ove Office of Evaluation and Oversight

Sector & Thematic Evaluation

Evaluation of the IDB Group's Work on Climate Adaptation, 2016-2022

IDB Group

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This document was prepared by Maria Fernanda Rodrigo (team leader), Anais Anderson, Andreia Barcellos, Marina Pupo Lafer, Aarre Laakso, and Julie King, under the supervision of Cesar Bouillon (cluster leader), with guidance from Jozef Vaessen (principal advisor) and under the direction of Marialisa Motta, OVE Director. Inputs and regional notes were prepared by Dennis Bours, Federico Fraga, Julian Loayza, and Rasec Niembro.

ACRONYMS AND ABBREVIATIONS

ADV	Advisory Services Division
AP	Action Plan
CFA	Climate Finance for Adaptation
CCF	Contingent Credit Facility
CRF	Corporate Results Framework
CS	Country Strategy
DRM	Disaster Risk Management
ECLAC	Economic Commission for Latin America and the Caribbean
ESMP	Environmental and Social Management Plan
EWS	Early Warning System
IPCC	Intergovernmental Panel on Climate Change
IRF	Immediate Response Facility
LAC	Latin America and the Caribbean
MPA	Marine Protected Area
MDB	Multilateral Development Bank
NDC	Nationally Determined Contributions
ND-GAIN	Notre Dame Global Adaptation Initiative
OVE	Office of Evaluation and Oversight
PA	Paris Agreement
PAIA	Paris Agreement Alignment Implementation Approach
PBG	Policy Based Guarantee
PBL	Policy Based loan
SEG	Environmental, Social, and Governance Department of IDB Invest
SO	Strategic Objective
SFD	Sector Framework Document
SME	Small and medium-sized enterprise
TC	Technical Cooperation
UNEP	United Nations Environment Program
UNFCC	United Nations Framework Convention on Climate Change

EXECUTIVE SUMMARY

Support for climate adaptation in Latin America and the Caribbean (LAC) is essential. The LAC region faces profound risks from slow- and fast-onset climate events that exacerbate developmental challenges, especially for poor and vulnerable populations. Support for climate adaptation enables countries to predict, prepare for and mitigate these risks in ways that minimize social and economic damage. Although the short-term costs of climate adaptation could be perceived as high, its long-term benefits far exceed the cost of inaction.

This evaluation used mixed methods to assess the relevance and effectiveness of IDB Group (IDB and IDB Invest) support for climate adaptation during the period 2016-2022. Over the evaluation period, the IDB Group climate adaptation portfolio totaled 467 operations (425 IDB operations and 42 IDB Invest operations) approved for $5.3 billion ($4.7 billion for the IDB and $613 million for IDB Invest). The adaptation portfolio accounts for approximately 21% of the IDB Group's total adaptation and mitigation portfolio of $25.2 billion during the evaluation period. The IDB also approved 14 contingent loans for natural disasters totaling $2.5 billion; however, these figures are not included in the overall climate finance totals reported by OVE, except in cases where the loans were disbursed during the evaluation period. To assess the relevance of climate adaptation interventions, OVE selected a random representative sample of the IDB Group's adaptation portfolio that included 284 operations totaling $4.1 billion. To assess effectiveness, OVE selected all lending operations with at least 70% of their resources disbursed by December 2023 and all guarantees from the overall IDB Group adaptation portfolio. In addition to portfolio analysis, the methods included literature review, document analysis, interviews with staff and stakeholders, comparison with global indicators, and geospatial analysis. The evaluation focused on interventions (sets of activities or actions within a project that aimed to contribute to climate adaptation). Interventions are typically identified at the component level, meaning that even when adaptation is not the project's objective, components that include activities for adaptation are included in the analysis. The assessment was conducted at the level of reported adaptation indicators, many of which represent only a portion of a broader project.

The evaluation, particularly the effectiveness analysis, was limited by the small number of mature interventions and a scarcity of climate adaptation indicators. A lack of specific climate adaptation indicators, combined with a general absence of reporting on adaptation measures in supervision reports, limited the assessment of effectiveness, especially for IDB operations. Although climate adaptation is recorded at project design, climate-related activities are not tagged and monitored as such during project implementation or at project closure. In addition, demonstrating the effectiveness of climate adaptation interventions would, in some cases, require the occurrence of a severe weather shock, an event that would be both rare and undesirable. The evaluation, therefore, measured progress not only through outcome indicators (such as reduction in climate-related economic losses) but also through intermediate outcomes (such as improved water resource management or adoption of climate-resilient practices) and even through adaptation-related output indicators (such as the construction of flood-resistant infrastructure, climate-resilient road networks, or the deployment of early warning systems). Nevertheless, few interventions in the effectiveness sample included relevant indicators at either output or outcome levels. The relatively small number of indicators limited the potential to evaluate progress and demonstrate achievements.

Effective climate adaptation requires addressing risks related to increasing shifts in weather patterns through a combination of anticipatory, adaptive and absorptive interventions. Anticipatory interventions (52% of IDB adaptation interventions and 13% of IDB Invest adaptation interventions) focus on preparation and planning before climate impacts occur. Adaptive interventions (40% of IDB adaptation interventions and 87% of IDB Invest adaptation interventions) emphasize adjustments in response to evolving climate conditions. Finally, absorptive interventions (8% of IDB adaptation interventions) support mechanisms to withstand and recover from severe weather shocks. Evidence indicates that adaptation is most effective when these intervention types are integrated and locally relevant. Enhancing complementarity within and across these categories – through, for instance, aligning resilient infrastructure, early warning systems, and financial instruments with a territory's vulnerability, risk, and exposure – can strengthen long-term resilience. Yet, evidence is limited regarding the impact of combining specific interventions across (and within) the three categories (e.g., a combination of early warning systems, gray and green infrastructure, and emergency relief).

Over the evaluation period, the IDB Group increasingly prioritized support for climate adaptation in its strategies and operations, but strategic considerations still did not consistently lead to targeted action. To meet its climate commitments, the IDB Group has advanced institutional, strategic and operational efforts, including adopting three Climate Change Action Plans (CCAPs), creating dedicated climate units in both IDB and IDB Invest, and increasing climate specialist staff. During the 2016-2022 period, climate finance reached 31% of approved amounts, surpassing the 30% target. Sector Framework Documents (SFDs) have increasingly integrated climate adaptation, with 28 of 36 including adaptation considerations and 21 offering lines of action. However, some sectors, such as Extractive Industries, have missed certain opportunities to reflect adaptation priorities. Similarly, most (41 of 53) Country Strategies (CSs) assessed climate vulnerabilities, but only some provided detailed diagnostics or articulated operational responses. Belize's 2013-2020 CS stands out for its comprehensive analysis and embedded adaptation actions across key sectors. Others, like Panama's 2021-2024 CS, noted climate risks but did not provide actionable plans. At the project level, climate risk assessments—distinct from ESG screening and often implemented as stand-alone interventions—were not consistently linked to the design and execution of operations.

Adaptation efforts across the IDB Group focused mostly on a few key sectors. Eighty-five percent of the IDB's adaptation portfolio during the evaluation period was mapped to five sectors: Environment and Natural Disasters, Water and Sanitation, Urban Development and Housing, Transport, and Agriculture and Rural Development, with a primary focus on infrastructure and agriculture. Most interventions – particularly at the IDB – focused on resilient gray infrastructure in water and sanitation and transport or support for smallholder farmers through climate-resilient agricultural practices. Incorporating climate adaptation activities into diverse IDB Invest operations faced specific challenges due to clients' perceptions that adaptation measures do not offer immediate benefits. The emphasis on infrastructure and agriculture reflects the region's exposure to elevated climate-related risks in these sectors. Nonetheless, other critical areas, such as tourism, health, urban resilience, and private sector innovation, could have been explored further.

