targets.
- Opportunities for development finance institutions like IDB to assist selected institutions in increasing climate finance and supporting the achievement of INDC.

Publication and Confidentiality:

Please note, the output of our analysis will be presented in a report intended for publication. We will share with you the draft version of the report before its public release to ensure an appropriate representation of the findings.

Questions

A. Details of the Reporting Institution

1	**Name of the reporting institution**		
	Contact information of the person filling this survey		
2	Name and surname		
3	Department		
4	Position within the institution		
5	E-mail address		
6	Phone number		
7	**Fiscal year of reference**	Start date:	End date:
8	**Units and currency used for accounting data** ("millions of USD" preferred; other units and currencies acceptable if needed)	(Units and currency)	
	If amounts are a conversion from another currency to USD, please provide the exchange rate used. (e.g., 1 US D= 18.93 MXN)	(Conversion rate applied)	

B. Current State of Climate Finance Investment at Your Institution

Climate finance in this project refers to financial committments for climate change mitigation or adaptation projects or activities. Climate finance can take the form of traditional private sector investments, concessional- or market-rate public financing, the provision of risk management instruments, as well as technical support or capacity building.

- Climate change mitigation refers to activities that either reduce or avoid greenhouse gas (GHG) emissions, or that increase GHG sequestration by enhancing sinks and reservoirs.
- Climate change adaptation refers to activities that reduce the vulnerability of human or natural systems to the impacts of climate change and climate-related risks, by maintaining or increasing adaptive capacity and resilience.
- Multiple objectives projects provide both mitigation and adaptation benefits, and have not already been counted in either mitigation or financing amounts. Forestry projects are a common example of this, providing both mitigation benefits (by enhancing forest GHG sinks) and adaptation benefits (by improving the climate resiliency of the surrounding ecosystem).

Please use the most recent year for which data is available. Please also note that you are not expected to fill out every data point or sector. Only fill out those that are applicable to your organization (feel free to include "N/A" for anything that is not applicable to your organization).

1) Climate change-related objectives and methodology for accounting climate finance committments

9	**Does your institution have a mandate to provide finance or other support for climate change related activities?**	Select Yes/No
	Please explain.	
10	**Has your institution considered your country's INDC in current or planned future financing activities?** Intended Nationally Determined Contributions (INDCs) are the climate action commitments or pledges made by national governments for the COP21 climate change agreement in Paris in 2015.	Select Yes/No
	Click here to access your country's INDC	
	Please explain.	
11	**Does your institution track the amount of finance or support it provides for tackling climate change?**	Select Yes/No
	If yes, please explain what this entails. If not, why?	

2) Uses/sectors of climate finance committed by your institution in the most recent year (s) for which data is available

12	**Using the drop down menus, please rank from 1 to 5 mitigation and adaptation sectors by the total amount of finance provided.** If possible, please provide an estimate of the amount of finance provided for each sector. If your organization also provides risk mitigation instruments, please include only the actual payment, not the gross exposure.			
	MITIGATION		**Amount**	
	Click here to access a list of project examples			
	12a	Please select		(Units and currency)
	12b	Please select		(Units and currency)
	12c	Please select		(Units and currency)
	12d	Please select		(Units and currency)
	12e	Please select		(Units and currency)
	ADAPTATION		**Amount**	
	Click here to access a list of project examples			
	12f	Please select		(Units and currency)
	12g	Please select		(Units and currency)
	12h	Please select		(Units and currency)
	12i	Please select		(Units and currency)
	12j	Please select		(Units and currency)
	OTHER ENVIRONMENTAL OBJECTIVES		**Amount**	
	Click here to access a list of project examples			
	12k	Others (please specify):		(Units and currency)
	12l	Others (please specify):		(Units and currency)
	12m	Others (please specify):		(Units and currency)

3) Breakdown of your institution's climate financing by instruments used

13	**Please provide an estimate of the amount provided through each of the following instruments to climate-related projects.**			
	Financial instruments		**Amount**	
	Click here to see the definitions of financial instruments			
	13a	Grants or technical assistance		(Units and currency)
	13b	Concessional loans		(Units and currency)
	13c	Market-rate loans		(Units and currency)
	13d	Equity investment		(Units and currency)
	13e	Other direct financial instruments:		(Units and currency)
	Risk mitigation instruments Please provide the gross exposure for selected instruments, rather than the actual payment from those commitments.		**Amount**	
	Click here to see the definitions of risk mitigation instruments			
	13f	Loan guarantees		(Units and currency)
	13g	Insurance		(Units and currency)
	13h	Other risk mitigation instruments:		(Units and currency)
14	**If applicable, what kinds of concessional finance or support do you offer? And how do you determine these terms?** For example, If your institution provides concessional loans: do you offer longer tenors, lower-than-market interest rates, reduced collateral requirements, or other preferential terms)? If your institution makes equity investments: what kinds of equity positions does your institution normally take? If you provide technical assistance: what kinds of expertise do you typically provide?			