Although the IDB Group made significant investments in climate adaptation, there is room to strengthen alignment with country-specific adaptation needs. At the portfolio level, adaptation resources were not necessarily directed to the countries with the most needs. For example, Nicaragua, Honduras, El Salvador, Belize and Guatemala had high needs for adaptation support (as measured by the ND-GAIN Index) but relatively low shares

of their IDB Group resources devoted to climate adaptation financing. Other actors may have contributed to adaptation, and countries' needs captured by the ND-GAIN Index may not fully reflect the needs of particular regions or areas within the countries. Irrespective of these caveats, the limited association between country needs and IDB Group support suggests that there may be room for better targeting of IDB resources. Most interventions aligned with country priorities, and interventions were often related to key vulnerabilities identified in country strategies. For example, an investment loan in the Dominican Republic aimed to increase agricultural productivity, enhance environmental sustainability and adaptation to climate through the adoption of resilient technologies. It aligned with the strategic objective in the country strategy of adaptation of agricultural production to climate and identified climate vulnerabilities (i.e., high temperatures, droughts and intense rain). However, many did not directly address the identified local climate vulnerabilities. Almost half (48%) had limited or no connection between the intervention and the identified climate vulnerabilities. Few IDB Invest interventions explicitly included climate adaptation, and most did not substantively address countries' vulnerabilities. For example, an IDB investment loan in Argentina that supported urban infrastructure did not include a diagnosis on climate vulnerabilities or specific interventions for adaptation. Similarly, an IDB Invest senior loan in Nicaragua that aimed to decrease water pollution and emissions did not include a description of specific climate vulnerabilities.

The relevance of the IDB's adaptation interventions varied across anticipatory, adaptive and absorptive interventions, reflecting a mix of strategic intent and operational limitations. Among anticipatory interventions, those supporting disaster risk management (DRM) stood out – particularly in Bolivia, where the IDB supported DRM across sectors by integrating risk identification, reduction, response, and recovery into national planning, budgeting, and participatory governance processes. However, other anticipatory efforts, such as interventions of climate risk assessments and planning, often lacked follow-up actions, limiting their impact. Governance-related anticipatory interventions, especially through policy-based reforms, sometimes supported institutional changes without linking them to adaptation needs. Early warning system initiatives – such as those in Ecuador – were particularly relevant when they considered the interplay between infrastructure, institutional capacity, and risk response. Adaptive interventions were generally more relevant than anticipatory interventions because they aligned with country priorities and targeted tangible sectoral vulnerabilities. For example, in Paraguay, climate-resilient road upgrades addressed flood risks and improved connectivity, while in Bolivia, drought-sensitive water infrastructure ensured the availability of safer potable water. Although less frequent, nature-based adaptive interventions, such as mangrove restoration in the Bahamas, were highly relevant. Adaptive efforts supporting resilient firms and farms were particularly relevant when they combined productivity gains with climate-smart practices, as seen in Honduras' agricultural sector. However, institutional and local capacity-building components were often limited in relevance, primarily due to challenges in knowledge transfer and measuring outcomes. The relevance of absorptive interventions was mixed. IDB's lending operations – such as Immediate Response Facilities and Contingent Credit Facilities in a handful of countries – proved to be timely and well-aligned with post-disaster needs. Yet, emergency technical cooperations, such as those in Guatemala and Ecuador, were more limited in scope, offering short-term humanitarian aid without integration into broader institutional frameworks or follow-up investments to strengthen long-term emergency response systems.

IDB Invest conducted some promising interventions, but the relevance of others was limited. IDB Invest played a limited role in building the anticipatory and adaptive capacities of private sector clients, and there were no IDB Invest absorptive interventions. A few well-

designed interventions – such as implemented risk assessments and firm-level resilience measures – demonstrated strong alignment with specific client needs. However, most anticipatory and adaptive interventions did not clearly respond to the climate risks faced by clients. For example, some interventions included infrastructure improvements without demonstrating how they addressed climate risks, such as drought, flooding, or high temperatures. Furthermore, the focus on end beneficiaries was often indirect, particularly in interventions implemented through financial intermediaries. Because intermediaries commonly used broad criteria for green portfolios, adaptation and mitigation components were not clearly differentiated. Thus, while some interventions supported general sustainability goals, they missed opportunities to build resilience where most needed.

Many IDB climate adaptation interventions were highly effective, although effectiveness varied by intervention type, with adaptive interventions achieving the most consistently strong results. Among 27 adaptive interventions with adaptation indicators at design, nearly 60% were rated highly effective. Successful interventions promoted climate-smart agriculture and sustainable natural resource management, as seen in Colombia, Bolivia and the Dominican Republic, where productivity and environmental benefits were closely linked. Green and blue infrastructure interventions, leveraging nature-based solutions such as reforestation, coastal restoration, and water basin management, also performed well, as seen in Honduras, Brazil, and the Bahamas. Results for resilient gray infrastructure were mixed, often hindered by the limited integration of adaptation designs, which sometimes may have led to maladaptive outcomes, such as vegetation loss. Capacity-building components across interventions – particularly when embedded in broader investment loans – proved highly effective, with strong examples in Bolivia, Guyana and regional agricultural training programs. Anticipatory gains were primarily associated with these localized training efforts and sectoral planning enhancements. Absorptive interventions, notably Immediate Response Facilities in Haiti, Costa Rica and Argentina, were highly effective in supporting post-disaster recovery and restoring essential infrastructure.

The effectiveness of IDB Invest climate adaptation interventions was limited, although some projects were successful due to solid project design and alignment with client needs. Adaptive interventions were the most common for IDB Invest, especially those targeting resilient firms and farms; however, only three of the 17 interventions with adaptation indicators at design were highly effective. The strongest results were achieved through direct engagement with corporate clients, where interventions enabled improved productivity, water efficiency and sustainability practices. In contrast, operations channeled through financial intermediaries faced considerable challenges, often due to MSMEs' limited technical capacity, lack of access to credit, and the use of broad green portfolio criteria that did not distinguish between adaptation and mitigation. Advisory services to strengthen green lending in Ecuador and Peru yielded positive institutional outcomes, but adaptation outcomes at the beneficiary level remained diffuse. Anticipatory capacity-building efforts were generally more successful but remained concentrated at the institutional level. Absorptive capacity interventions were absent from the IDB Invest portfolio, indicating an opportunity for future development.

From the findings of this evaluation, OVE recommends these actions:

1. **Focus IDB Group's adaptation support in vulnerable countries, sectors, and regions.** The IDB Group should prioritize adaptation strategies and interventions where adaptation is critical, including highly climate-vulnerable countries (e.g., El Salvador, Honduras, and Guatemala), regions (e.g., coastal zones, urban poor), sectors with high exposure (e.g., agriculture, environment

and infrastructure), as well as sectors that can positively promote climate adaptation (e.g. water resource management and urban planning). To ensure appropriate targeting, the IDB Group could use indicators like ND-GAIN (at the country level) complemented by the findings of climate diagnostics, and risk and vulnerability assessments at the local level, such as frequency of slow- and fast-onset climate events, dependency on climate-sensitive livelihoods (e.g., for agriculture and tourism), and capacity for disaster response. When IDB Group's country and sector strategies do not address the needs of highly vulnerable countries, sectors, or subnational regions, they should document whether the country is already addressing those needs (independently or in partnership with other development institutions).

2. **Close the gap between strategic adaptation planning and operational implementation, mitigating the risks of maladaptation.** This entails: (i) ensuring that climate vulnerability assessments in CSs are in-depth and that projects' objectives align with their findings, (ii) ensuring follow through during project implementation, and defining adequate monitoring frameworks including expected results, indicators and targets; and (ii) detecting and responding to unintended adverse effects during implementation in projects at risk of maladaptation, such as reduced vegetation or degradation of protected areas, especially when implementing gray infrastructure interventions.

3. **Enhance synergies across adaptation intervention types and instruments and conduct further country-level empirical research at the regional and local levels on synergies.** To increase the relevance and effectiveness of climate adaptation interventions, the IDB Group should: (i) further increase synergies across anticipatory, adaptive and absorptive interventions, with a stronger focus on local capacity-building and instruments (e.g., combining policy-based loans with technical cooperation, or advisory services with IDB Invest loans), and (ii) generate empirical country-level evidence at the regional and local levels to understand which combinations of specific anticipatory, adaptive and absorptive interventions work best in different contexts and use this evidence to inform program design and improve resource targeting.

4. **Improve measurement and reporting on climate adaptation interventions, while acknowledging inherent limitations in assessing their outcomes.** This entails: (i) including specific result indicators and reporting on climate adaptation interventions in both IDB and IDB Invest operations to assess their results effectively; and (ii) adjusting measurements for climate adaptation interventions, focusing on robust proxy indicators such as intermediate outcomes where feasible. Using output remains a valid approach in cases where intermediate outcomes are not possible to measure, given the long timeframes and the uncertainty that characterizes climate adaptation interventions.

I. INTRODUCTION

A. Climate adaptation

1.1. **The Latin America and Caribbean (LAC) region faces profound climate risks that exacerbate developmental challenges, especially for poor and vulnerable populations.** The region is the second-most disaster-prone in the world, with over 60% of its 660 million inhabitants concentrated in areas prone to both slow- and fast-onset climate events (UNDRR, 2025). The Caribbean endures hurricanes and tropical storms, resulting in immediate destruction and long-term consequences. Countries in Central America's Dry Corridor – including Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua – battle droughts, temperature extremes, and shifting precipitation patterns, while rising sea levels and cyclones threaten Belize's low-lying coast. Northern South America, particularly Bolivia, Colombia, Ecuador and Peru, suffers from the El Niño-Southern Oscillation, which can range from heavy rains and floods to droughts. In Southern South America, Argentina, Chile, Paraguay and Uruguay face coastal and inland waterway vulnerabilities and a rise in climate-driven vector-borne diseases. Brazil's diverse ecosystems are at escalating risk. For example, the Amazon is getting hotter and experiencing more extreme weather, from droughts to heavy rain. The Caatinga, which is prone to becoming desert-like, is facing threats to farming due to rising temperatures and less rainfall. The Atlantic Rainforest and coastal areas are vulnerable to environmental damage due to increased rainfall and rising sea levels.[1] Poor and vulnerable populations, comprising 78 million or more people (IDB, 2023), suffer most from extreme weather events, which lead to forced displacement, food insecurity and adverse health effects (IDB, 2014; ECLAC, 2021).[2] It is estimated that by 2030, 17 million people in the region could be forced to move to escape the impact of slow- and fast-onset weather events (IDB, 2024; World Bank, 2022).

1.2. **Mitigation and adaptation measures act upon and adjust to the climate.** *Mitigation* aims to reduce emissions of greenhouse gases and enhance the removal of carbon from the atmosphere by utilizing renewable energy, improving energy efficiency, and implementing afforestation, reforestation and carbon capture technologies (IPCC, 2022). *Adaptation* aims to adjust to current or expected slow- or fast-onset climate impacts by, for example, strengthening buildings, roads and bridges to withstand events like hurricanes and floods. Adaptation is inherently a long-term process, shaped by local contexts and implemented according to local needs, requiring sustained planning, investments and gradual adjustments across sectors and institutions. It seeks to reduce vulnerability by addressing the specific risks that expose communities, sectors or ecosystems to climate impacts while simultaneously building resilience by enhancing their capacity to anticipate, absorb and recover from climate-related shocks and stresses (Box 1.1.). At the same time, adaptation aims to capitalize on beneficial opportunities that may arise from extreme weather events, such as the potential availability of areas previously unsuitable for certain crops, allowing for

[1] For additional information, please refer to the Subregional Technical Notes in Annexes II-VI.

[2] The quantity and quality of water resources, thermal stress due to heat, and changes in exposure to diseases are all phenomena that can affect community well-being. Rising temperatures, for instance, can contribute to the spread of mosquito-borne diseases such as dengue and Zika virus (World Bank, 2022; IPCC, 2022).

diversification of agricultural production. Adaptation reduces economic losses: early warning systems, for example, provide timely information on future climate events, enhancing community preparation and limiting losses. Adaptation also generates economic benefits. Climate-smart agriculture, for instance, can enhance productivity and sustainability, leading to more stable incomes for farmers. Innovation and technological advancements can contribute to the development of new practices with applications across sectors (IPCC, 2014).

Box 1.1. Vulnerability and Resilience

Vulnerability is a complex concept, defined by the degree to which a system is susceptible to, or unable to cope with, the adverse effects of weather events. It is commonly understood as a function of exposure, sensitivity and adaptive capacity, with characteristics that are multidimensional – social, economic and environmental – and highly context-specific and dynamic. Socio-economic conditions play a central role in shaping both sensitivity and adaptive capacity. In regions like LAC, vulnerability is accentuated by socio-economic disparities and heightened exposure to climate hazards.

Resilience is the capacity of interconnected social, economic, and ecological systems to cope with a hazardous event, trend, or disturbance, responding or reorganizing in ways that maintain their essential identity, function and structure.

Source: Biscaro and Giupponi (2015); Füssel (2005); Krishnamurthy et al. (2014); Sandoval-Díaz et al. (2023); IPCC (2023).

1.3. **Although the short-term costs of climate adaptation could be perceived as high, the long-term benefits are greater than the cost of inaction.** Financing climate adaptation may require large upfront investments, particularly for resilient infrastructure projects that are capital-intensive. Building resilient infrastructure incurs an additional estimated cost of around 3% to 10% of the base cost of infrastructure (Galindo Paliza et al., 2022). In contrast, a portion of adaptation interventions require low or no investment (e.g., replacing depreciated equipment with adapted technology, or small changes in agricultural practices) (IPCC, 2014). The benefits of adaptation, such as protecting infrastructure and jobs and ensuring continued deliveries of services, are likely to materialize in the long term (Bapna et al., 2019). Failing to adapt can result in significant losses, including the destruction of infrastructure and reduced opportunities for growth in affected areas. The IDB (2022) estimates that by 2030, LAC requires between US$470 billion and US$1.3 trillion in climate adaptation investments, representing 7% to 19% of the region's annual GDP. The overall rate of return on adaptation investments consistently shows high benefits relative to costs, with an estimated benefit-cost ratio ranging from 4:1 to 12:1 (OECD, 2015; World Bank, 2017; UNEP, 2020), varying across studies. Estimates include US$4–US$7 per dollar invested (IDB, 2020a), US$10 per dollar invested (WRI, 2025), up to US$12 per dollar invested (Standard Chartered, 2021). Adaptation actions can, therefore, be a highly profitable investment for a country, city or company (Bapna et al., 2019).

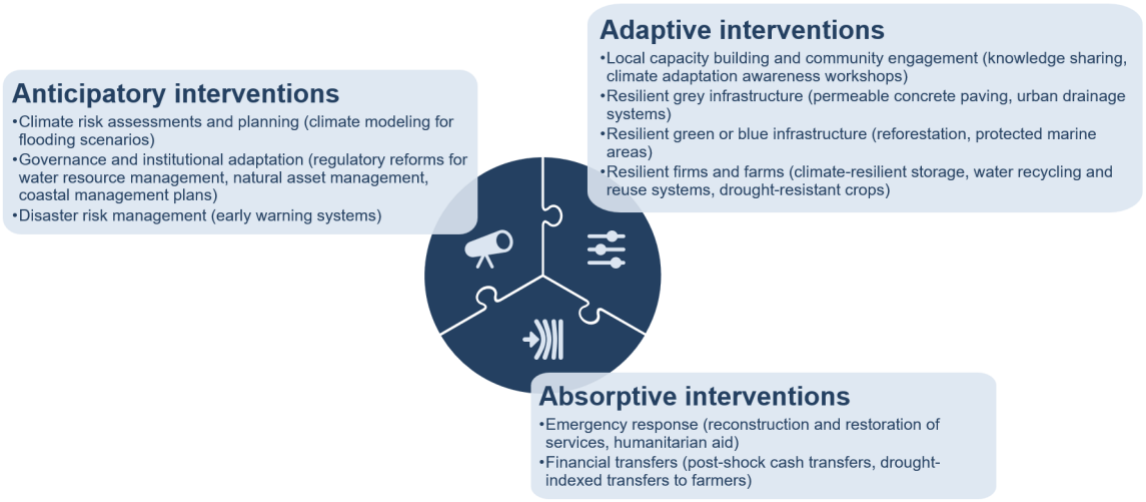
B. Interventions needed to adapt to climate

1.4. **Three types of interventions – anticipatory, adaptive and absorptive – contribute to climate adaptation.** The literature on climate adaptation identifies three types of interventions – anticipatory, adaptive, and absorptive. They offer a structured lens for understanding the range of responses required before, during, and after climate-related events. The literature indicates that these interventions significantly enhance adaptation by providing proactive measures, flexible responses and immediate coping mechanisms, thereby addressing both fast- and slow-onset climate impacts. Anticipatory interventions are actions taken in advance of (*before*) anticipated weather events, to avoid or reduce future losses.