4) Recipients of climate finance

This section focuses on the recipients of climate finance and the uses

15	**Using the drop down menus, please rank the recipients of your finance from your institution by the percentage of finance received in climate related activities, and provide an estimate of the amount of finance.** If your organization also provides risk mitigation instruments, please include only the actual payment, not the gross exposure.			
	PUBLIC		**Amount**	
	15a	Please select		(Units and currency)
	15b	Please select		(Units and currency)
	15c	Please select		(Units and currency)
	15d	Please select		(Units and currency)
	15e	Others, please describe:		(Units and currency)
	PRIVATE		**Amount**	
	15f	Please select		(Units and currency)
	15g	Please select		(Units and currency)
	15h	Please select		(Units and currency)
	15i	Please select		(units and currency)
	15j	Others, please describe:		(Units and currency)

C. Barriers to Increasing Climate Finance, and Potential External Support

1) Barriers your institution is facing to increasing its investment/financing to more climate change mitigation and/or adaptation projects

16	**If any, what are the obstacles preventing your institution to increasing its support for climate change mitigation or adaptation projects? Please explain.**	
	...Financial For instance, size of balance sheet/capital adequacy ratios that prevent your institution from taking on additional risks; default rates for certain kinds of lending/borrowers; level or time horizon of climate projects revenues, level of echnology risk; etc.	
	...Governance, legal, or political For instance, political instability that prevents long-term planning; institutional mandates to focus on other issues besides climate change; regulatory requirements for certain levels of portfolio diversification; goals to achieve a certain amount of co-financing for new projects; etc.	
	...Institutional or technical capacities For example, expertise that your institution is lacking for evaluating particular technology; missing expertise or personnel in a particular region to provide technical assistance; missing relationships with certain kinds of private sector actors needed for collaboration, etc.	
17	Are there any other major barriers or challenges preventing your institution to increasing support for climate change mitigation OR adaptation activities (not mentioned above)?	
18	**Which of the above is the most significant barrier to increasing finance for climate change? Please explain.**	

2) Type of intervention needed to enable your institution to enanhance climate finance in order to help advance national goals

19	**If applicable, how could international development finance institutions like IDB provide support to your institution to address the above indicated barriers to climate investments? Please elaborate.** For instance, providing technical expertise to build your institutions' capacity to evalute and finance climate interventions such as renewable energy or energy efficiency projects; providing finance at concessional terms to take on risks your institutions is not capable to take; etc.	
20	**Are there any innovative finance instruments that your organization is interested in? Please elaborate.** For instance, green bonds, blended concessional and commercial investment mechanisms, public-private partnerships, yieldcos, etc.	

D. Incentives or Strategic Goals that Your Institution May Have for Providing Climate Finance

1) Barriers your institution is facing to increasing its investment/financing to more climate change mitigation and/or adaptation projects

21	**Is providing climate finance financially attractive to your institution? Please explain why or why not.** For example, high margins on climate finance lending as a source of revenue could be attractive; or significant risk of loan default could be unattractive; etc.	
22	**Aside from financial considerations, what are other incentives for your institution to provide climate finance?** For instance, providing economic stimulus; providing electrical grid reliability in vulnerable communities; etc.	
23	**How do you expect that your organization's financing approaches will change in the future for climate change projects or activities? Please explain.** For instance, changes in amount of climate finance provided or the types of instruments used in the future; etc.	

E. Additional Comments

24	**Additional comments?** Please let us know if you have any additional comments or other information that you would like us to know, particularly related to climate finance.	

Instrument Definitions

Definition of financial instruments

Grants	Transfers made in cash, goods or services for which no repayment is required
Loans	A debt evidenced by a note which specifies, in particular, the principal amount, interest rate, and date of repayment
Concessional loans	Loans extended at terms preferable to those prevailing on the market. This category can also include loans extended on terms substantially more generous than market loans.
Market rate loans	Loans extended at regular market conditions
Equity	A stock or any other security representing an ownership interest

Definition of risk mitigation instruments

Guarantees	Guarantee instruments are commitments in which a guarantor undertakes to fulfill the obligations of a borrower to a lender in the event of non-performance or default of its obligations by the borrower, in exchange for a fee.
Gross exposure	The total probable maximum loss that a guarantor is expected to pay in case of default, regardless of reinsurance.
Actual payment	The amount that a guarantor paid when the default actually occurred, or the risk-adjusted expectation of future payments.
Insurance	Insurance is a risk management tool used to address the risk of a contingent, uncertain loss.
Gross exposure	The total probable maximum loss or liability to the insurer from a given agreement.
Actual payment	The insurer's actual payments from the agreement, or risk-adjusted expectations of future payments.