They include, for example, scenario planning, early warning systems and the development of climate information systems for agricultural planning, as well as risk management strategies to prepare stakeholders to respond to climate events. Anticipatory interventions also include establishing institutional frameworks to ensure that adaptation measures can be effectively implemented. Adaptive interventions are changes to systems and institutions to adjust them over time to changing climate conditions (*during* the occurrence of weather shifts, either slow- or fast-onset). They include (a) the construction of resilient gray infrastructure, such as transport networks and water management systems that can function during extreme climate events;[3] (b) the construction of green and blue infrastructure, such as reforestation initiatives and the creation of protected marine areas; and (c) climate-smart (green) practices adopted by firms or farms, like the adoption of water recycling and reuse systems (e.g., efficient dyeing technologies in the textile industry) or of drought-resistant crops in agriculture. Adaptive interventions require local capacity building, whether for governments, communities, or the private sector, to foster understanding and informed decision-making, as well as social learning on climate adaptation. Absorptive interventions are planned actions taken at the time of emergencies to absorb and cope with shocks and stresses in the short term (*immediately after* weather events, usually fast-onset ones). They include, for example, emergency relief mechanisms and social safety nets that allow the delivery of cash transfers to affected communities. Together, anticipatory, adaptive and absorptive capacities offer an integrated framework for understanding and enhancing climate resilience across diverse contexts and temporal scales (Castells-Quintana et al., 2018; Sandoval-Díaz et al., 2023). The literature also points to transformational adaptation, which refers to deeper, systemic shifts in development pathways – such as changes in land-use patterns, relocation of vulnerable communities, or reforms in governance structures – that go beyond incremental adjustments (Filho et al., 2023; Francis et al., 2016; Revi et al., 2020). However, there are currently no objective or widely accepted methods for measuring or evaluating this approach. Figure 1.1. illustrates an overall framework for climate adaptation interventions, including the three types of interventions and examples of actions that can be deployed under each.

[3] Gray infrastructure includes transportation infrastructure like road tunnels, road networks, bridges; water management systems like wastewater collection and treatment systems, reservoirs, dams, drainage systems; or coastal protection like dikes, or floodgate constructions.

Figure 1.1. Framework for climate adaptation interventions



1.5. **Combining anticipatory, adaptive and absorptive interventions enhances adaptation.** Evidence shows that combining anticipatory, adaptive, and absorptive interventions is more effective than implementing them in isolation, because each type addresses different dimensions of risk and vulnerability (Balana et al., 2023; Asfaw et al., 2015; Macours et al., 2012). For example, implementing early warning systems to foresee weather events (anticipatory), constructing flood-resistant infrastructure to cope with them (adaptive) and preparing to restore services quickly afterwards (absorptive) enhances adaptation and reduces losses more than pursuing actions in only one area. However, the implementation of these approaches faces challenges that include institutional and governance barriers across government levels and policies; financial constraints, particularly in developing countries where access to adaptation funds and innovative financing is needed (Atteridge et al., 2022; Besekey Sutton, 2012); knowledge and capacity gaps, especially in climate data, technical expertise and knowledge sharing (Castle et al., 2015); defining indicators and measuring long-term outcomes in monitoring, evaluation and learning systems (IIED, 2013; Leiter, 2017); and maladaptation (some actions may inadvertently increase vulnerability or create negative externalities) (Magnan, 2014).

C. Purpose, scope and methods of the evaluation

1.6. **The objective of this evaluation is to assess the relevance and effectiveness of the IDB Group's (IDB and IDB Invest) efforts in supporting climate adaptation.** The evaluation assesses (1) the extent to which the IDB Group has supported climate adaptation to respond to the needs of LAC governments and private sector clients (relevance); and (2) the extent to which IDB Group's interventions achieved their objectives (effectiveness) by addressing three evaluation questions:

1. How has the IDB Group integrated climate adaptation into strategies, frameworks and country dialogue?
2. Are IDB Group climate adaptation interventions relevant to addressing the region's main adaptation climate needs?
3. Have IDB Group climate adaptation interventions achieved their objectives?

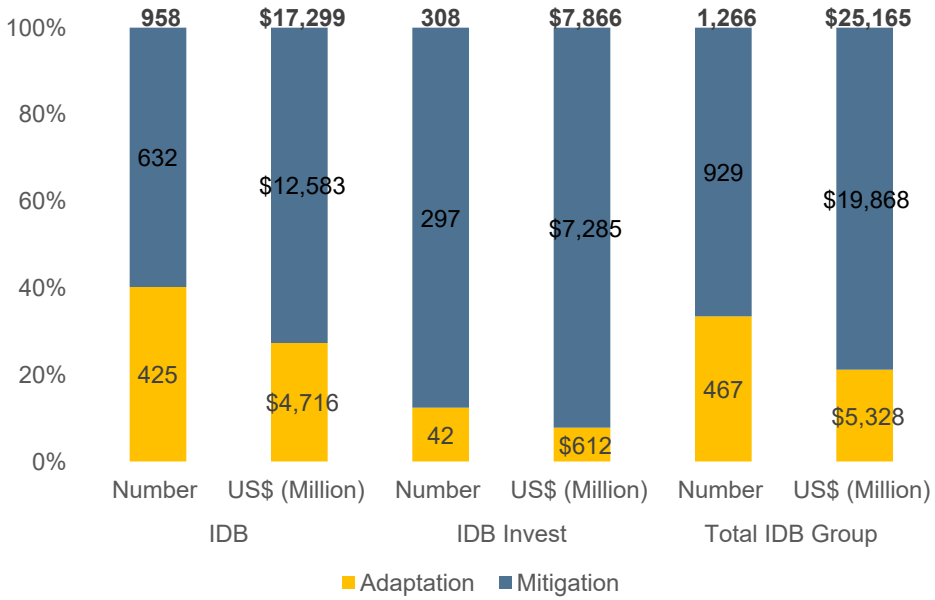
The evaluation covers IDB and IDB Invest interventions related to climate adaptation during the period 2016-2022. The selected evaluation period ensures consistency of the analysis, as the IDB Group has tracked mitigation and adaptation activities in its operations (flagging them as "climate finance") using the Multilateral Development Banks (MDBs) Joint Methodology for Tracking Climate Finance starting in 2016 (see Annex I for more information). Under this approach, mitigation projects or components aim to avoid, reduce, or capture greenhouse gas (GHG) emissions, while adaptation projects or components aim to address climate vulnerability. The evaluation does not cover IDB Lab and does not include IDB and IDB Invest operations with a dual categorization (mitigation and adaptation in the same components)[4]. Excluding dual-categorized interventions and focusing only on exclusive adaptation components ensures that the evaluation measures actual adaptation efforts, avoids inflating results with mitigation co-benefits, and provides a clearer picture of how operations specifically enhance adaptation to climate risks.

1.7. **Between 2016 and 2022, IDB and IDB Invest allocated $5.3 billion to climate adaptation, approximately 21% of the IDB Group's total climate portfolio for mitigation and adaptation of $25.2 billion in this period**. While the IDB Group supported a total of 1,266 climate-related operations for adaptation and mitigation amounting to $25.2 billion, most of both the number of operations and financing focused on mitigation. The IDB also approved 14 contingent loans for natural disasters for $2.5 billion. Of these loans, OVE included only those that have disbursed in the evaluation portfolio. Adaptation represented about 37% of the total number of operations (467 out of 1,266) and 21% of total climate finance ($5.3 billion out of $25.2 billion) (Figure 1.2).[5] IDB financed 425 adaptation operations during the evaluation period (167 lending and 258 technical cooperation projects) amounting to $4.7 billion. IDB Invest contributed an additional $612 million (37 senior loans, 3 subordinated loans, 1 senior and subordinated loan, and 1 guarantee). Funding for adaptation for the IDB grew at an annual rate of 14%, above the 11% growth rate for mitigation finance. The largest share of IDB's adaptation investments focused on water and sanitation and transportation, followed by the environment and disaster risk management. Investment loans and grants made up 80% of IDB's finance for adaptation, while policy-based operations (loans and guarantees) accounted for 18%. Technical cooperations (TCs) made up the remaining 2%. Four countries received half of IDB's adaptation resources during the evaluation period: Bolivia (19%), Argentina (15%), Panama (7%), and the Bahamas (7%). IDB Invest's funding for adaptation grew at an annual rate of 57%. It focused on agriculture, financial markets, and transportation through long-term senior loans. Brazil (38%), and Colombia (11%) accounted for almost half of the private window approvals for adaptation.

[4] Since 2016, the European Bank for Reconstruction and Development (EBRD) and IDB Group have tracked dual-benefit operations as a separate category in their internal systems. The other MDBs split the financed amount between mitigation and adaptation.

[5] According to data in the latest Joint Report on Multilateral Development Banks Climate Finance (2024), MDB's climate finance dipped slightly in 2020 but recovered in 2021 and has since followed a sustained upward trend.

Figure 1.2. Climate finance approved by IDB and IDB Invest, 2016-2022
(US$ million and number of operations)



Source: Own elaboration (based on data reported by IDB and IDB Invest).
Notes: The IDB also approved 14 contingent loans for natural disasters totaling $2.5 billion. OVE included only those loans that were disbursed during the evaluation period in the portfolio analysis. The total number of operations does not equal the sum of adaptation and mitigation operations because some operations include independent components for adaptation and mitigation. Specifically, 99 IDB operations and 31 IDB Invest operations had both components targeting mitigation and components targeting adaptation.

1.8. **The evaluation draws on two distinct samples of the overall adaptation portfolio to answer the relevance and effectiveness questions.** To assess the relevance of interventions, OVE selected a random representative sample of the IDB Group's adaptation portfolios that includes 284 operations (of the 467) totaling $4.1 billion (of the $5.3 billion) of the total adaptation portfolio. The sample size was determined using an 85% confidence level and a 5% margin of error. The sample was stratified by window (IDB and IDB Invest) and instrument type for IDB (i.e., investment and policy-based loans, grants and technical cooperations). In addition to the operations from the random sample, the team also considered all loans and grants that had at least 70% of their resources disbursed by December 2023, along with all operations that supported emergency response efforts through the Credit Contingency Facility for Natural Disasters (CCF) and the Immediate Response Facility for Emergencies (IRF)[6]. All policy-based guarantees from IDB and guarantees from IDB Invest were also added if not included in the random sample. For IDB, the relevance sample resulted in 243 operations ($3.5 billion), 46% of which are investment loans and grants, 7.5% policy-based operations, and 47% technical cooperation projects. For IDB Invest, the subset included 41 operations[7] ($602 million), 90% of which (37) are senior loans (See Annex I). To

[6] Management does not assign Climate Finance consistently across emergency response operations. For example, the only CCF that included CF for adaptation was BH-L1049, on the IRFs the only one that included CF for adaptation was HO-L1222. There were 6 CCFs and 4 IRFs with disbursements in the period of analysis.

[7] The difference between the total IDB Invest operations (42) and the representative sample (41) is of one operation.

assess the effectiveness of IDB Group's climate adaptation interventions, OVE selected all lending operations with at least 70% of their resources disbursed by December 2023 and all guarantees from the overall IDB group adaptation portfolio. For IDB, the resulting sample consisted of 69 operations ($1.9 billion), 74% of which are investment loans and grants, and 26% policy-based operations. For IDB Invest, the subset included 33 operations ($449 million), 87% of which (29) are senior loans (Table 1.1.).

Table 1.1. IDB Group portfolio and evaluation samples 2016-2022

	Adaptation portfolio		Relevance sample		Effectiveness sample	
	Number	US$ million	Number	US$ million	Number	US$ million
IDB						
Investment loans and grants	148	3,746	111	2,632	51	1,088
Policy-based operations	19	863	18	839	18	839
Technical cooperations	258	106	114	56	Not considered	
Total IDB	**425**	**4,715**	**243**	**3,528**	**69**	**1,927**
IDB Invest						
Senior loans	38	518	37	508	29	355
Subordinated loans	3	22	3	22	3	22
Guarantees	1	72	1	72	1	72
Total IDB Invest	**42**	**612**	**41**	**602**	**33**	**449**
Total IDB Group	**467**	**5,327**	**284**	**4,130**	**102**	**2,376**

Source: OVE.

1.9. **The evaluation focused on the interventions within projects that aimed to deliver climate adaptation results**. An intervention is defined as a set of activities or actions within a project that aims to contribute to climate adaptation. These interventions are typically identified at the component level, meaning that even when adaptation is not the objective of the project, specific components that include activities for adaptation are included in the analysis. From this point forward, we refer to these clusters – whether components, activities, or full projects – as "climate adaptation interventions." Each intervention was classified by intervention type – anticipatory, adaptive, or absorptive – and further categorized within each type based on the nature of the adaptation measure (e.g., climate risk assessments, resilient infrastructure, local capacity building). An operation may include more than one type of adaptation intervention. For example, an investment loan in the water sector may finance both the construction of flood-resistant infrastructure (adaptive) and the development of early warning systems (anticipatory). Thus, the number of interventions analyzed in the relevance and effectiveness samples exceeds the number of operations.

1.10. **Most interventions were anticipatory and adaptive; absorptive interventions were less common.** In the relevance sample,[8] 52% of IDB's interventions were anticipatory, primarily financing climate risk assessments, and planning processes,

[8] Which is a fairly adequate representation of the universe of adaptation interventions.

mostly through technical cooperations (80% of cases). Other anticipatory interventions, such as strengthening institutional frameworks and disaster risk management, were supported through policy-based operations. Adaptive interventions accounted for 40% of the portfolio. They financed gray infrastructure, particularly in the water, sanitation, and transport sectors mostly through investment loans and grants. This focus is consistent with the IDB's comparative advantage in infrastructure finance. Absorptive interventions accounted for only 8% of the portfolio. IDB Invest concentrated efforts on adaptive interventions (87%), supporting investments in climate-smart agriculture, and financing of resilient technologies for private companies through financial institutions (38%) as well as corporates lending (41%), and gray infrastructure projects (9%). Only 13% of IDB Invest's interventions supported the anticipatory capacity of clients. In the effectiveness sample, 44% of IDB's interventions were classified as anticipatory, whereas 45% were adaptive. The remaining 11% were absorptive interventions. For IDB Invest, while 29% were anticipatory interventions, 71% were adaptive.

1.11. **The OVE team developed a conceptual framework articulating how the IDB Group support for climate adaptation is expected to contribute to achieving development outcomes.** The conceptual framework is based on three sources of information: (1) a literature review on climate adaptation, which identified the main types of interventions and their contributions to intended outcomes (described in Figure 1.1); (2) a review of the IDB Group's climate adaptation relevance sample; and (3) a review of two IDB Group Climate Change Action Plans (documents GN-2848-4 and GN-2848-9), which serve as strategic frameworks for the IDB Group and its country clients to coordinate and leverage initiatives, resources, and technical assistance to support climate adaptation and low-carbon interventions in the region. The conceptual framework summarizes how IDB Group's support for climate adaptation is expected to contribute to development outcomes via a series of outputs and intermediate outcomes (Figure 1.3). Adaptation interventions are expected to lead to behavioral changes of government entities, communities, households, and individuals that enable them to better identify (anticipate) risks, adapt to them, and recover from them. Ultimately, adaptation interventions are expected to lead to decreased climate-related losses, maintained access to services and food security as well as maintained – and possibly improved – economic activity, productivity and income. Because adaptation is an iterative and long-term process, these outcomes are achieved gradually through sustained efforts, continuous learning, and adjustments to evolving climate risks. A limitation of this framework is that it did not examine financial or fiscal resilience, nor the incentives at the corporate or governmental level that may influence the approval, design, or demand for adaptation interventions.