Definitions and project examples

Category	Sub-category	Activities
Green energy and mitigation of greenhouse gases (GHGs)		
1. Renewable energy	1.1 Electricity generation	Wind power
		Geothermal power (only if net emission reductions can be demonstrated)
		Solar power (concentrated solar power, photovoltaic power)
		Biomass or biogas power (only if net emission reductions, including carbon pool balance, can be demonstrated)
		Ocean power (e.g., wave, tidal, ocean currents, or salt gradient)
		Hydropower plants (only if net emission reductions can be demonstrated)
		Renewable energy power plant retrofits
	1.2 Heat production or other renewable energy application	Solar water heating and other thermal applications of solar power in all sectors
		Thermal applications of geothermal power in all sectors
		Wind–driven pumping systems or similar
		Thermal applications of sustainably produced bioenergy in all sectors, including efficient, improved biomass stoves
	1.3 Measures to facilitate integration of renewable energy into grids	New, expanded, and improved transmission systems (lines, substations)
		Storage systems (battery, mechanical, pumped storage)
		New information and communication technology, smart–grid and mini–grid

(continued on next page)

Definitions and project examples *(continued)*

Category	Sub-category	Activities
Green energy and mitigation of greenhouse gases (GHGs)		
2. Lower-carbon and efficient energy generation	2.1 Transmission and distribution systems	Retrofit of transmission lines or substations and/or distribution systems to reduce energy use and/or technical losses, including improving grid stability/ reliability (only if net emission reductions can be demonstrated)
	2.2 Power plants	Thermal power plant retrofit to fuel switch from a more GHG-intensive fuel to a different, less GHG-intensive fuel type
		Conversion of existing fossil fuel-based power plant to cogeneration technologies that generate electricity in addition to providing heating/cooling
		Waste heat recovery improvements
		Energy-efficiency improvement in existing thermal power plant
3. Energy efficiency	3.1 Energy efficiency in industry in existing facilities	Industrial energy−efficiency improvements through the installation of more efficient equipment, changes in processes, reduction of heat losses, and/or increased waste heat recovery
	3.2 Energy efficiency improvements in existing commercial, public, and residential buildings	Energy-efficiency improvement in lighting, appliances, and equipment
		Substitution of existing heating/cooling systems for buildigns by co/generation plants that generate electricity in addition to providing heating/cooling
		Retrofit of existing buildings: architechural or building changes that enable reduction of energy consumption
	3.3 Energy efficiency improvements in the utility sector and public services	Rehabilitation of district heating and cooling systems
		Utility heat loss reduction and/or increased waste heat recovery
		Improvement in utility scale energy efficiency through efficient energy use and loss reduction
	3.4 Vehicle energy efficiency fleet retrofit	Existing vehicle, rail, or boat fleet retrofit or replacement (including the use of, for example, lower−carbon fuels, or electric or hydrogen technologies)
	3.5 Energy efficiency in new commercial, public, and residential buildings	Efficiency of new buildings: use of highly efficient architectural designs or building techniques that reduce energy consumption for heating and air conditioning, exceeding available standards and complying with high energy efficiency certification or rating schemes
	3.6 Energy audits	Energy audits to energy end−users, including industries, buildings, and transport systems
4. Agriculture, forestry, and land-use	4.1 Agriculture	Reduction in energy use in traction (e.g., efficient tillage), irrigation, and other agriculture processes
		Agricultural projects that improve existing carbon pools (e.g., rangeland management; collection and use of bagasse, rice husks, or other agricultural waste; reduced tillage techniques that increase carbon contents of soil; rehabilitation of degraded lands; or peatland restoration)
		Reduction of non CO2 GHG emissions from agricultural practices (e.g,, paddy rice production or reduction in fertilizer use)
	4.2 Afforestation and reforestation, and biosphere conservation	Afforestation (plantations) on non-forested land
		Reforestation on previously forested land
		Forest management activities that increase carbon stocks or reduce the impact of forestry activities
		Biosphere conservation projects (including payments for ecosystem services) targeting reducing emissions from the deforestation or degradation of ecosystems
	4.3 Livestock	Livestock projects that reduce methane or other GHG emissions (e.g., manure management with biodigestors)
	4.4 Biofuels	Production of biofuels (including biodiesel and bioethanol)

(continued on next page)