1.12. **The evaluation team applied a mixed-methods approach to address the evaluation questions.** To assess the relevance of the IDB Group's work on climate adaptation, the team examined the alignment of each intervention with country priorities (e.g., national development plans, and national adaptation plans) and IDB Group strategies. It also examined the extent to which each intervention in the portfolio was likely to contribute to its context-specific climate vulnerabilities as described in approval documents. This ex-ante assessment classified interventions according to whether they demonstrated a higher or lower potential to reduce the identified vulnerabilities. The team also reflected in the relevance analysis information complied in interviews with IDB Group staff (climate specialists, chiefs of operations, operations team leaders) and stakeholders (client

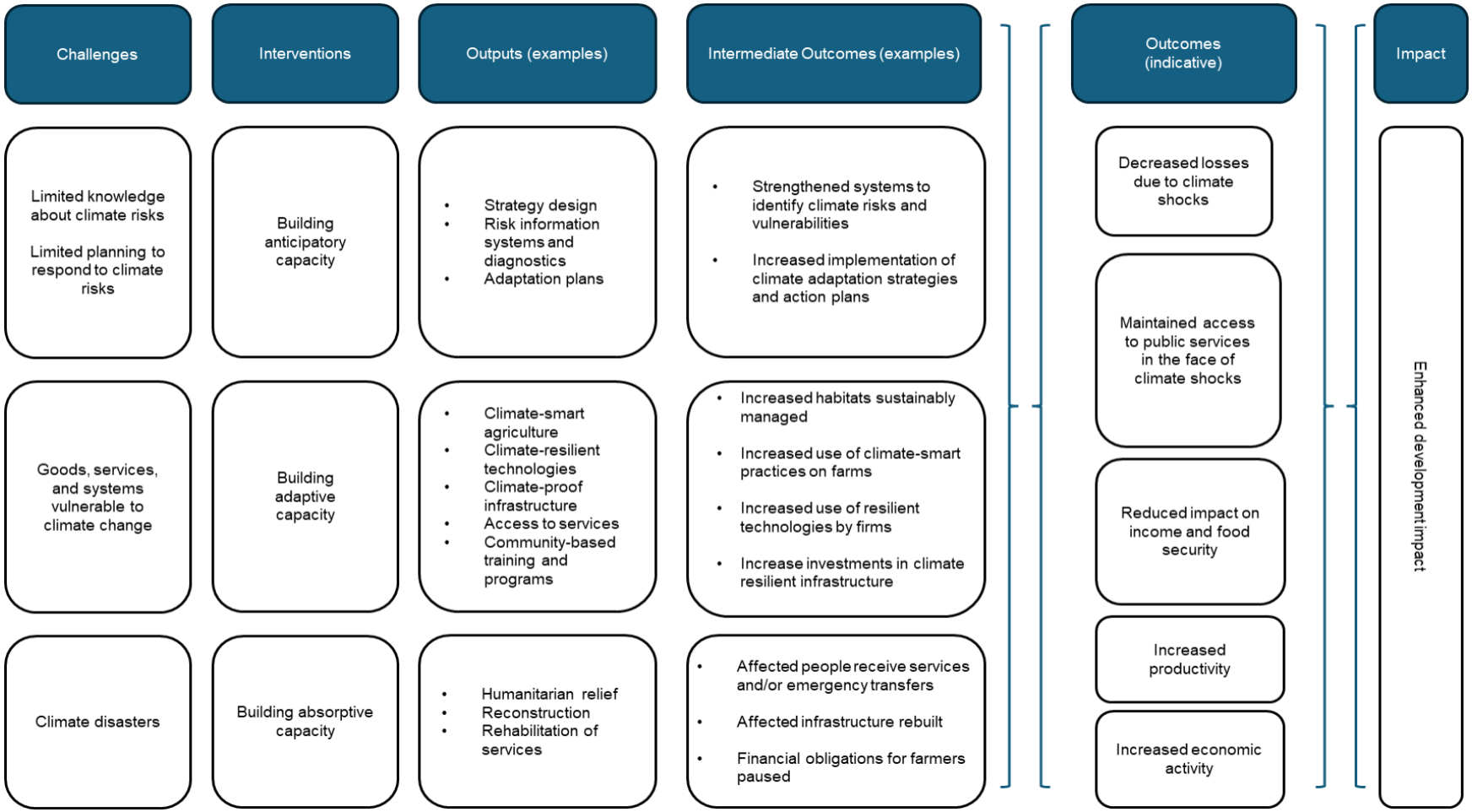
counterparts, staff of executing agencies). For efficiency, the team reviewed a large representative sample of interventions (see explanation above). To assess the effectiveness of the IDB Group's climate adaptation interventions, the team analyzed adaptation-related indicators (final outcomes, intermediate outcomes, or outputs) of the effectiveness sample portfolio (explained above) and, where possible, conducted a geospatial analysis of adaptation outcomes. The assessment was conducted at the level of reported adaptation indicators, many of which represent only a portion of a broader project. Thus, overall project ratings or project effectiveness ratings of project completion reports (PCRs) or extended supervision reports (XSRs) were not used to assess the effectiveness of climate adaptation interventions.

1.13. **The effectiveness analysis was limited by the small number of mature interventions and the scarcity of climate adaptation indicators to measure progress.** Demonstrating the effectiveness of climate adaptation interventions would, in some cases, require the occurrence of a climate shock, an event that is not desirable. Therefore, the evaluation team measured progress not only through outcome indicators such as reduction in climate-related economic losses, but also through intermediate outcomes – such as improved water resource management, adoption of climate-resilient practices – or even through output indicators, such as the construction of flood-resistant infrastructure, climate-resilient road networks, or the deployment of early warning systems. Of the 133 interventions (98 from IDB and 35 from IDB Invest) in the effectiveness sample, about 72% included indicators that helped the team capture (to some extent) relevant adaptation results. 64% of IDB (63 out of 98) and 94% (33 out of 35) of IDB Invest interventions included at least one indicator (regarding a final outcome, intermediate outcome or adaptation-related output) to assess progress towards achieving development outcomes. The lack of indicators limits the ability to track and evaluate progress, reducing the scope of the effectiveness assessment and making it difficult to demonstrate achievements.

1.14. **For adaptive interventions, the effectiveness assessment was supplemented with a geospatial analysis to examine adaptation outcomes using remote sensing data.** This analysis focused on interventions that could be reliably located using satellite imagery and had physical components likely to produce observable results. A total of 12 IDB interventions were analyzed (five interventions in transport, one in water and sanitation, one intervention combining gray and green infrastructure in tourism, and five interventions in blue infrastructure and climate-smart agriculture). Of the five transport interventions, four did not include an adaptation indicator at design.

1.15. **The remainder of the report is structured as follows.** Chapter II analyses whether IDB Group adaptation interventions have been relevant to addressing the region's adaptation needs. Chapter III examines their effectiveness. Chapter IV concludes and provides recommendations.

Figure 1.3. Evaluation conceptual framework



II. RELEVANCE

2.1. **This section evaluates the relevance of IDB Group climate adaptation activities between 2016 and 2022.** It first briefly describes the evolution of the IDB Group's approach to climate adaptation over the years. It then assesses the relevance of IDB Group Sector Framework Documents and Country Strategies for climate adaptation. Third, it assesses how well climate adaptation was integrated into IDB Group operations. Finally, it examines whether climate adaptation operations were relevant to address the region's climate vulnerabilities by enhancing anticipatory, adaptive and absorptive capacities.

A. Evolution of the IDB Group's approach to climate adaptation

2.2. **Support for climate adaptation has been increasingly important for the IDB Group and is a crucial pillar of its 2024 strategy.** In the 2010 Ninth General Capital Increase, the IDB identified climate adaptation as an institutional priority for specific sectors and set a target to allocate 25% of its total approvals to finance climate change initiatives, renewable energy and environmental sustainability by 2015, becoming the first multilateral development bank (MDB) to do so (document AB-2764). The 2015 "Update to the Institutional Strategy 2010-2020" (document AB-3008) recognized climate change as a cross-cutting theme. In 2016, the IDB and IDB Invest increased the target of total approvals for climate finance to 30% by 2020[9] and aimed to enhance climate risk evaluations, including adaptation strategies, in early project stages (document AB-3067). More recent frameworks set more ambitious goals for climate adaptation and resilience.[10] In 2021, IDB Group Management committed to aligning all approved operations with the Paris Agreement starting in 2023. Accordingly, IDB Group operations should support pathways that promote low emissions and climate adaptation without hindering development (IDB, 2022a). The 2024 IDB Group strategy (Impact+) includes addressing climate change as one of the three overarching objectives of the Group, together with promoting sustainable growth and reducing poverty and inequality. The strategy emphasizes the importance of shifting from measuring climate finance investment to monitoring results. These efforts have been accompanied by climate mainstreaming (Box 2.1). Figure 2.1 includes the key milestones of the evolution of the IDB's approach to climate in the past fifteen years.