Definitions and project examples *(continued)*

Category	Sub-category	Activities
Green energy and mitigation of greenhouse gases (GHGs)		
5. Non-energy GHG reductions	5.1 Fugitive emissions	Reduction of gas flaring or methane fugitive emissions in the oil and gas industry
6. Waste and wastewater	6.1 Waste and wastewater	Waste to energy projects
		Waste collection, recycling, and management projects that recover or reuse materials and waste as inputs into new products or as a resource (only if net emission reductions can be demonstrated)
7. Transport	7.1 Urban transport modal change	Urban mass transit
		Non-motorized transport (bicycles and pedestrian mobility)
	7.2 Transport-oriented urban development	Integration of transport and urban development planning (e.g., dense development, multiple land use, walking communities, or transit connectivity) leading to a reduction in the use of passenger cars
		Transport demand management measures to reduce GHG emissions (e.g., speed limits, high-occupancy vehicle lanes, congestion charging/road pricing, parking management, restriction or auctioning of licence plates, car-free city areas, or low-emission zones)
	7.3 Inter-urban transport	Railway transport ensuring a modal shift of freight and/or passenger transport from road to rail (improvement of existing lines or construction of new lines)
		Waterway transport ensuring a modal shift of freight and/or passenger transport from road to waterways (improvement of existing infrastructure or construction of new infrastructure)
8. Low-carbon technologies	8.1 Products or equipment	Projects producing components, equipment, or infrastructure dedicated for the renewable and energy efficiency sectors
	8.2 Research and development	Research and development of renewable energy or energy efficiency technologies
9. Cross-cutting issues	9.1 Support to national, regional, or local policy through technical assistance or policy lending	Mitigation national, sectorial, or territorial policies/planning/action plan policy/planning/institutions
10. Miscellaneous	10.1 Other activities with net GHG reduction	Any other activity not included in this list for which the results of an ex−ante GHG accounting (undertaken according to commonly agreed methodologies) show emission reductions
Adaptation to climate change		
Water preservation	Water preservation	Improvement in catchment management planning (to adapt to a reduction in river water levels due to reduced rainfall)
		Installation of domestic rainwater harvesting equipment and storage (to adapt to an increase in groundwater salinity due to sea level rise)
		Rehabilitation of water distribution networks to improve water resource management (to adapt to increased water scarcity caused by climate change)
Agriculture, natural resources, and ecosystem-based adaptation	Agriculture, natural resources, and ecosystem-based adaptation	Conservation agriculture such as providing information on crop diversification options (to adapt to increased vulnerability in crop diversification options)
		Increased production of fodder crops to supplement rangeland diet (to adapt to a loss in forage quality or quantity caused by climate change)
		Adoption of sustainable fishing techniques (to adapt to the loss of fish stocks due to changes in water flows or temperature)
		Identification of protected ecosystem areas (to adapt to a loss of species caused by sudden temperature changes)
		Improved management of slope basins (to adapt to increased soil erosion caused by flooding due to excess rainfall)

(continued on next page)

Definitions and project examples *(continued)*

Category	Sub-category	Activities
Adaptation to climate change		
Coastal protection	Coastal protection	Building dykes to protect infrastructure (to adapt to the loss and damage caused by storms and coastal flooding, and sea level rise)
		Mangrove planting (to build a natural barrier to adapt to increased coastal erosion and to limit saltwater intrusion into soils caused by sea level rise)
Other environmental objectives		
Other disaster risk reduction	Other disaster risk reduction	Early warning systems for extreme weather events (to adapt to an increase in extreme weather events by improving natural disaster management and reduce related loss and damage)
Water supply	Water supply	Municipal/industrial/agricultural
Wastewater treatment	Wastewater treatment	Municipal/industrial/agricultural
Industrial pollution control	Industrial pollution control	Reduction of fluid and air pollutants from industry
Soil remediation and mine rehabilitation	Soil remediation and mine rehabilitation	Clean up of hazardous waste sites
Waste management	Waste management	Solid waste collection and treatment, recycling
Biodiversity	Biodiversity	Forest species protection, biodiversity
Sustainable infrastructure	Sustainable infrastructure	Improvement of general transport logistics such as reduction of empty running

Source: IDFC (2015).

Appendix D: NDB Fact Sheets from Surveyed Institutions

Fact sheets have been included for those domestic DFIs in Brazil, Mexico, and Chile that provided climate finance investment data.