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9 The Corporate Results Framework (CRF) 2020-2023 target was 30% (GN-2727-12), with an aspirational target of 35%. See Annex I for climate-related indicators presented in the CRF.

10 In the IDB Group Impact Framework 2024-2030 (GN-3195-8), the IDB Group has set a cumulative amount of $25 billion climate finance target for adaptation to the period from 2024 to 2030 (with the baseline of $10.3 billion), aiming at a 45% Climate Finance target by 2030. Additionally, performance targets include increasing the share of projects building climate resilience and climate finance.

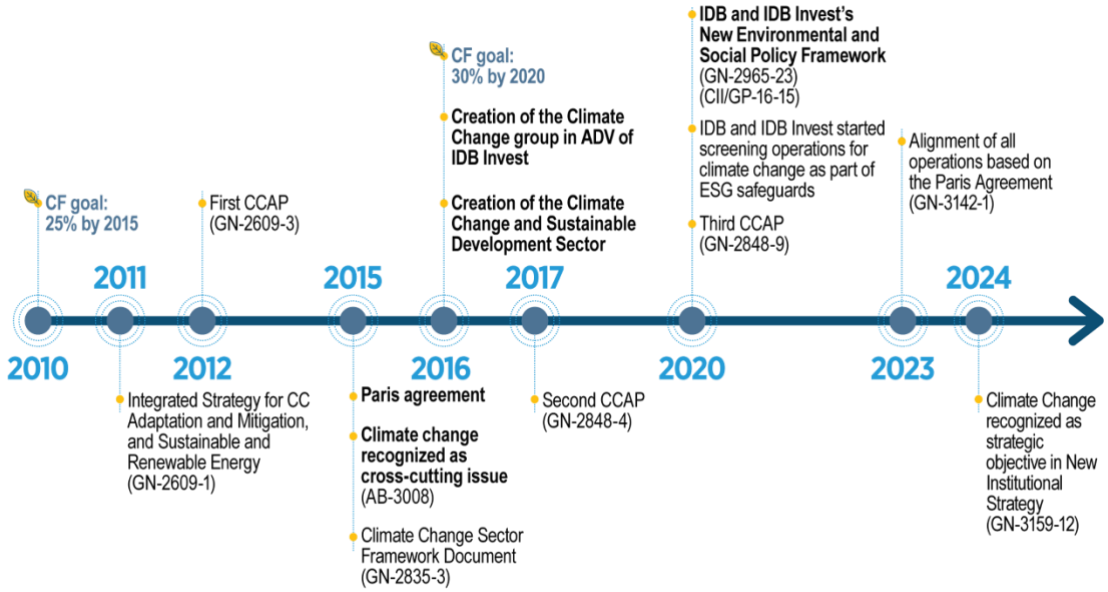
Box 2.1. Climate mainstreaming at the IDB Group

Climate mainstreaming refers to the practice of incorporating climate considerations into the IDB Group's operations and policy dialogue to effectively enhance adaptation and reduce carbon footprints. This includes embedding climate action into:

- Sector Framework Documents[a] to ensure that support to sectors is consistent with countries' climate adaptation and mitigation needs, and to identify opportunities to include climate in sector operations;
- Country documents such as Country Strategies[b] and Country Development Challenges (CDC)[c], to raise awareness and support policy discussions on climate; and
- The design, implementation, monitoring and evaluation of IDB and IDB Invest operations.

Source: Own elaboration (based on the *IDB Group Climate Change Action Plan 2016-2020* (GN-2848-4), AB-3008, GN-2609-1, GN-2835-8, GN-2727-12).
Note: [a] A Sector Framework Document is a knowledge document created by the IDB Group to provide sector-specific guidance and address the main development challenges in a sector, offering flexible yet focused direction for the Bank's operations and policy dialogue (GN-2670-5).
[b] A Country Strategy is an agreement between the IDB Group and a country outlining the strategic areas and objectives that will guide the IDB Group's support and resource allocation over a specified period. Since 2016, Country Strategy Guidelines (GN-2468-9) have mandated a thorough analysis of crosscutting issues like climate in strategies and suggest integrating climate into strategic objectives when relevant.
[c] A Country Development Challenges (CDC) document is a diagnostic analysis based on empirical evidence that identifies key obstacles to inclusive and sustainable growth in a country and serves as an input for the IDB Group's strategic planning and formulation of a Country Strategy (GN-2468-9).

Figure 2.1. Evolution of the IDB Group climate approach (major milestones)



Source: Own elaboration.
Note: ADV: Advisory Services; CCAP: Climate Change Action Plan; CF: climate finance.

2.3. **To implement its commitments on climate, the IDB Group has developed a series of action plans, embedded climate support in sectoral operations, created climate units, hired climate specialists, and enhanced project screening processes.** The IDB Group has developed three Climate Change Action Plans (CCAPs) (2012-2015, 2016-2020, and 2021-2025)[11] that over the years have provided IDB and IDB Invest with a unified strategy for achieving climate finance objectives and mainstreaming climate into operations and policy dialogue. For the 2016-2022 period, the IDB Group's climate finance amounts corresponded to 31%

11 GN-2609-3, GN-2848-4, GN-2848-9.

of the total amounts approved, surpassing the 30% target. In 2016, the Climate Change and Sustainable Development Sector and its Climate Change Solutions Division were established with strategic responsibility for mainstreaming climate-related considerations into project design and execution. Similarly, IDB Invest's Advisory Services Division (ADV) established a dedicated climate group to mainstream solutions in the private sector. The IDB Group has also increased the hiring of climate specialists. IDB specialists in Country Offices increased from 14 in 2020 to 36 in 2023, resulting in an expanded presence in Country Offices from 4 to 21 of 26 offices (see Annex I). IDB Invest increased its ADV staff focused on climate from 8 to 12 during the same period (IDB, 2023a). In addition, in 2020, the IDB and IDB Invest started to screen operations for climate as part of the environmental and social safeguards due diligence.[12]

B. Relevance of IDB Group sector framework documents and country strategies to climate adaptation

2.4. **Most Sector Framework Documents (SFDs) approved by the IDB Group included climate adaptation considerations and offered lines of action to integrate adaptation into operations.** Twenty-eight of 36 SFDs incorporated adaptation considerations, and 21 of these included lines of action (see Annex I).[13] For example, the Health 2021 SFD acknowledges that the region now deals with the consequences of the COVID-19 pandemic and of climate and suggests, as interventions, climate-resilient health infrastructure and robust emergency response systems to protect public health amid rising climate-related threats. However, some gaps remain. Some sectors with clear potential to contribute to climate adaptation did not incorporate considerations.[14] The Extractive Industries 2021 SFD, for instance, focused exclusively on mitigation measures like energy transition and waste management, overlooking the sector's reliance on climate-sensitive resources such as water and land. This was a missed opportunity to promote resilience against

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12 Supported by the 2018 publication of the *Disaster and Climate Change Risk Assessment Methodology*, which introduced a structured approach for identifying, classifying, and managing climate and disaster risks in infrastructure projects. As a pioneering effort among multilateral development banks, this methodology informed the 2020 update of the IDB's Environmental and Social Policy Framework (ESPF).

13 An SFD is assessed as including adaptation considerations when the document discusses climate adaptation in the given sector, taking into account (i) the context of existing regulations and the current institutional strategy; and/or (ii) within international evidence on the effectiveness of sector-related policies and programs; and/or (iii) challenges in the region; or (iv) lessons from the Bank. The 28 SFDs that incorporated adaptation considerations were Agriculture (2019), Agriculture and Natural Resources Management (2016), Climate Change (2018), Decentralization and Subnational Governments (2018), Energy (2018), Environment and Biodiversity (2018), Fiscal Management (2022), Food Security (2018), Gender and Diversity (2017), Gender and Diversity (2022), Health (2021), Health and Nutrition (2016), Housing and Urban Development (2020), Innovation, Science and Technology (2017), Innovation, Science and Technology (2022), Integration and Trade (2016), Integration and Trade (2019), Labor (2021), Skills Development (2020), Social Protection and Poverty (2021), Support to SMEs and Financial Access/Supervision (2017), Tourism (2017), Tourism (2022), Transportation (2016), Transportation (2020), Urban Development and Housing (2016), Water and Sanitation (2017), Water and Sanitation (2021).