Key to Fact Sheets

Key to Fact Sheets	
The background section provides background and financial context for the insitution examined. Information is intended to help provide an overview of the institutions without climate-specific activities.	
Mandate	The mandate provides the main purpose of the institution and therefore helps to determine in which ways climate finance is (or could be) a priority for the insitution (e.g., a mortage provider has other concerns than a debt provider for the power sector).
Established	The founding year is an indicator for how well the institution is established and how deep it might be rooted in domestic political and economic structures. The older the insitution the more likely it is able to use its brand to excert political or behavioral influence.
Headquarters	The location of the headquarters provides context for where the institution operates and may provide an idea of its regional focus or influences.
Locations	The number of locations tells us how many local touchpoints an institution has with customers and what level of impact it can have at the grassroots of the climate economy.
Employees	The number of employees tells us about the size of an organization. Further, together with the number of locations, it can give us an overview of how expertise is distributed horizontally and vertically.
Priority sectors	Priority sectors show how an insitution's mandate takes form on the ground. Information on priority sectors also helps us to determine if an insitution's activities overlap with a country's INDC focus sectors.
Targeted clients	The types of customers that the institution serves (e.g., SMEs, corporations, individuals, and municipalities) inform risk appetite, counterparty risk, demand side barriers to providing finance, and the average size of loans that are provided by the bank.
Shareholders	Equity stakeholders often determine an insitution's objectives. This is important to know when considering which factors determine an institution's ambitions toward climate finance.
Operating modality	Tier 1 and Tier 2 refer to the role of the institution as a provider of finance. Tier 1 institutions provide financing directly to end-users (e.g., loans to SMEs and direct equity investments). Tier 2 institutions provide finance through financial intermediaries (e.g., brokers and banks) that ultimately pass it along to end users. Some institutions are both Tier 1 and Tier 2 providers.

(continued on next page)

Key to Fact Sheets *(continued)*

Key to Fact Sheets	
The background section provides background and financial context for the insitution examined. Information is intended to help provide an overview of the institutions without climate-specific activities.	
Total assets	Total assets gives an indication of the financial capacities of an organization. Together with the capital adequacy ratio and current climate financing activities, size gives and indication of how much growth potential an institution has in the climate finance sector.
Return on equity	Return on equity captures the amount of profit per unit of equity (net incom/shareholder equity) and provides a measure of a given institution's efficiency in generating profits for shareholders. Beyond that, it gives an indication of return requirements for climate-relevant investments.
Return on assets	Return on assets measures the institution's profit generated relative to its total asset base (net income/total assets) and provides a measure of how profitable a given company's assets are. Return on assets provides a more detailed look at the financial health and financial sustainability of an organization because it is not distorted by the debt-to-equity ratio.
Capital adequacy ratio	The capital adequacy ratio is a measure of an institution's capital to its risk-weighted assets. It is an indicator of risk exposure and relative ability to take on new and different risks from climate-relevant financing activities. The higher the ratio, the more scope the bank has to add risk to its portfolio.
Credit profile (SCAP)	The stand-alone credit profile (SCAP) expresses the credit rating of an institution as opposed to the credit rating of a sovereign backer (if applicable). It is an indicator of the insitution's current financial sustainability.

Key to Fact Sheets	
The climate financing activities section provides information on the climate change mitigation- and adaptation- specific activities that the institution supports.	
Instruments	The type of instruments and the scale of finance that is provided through these instruments help us assess how institutions perceive risk in climate sectors and how much their appetite for risk might be. We collect information on conventional instruments such as equity, market rate loans, and concessional loans.
Risk mitigation instrumetns	Risk mitigation instruments provide additional information on instruments that banks provide for climate finance investments; however, they are not counted as sector flows or toward private and public flows.
Recipients	Breaks down public and private recipients of the institution's climate finance to better understand where money is going.
Climate finance sectors	The primary mitigation and adaptation sectors that the institution supports.
Challenges	A description of the financial, political, technical, governance, and other barriers and challenges that prevent the institution from providing greater finance for climate change mitigation and/or adaptation.
Opportunities	Opportunities, as identified by the institution, to increase climate finance activities (e.g., innovative financial instruments).
Notes	Space for any other brief and relevant information to contextualize the institution that is not captured in the above sections.
Sources	List of primary sources for the information in the fact sheets.

Brazil Domestic DFI Fact Sheets

Banco de Desenvolvimento de Minas Gerais S.A (BDMG)

Background

Mandate

Promoting competitive and sustainable socioeconomic development of Minas Gerais, generating more and better jobs and reducing inequalities.

Established:	1962
Headquarters:	Brazil
Number of locations:	221
Number of employees:	353

Operating modality	Tier 1
*Priority sectors**	
Industry	43.0%
Trade and services	33.0%
Public sector	14.0%
Rural and agroindustry	11.0%

Targeted clients	
Government agencies	
Corporations	
Individuals	
Shareholders	
State of Minas Gerais	89.70%
Economic Dev Dept of M.G.	10.20%

Financials 2014	
Total assets (US$ mln) [2016]	$2,235
ROAE (%) (2015)	–1.40%
ROAA (%) (2015)	–0.40%
Capital adequacy ratio (%) (2015)	15.0%
Rating (Moody's)	B1

Climate Financing Activities 2015

Mandate to support climate change related activities	*Instruments*		*Recipients*	
One of BDMG's three main goals is supporting environmental sustainability.	**Market loan**	75%	**Private**	18%
BDMG aims to finance and promote innovation for low carbon projects.	**Concessional**	25%	**Public**	82%

Climate finance by sector (% of total climate finance provided by institution)		
Renewable energy	40%	$12
Agriculture, forestry, and land use	55%	$17
Energy efficiency	4%	$1
Transport	2%	$1

Sources: BDMG (2015a); BDMG, (2015b); Moody's (2016d); ALIDE (2016); CPI analysis based on surveys.

Brazil Domestic DFI Fact Sheets *(continued)*

Banco do Brasil S.A. (BB)			
Background			
Mandate		*Established:*	1808
BB is a commercial government-owned bank with a development mandate.		*Headquarters:*	Brazil
		Number of locations:	5,429
		Number of employees:	109,191
Operating modality	Tier 1	*Targeted clients*	
Priority sectors		Government agencies	
Agriculture	√	Individuals	
		Corporations	
		Shareholders	
		Federal government	57.70%
		Treasury shares	2.50%
		Free float	39.80%
Financials 2014			
Total assets (US$ mln)	$544,193		
ROE (%) [2015]	17.30%		
ROA (%) [2015]	0.90%		
Capital adequacy ratio (%)	16.13%		
Rating (Moody's)	ba2		

Climate Financing Activities 2015				
Mandate to support climate change related activities	*Instruments*		*Recipients*	
BB has no specific climate finance mandate but manages Brazil's Low Carbon Agriculture Program.	**Market loan**	Not provided	**Private**	100%
	Concessional	Not provided	**Public**	
	Others			
Climate finance by sector (% of total climate finance provided by institution)				
Agriculture, forestry, and land use	100%		$293	

Sources: BB (2015a, 2016a); Moody's (2016c); ALIDE (2016); CPI analysis based on surveys.

Brazil Domestic DFI Fact Sheets *(continued)*

Banco Nacional de Desenvolvimento Econômico e Social (BNDES)

Background

Mandate

To foster sustainable and competitive development in the Brazilian economy, generating employment while reducing social and regional inequalities.

Established:	1952
Headquarters:	Brazil
Number of locations:	5
Number of employees:	2,783
Targeted clients	
Corporate actors, project developers, SMEs	
Shareholders	
National Treasury, Worker's Assistance Fund	

Operating modality	Tier 2
Priority sectors	
Agriculture	10.10%
Industry	27.10%
Infrastructure	40.40%
Trade and services	22.40%

Financials 2014	
Total assets (US$ mln)	$332,091
ROE (%)	11.30%
ROA (%)	1.60%
Capital adequacy ratio (%) (2015)	14.74%
Rating (Moody's) (2016)	Ba2

Climate Financing Activities 2015

Mandate to support climate change related activities	*Instruments*		*Recipients*	
BNDES supports climate finance as a manager of the Amazon Fund and the Brazilian Climate Fund and provides financial support to projects associated with mitigation and adaptation to climate change through its Green Economy focus.	**Market loan**	6%	**Private**	82%
	Concessional	93%	**Public**	18%
	Equity & TA	1%		

Climate finance by sector (% of total climate finance provided by institution)		
Renewable energy	46%	$4,053
Transport	45%	$3,952
Agriculture, forestry, and land use	9%	$811
Energy efficiency	0%	$27

Sources: BNDES (2015a, 2015b, 2016a); Moody's (2016e); BCDB (2016); ALIDE (2016); CPI analysis based on surveys.

Brazil Domestic DFI Fact Sheets *(continued)*

Banco Regional de Desenvolvimento do Extremo Sul (BRDE)

Background

Mandate

Promote and lead development actions for economic and social development in the southern states of Brazil (Rio grande do Sul, Santa Catarina, and Parana).

Established:	1961
Headquarters:	Brazil
Number of locations:	47
Number of employees:	561

Operating modality	Tier 1
Priority sectors	
Agriculture	34.2%
Industry	29.0%
Infrastructure	19.7%
Trade and services	17.1%

Targeted clients

Corporations and municipalities (cannot cooperate with state governments)

Shareholders	
BNDES	86.10%
FINEP	8.30%

Financials 2014	
Total assets (US$ mln) [2016]	$4,843
ROE (%)	15.0%
ROA (%)	0.7%
Capital adequacy ratio [2016 1T]	16.9%
Rating (Moody's) (2016)	ba2

Climate Financing Activities 2015

Mandate to support climate change related activities

BRDE has no climate change mandate.

Instruments		*Recipients*	
Market loan		**Private**	100%
Concessional	100%	**Public**	
Others			

Climate finance by sector (% of total climate finance provided by institution)		
Renewable energy	71%	$87
Agriculture, forestry, and land use	8%	$10
Energy efficiency	1%	$1
Waste and wastewater	20%	$24

Sources: BRDE (2015, 2016a, 2016b); BCDB (2016b); Moody's (2016f); ALIDE (2016); CPI analysis based on surveys.

Mexico Domestic DFI Fact Sheets

Banco Nacional de Obras y Servicios Públicos S.N.C.(Banobras)	
Background	
Mandate	*Established:* 1933
Boost investment in infrastructure and public services, and enhance the financial and institutional capacity of states and municipalities.	*Headquarters:* Mexico
	Number of locations: 30
	Number of employees: 937
Operating modality Tier 2	*Targeted clients*
Priority sectors	Subnational governments, municipalities, and private infrastructure developers
Energy 54.00%	*Shareholders*
Security 11.00%	Federal government
Water 2.00%	
Multi-sector 32.00%	

Financials 2014	
Total assets (US$ mln)	$39,502
ROE (%)	10.60%
ROA (%)	0.50%
Capital adequacy ratio (%)	14.00%
Rating (Moody's)	Ba2

Climate Financing Activities 2015				
Mandate to support climate change related activities	*Instruments*		*Recipients*	
N/A	**Market loan**	Not provided	**Private**	89%
	Concessional	Not provided	**Public**	11%
	Others			

Climate finance by sector (% of total climate finance provided by institution)		
Low-carbon technologies	45%	$66
Renewable energy	31%	$46
Waste and wastewater	18%	$27
Energy efficiency	6%	$9

Sources: Banobras (2016a); Moody's (2016a); ALIDE (2016); CPI analysis based on surveys.

Mexico Domestic DFI Fact Sheets *(continued)*

Fideicomisos Instituidos en Relación con la Agricultura (FIRA)

Background

Mandate

Support development of the rural sector in Mexico; raise productivity and living standards from regional development, environmental sustainability, and gender equality perspectives.

Established:	1954
Headquarters:	Mexico
Number of locations:	100
Number of employees:	1,137

Operating modality	Tier 2
Priority sectors	
Agriculture	√
Fishing	√
Forestry	√

Targeted clients
Financial intermediaries
Shareholders
Ministry of Finance

Financials 2014	
Total assets (US$ mln)	$5,325.10
ROE	2.00%
ROA	1.40%
Capital adequacy ratio	N/A
Rating (Moody's)	Baa2

Climate Financing Activities 2015

Mandate to support climate change related activities	*Instruments*		*Recipients*	
FIRA aims to mitigate climate change and to help alleviate the effects of natural disasters as part of its sustainable development commitment.	**Market loan**	100%	**Private**	100%

*Climate finance by sector (% of total climate finance provided by institution)**		
Agriculture, forestry, and land use	46%	$107
Energy efficiency	9%	$21
Renewable energy	9%	$20
Waste and wastewater	36%	$85

Sources: FIRA (2016a, 2016b); Moody's (2012a); ALIDE (2016); CPI analysis based on surveys.
* The amounts of climate finance provided by FIRA reflect the 2015 portfolio balance rather than new commitments.

Mexico Domestic DFI Fact Sheets *(continued)*

Nacional Financiera (NAFIN)	
Background	
Mandate	
Promote savings and investments, and channel financial and technical resources to industrial development and, in general, to national and regional economic development.	

Established:	1934
Headquarters:	Mexico
Number of locations:	32
Number of employees:	1,017

Operating modality	Tier 2
Priority sectors	
Industry	√
Services	√

Targeted clients
SMEs, large corporations, government, municipalities, financial intermediaries
Shareholders
Mexican government

Financials 2015	
Total Assets (US$ mln)	$22,311
ROE (%)	4.66%
ROA (%)	0.33%
Capital adequacy ratio (%) (2015)	13.60%
Rating (Moody's)	A3

Climate Financing Activities 2015				
Mandate to support climate change related activities	*Instruments*		*Recipients*	
NAFIN's mandate includes supporting priority programs and projects of the federal government. NAFIN focuses on supporting renewable energy projects and is mandated to increase investments with a positive environmental and social balance.	**Market loan**	100%	**Private**	100%
	Concessional		**Public**	
	Equity & TA			

Climate finance by sector (% of total climate finance provided by institution)		
Renewable energy	78%	$160
Energy efficiency	22%	$46

Sources: NAFIN (2015a, 2013); Cadenas (2012); IDFC (2015a); Moody's (2016b); Mexico (2016); ALIDE (2016); CPI analysis based on surveys.

Mexico Domestic DFI Fact Sheets *(continued)*

Sociedad Hipotecaria Federal (SHF)	
Background	
Mandate	
To develop the primary and secondary markets for housing finance by providing credit loans and guarantees for home construction, acquisition, and improvement. To increase the productive capacity and technological development of the housing sector.	
Operating modality	Tier 2
Priority sectors	
Housing	√
Construction	√

Established:	1963
Headquarters:	Mexico
Number of locations:	1
Number of employees:	443
Targeted clients	
Financial intermediaries (banks, non-banks), housing developers (indirectly)	
Shareholders	
Finance Ministry	

Financials 2014	
Total assets (US$ mln)	$8,398.30
ROE (%) (2014)	–4.90%
ROA (%) (2014)	0.77%
Capital adequacy ratio (%) (2014)	10.99%
Rating (Fitch) (March 2016)	AAFC1(mex)

Climate Financing Activities 2015				
Mandate to support climate change related activities	*Instruments*		*Recipients*	
No climate finance mandate.	**Market loan**		**Private**	100%
	Concessional	100%	**Public**	
	TA	<1%		
Climate finance by sector (% of total climate finance provided by institution)				
Energy efficiency	100%		$51	

Sources: SHF (2016a, 2016b); Fitch (2016a); ALIDE (2016); CPI analysis based on surveys.

Chile Domestic DFI Fact Sheets

Corporación de Fomento de la Producción (CORFO)

Background

Mandate

Improve the competitiveness and the productive diversification of the country by encouraging investment, innovation, and entrepreneurship, and strengthening the human capital and technological capabilities to achieve sustainable and territorially balanced development.

Established:	1939
Headquarters:	Chile
Number of locations:	15
Number of employees:	937

Operating Modality	Tier 2*
Priority Sectors	
SMEs	√
Innovation and technology	√
Modernization of private companies	√
Startups and exports	√

Targeted clients
SMEs
Commercial banks
Shareholders
Central government, Dept of Energy
Ministry of Agriculture

Financials 2014	
Total assets (US$ mln)	$7,518
ROE (%) [2013]	0.10%
ROA (%) [2013]	0.10%
Capital adequacy ratio (%)	n/a
Rating (Moody's)	n/a**

Climate Financing Activities 2015

Mandate to support climate change related activities	*Instruments*		*Recipients*	
No specific mandate	**Market loan**		**Private**	
	Concessional		**Public**	100%
	TA	100%		

Climate finance by sector (% of total climate finance provided by institution)		
Energy efficiency	29%	$0.18
Agriculture, forestry, and land use	33%	$0.21
Transportation	22%	$0.14
Waste and wastewater	16%	$0.10

Sources: CORFO (2015, 2016a); Moody's (2016f); ALIDE (2016); CPI analysis based on surveys.
Note: Some reported climate finance reflects CIFES and CPL resources.
* CORFO is a public institution that promotes national competitiveness; it is not a bank.
** Moody's credit rating on Government of Chile Aa3; outlook Stable.

Chile Domestic DFI Fact Sheets *(continued)*

BancoEstado

Background

Mandate

BancoEstado is a commercial government-owned bank with a mandate to make Chile a more inclusive and equitable country with opportunities for all.*

Established:	1953
Headquarters:	Chile
Number of locations:	120
Number of employees:	9,805

Operating Modality	Tier 2*
Priority Sectors	
Housing and mortgages	√
Commercial banking	√
Personal banking	√
Microfinance	√

Targeted clients
Institutions (NGOs, governments)
Companies, including SMEs
Individuals
Shareholders
Treasury

Financials 2014	
Total assets (US$ bn) [2016]	$48.8
ROE (%) [2015]**	17.50%
ROA (%) [2015]**	0.90%
Capital adequacy ratio (%) [2016]	11.40%
Rating (Moody's)	baa2

Climate Financing Activities 2015

Mandate to support climate change related activities

BancoEstado has no climate finance mandate but provides finance to renewable energy and energy efficiency projects.

Instruments		*Recipients*	
Market loan	85%	**Private**	100%
Concessional	15%	**Public**	
Others			

Climate finance by sector (% of total climate finance provided by institution)		
Renewable energy	30%	$298
Lower carbon generation	54%	$535
Energy efficiency	15%	$150

Sources: BancoEstado (2015, 2016a); Moody's (2015); SBIF Chile (2016); ALIDE (2016); CPI analysis based on surveys.
* Before taxes.


IDB