14 The eight SFDs that did not include climate adaptation considerations were Citizen Security and Justice (2017), Early Childhood Development (2019), Education and Early Childhood Development (2016), Extractive Industries (2021), Fiscal Policy and Management (2018), Labor (2016), Social Protection and Poverty (2017), and Transparency and Integrity (2020).

climate threats like water scarcity and land degradation. Moreover, 7[15] of the 28 SFDs, though including climate considerations, lacked concrete lines of action to incorporate climate adaptation into operations. The Integration and Trade 2016 SFD, for instance, gave only general consideration to its alignment on climate with the institutional strategy, noting that the latter proposed trade and investment activities aimed at promoting resilience. While the document presented, through a line of action, climate-related project evaluation guidelines for bidding processes, it did not explore how innovation and technology could actively support adaptation, such as through the development of climate-resilient solutions, enhanced competitiveness, or more robust and adaptive value chains.

2.5. **Most Country Strategies (CSs) assessed climate vulnerabilities and impacts, but the depth of the climate impact analysis and the inclusion of operational considerations to address vulnerabilities varied.**[16] Forty-one of 53 CSs assessed climate vulnerabilities and impact. Of these, 20 provided in-depth analysis on climate impacts and 9 discussed how to address them. Belize's 2013-2020 CS is a good example of both an in-depth analysis of climate vulnerabilities and impacts and a proposal to address such vulnerabilities. It pointed out that the country's heightened vulnerability to natural disasters and changes to weather patterns – stemming from its geographic features and economic dependence on natural resources – increases the likelihood of future impacts (see Annex I). In addition to including comprehensive and sector-specific assessments and plans, it embedded clearly defined climate adaptation actions in key sectors – infrastructure, agriculture, tourism and disaster risk management. However, in-depth vulnerability analysis in CSs did not always lead to the development of cohesive, actionable and measurable plans for taking concrete actions to enhance climate adaptation. Panama's 2021-2024 CS, for example, mentioned the country's vulnerability to natural disasters due to its geographic location, but provided limited diagnostic information or localized vulnerability analysis. It considered climate embedded in the sustainability pillar through the specific objective "develop services for sustainable and inclusive growth of tourism and agriculture" and expected result "increased productivity, resilience, and sustainability of Panamanian agricultural producers." While CSs and SFDs are intended to guide programming, they are not consistently used in practice. The context-specific vulnerability analyses in CSs and the lines of action to implement climate actions in SFDs could provide valuable input to inform programming decisions and articulate adaptation in a relevant, and context-specific manner—but this potential remains underutilized.

C. Integration of climate adaptation into operations

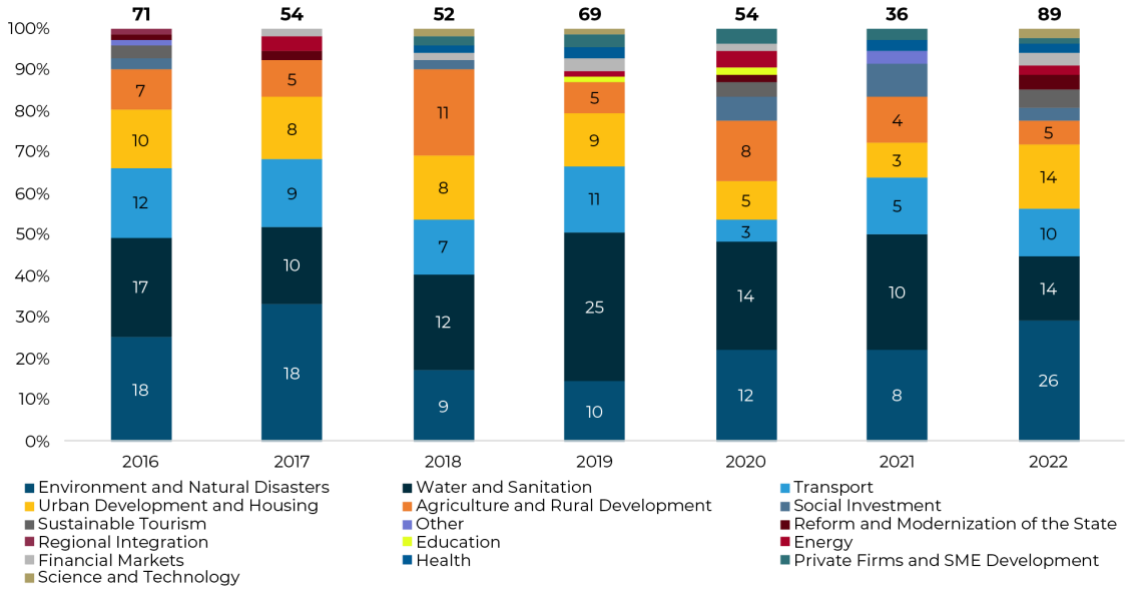
2.6. **With growing recognition of climate risks, the integration of climate adaptation into IDB Group operations focused in a subset of vulnerable sectors, though other highly climate-exposed areas (e.g., tourism, social protection) remained underserved.** 17 IDB sectors included operations with climate adaptation interventions during the evaluation period, with 85% of IDB's adaptation portfolio

15 The seven SFDs that included climate adaptation considerations but did not include concrete lines of action to incorporate climate adaptation into operations were Gender and Diversity (2017), Gender and Diversity (2022), Innovation, Science and Technology (2017), Innovation, Science and Technology (2022), Integration and Trade (2016), Integration and Trade (2019), Support to SMEs and Financial Access/Supervision (2017).

16 The analysis also included the review of the CDCs prepared for the elaboration of each strategy, as these documents provide a more in-depth assessment of the development challenges of a country.

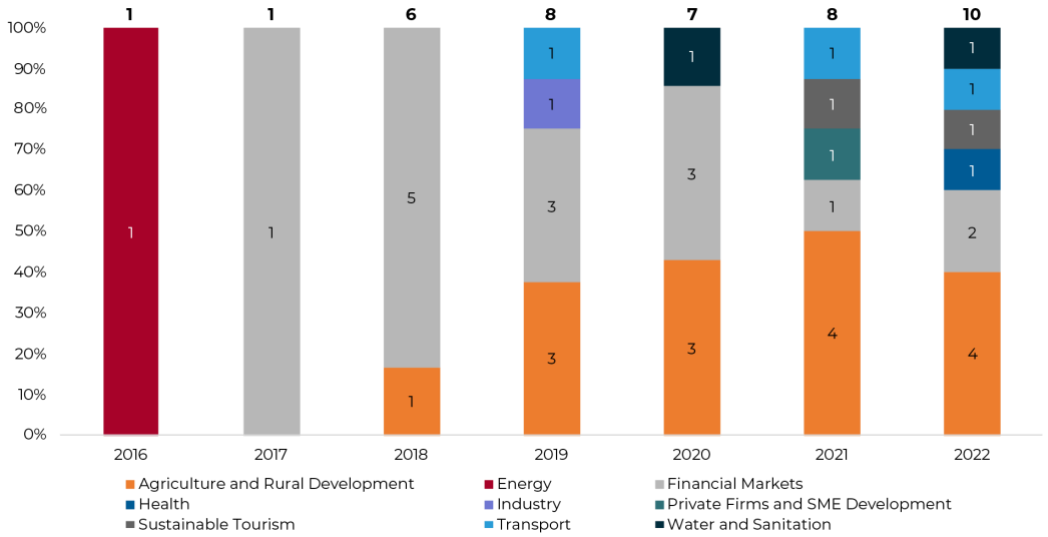
mapped to five key sectors: Environment and Natural Disasters, Water and Sanitation, Urban Development and Housing, Transport, and Agriculture and Rural Development (Figure 2.2). Environment and Natural Disasters consistently featured a high number of projects, reaching a peak of 26 (29%) projects in 2022. Water and Sanitation also maintained steady activity, with notable increases in 2019 (25 projects, 36%). In contrast, sectors such as Sustainable Tourism, and Social Protection exhibited limited project activity, with some sectors only represented once or twice over the seven-year period. Interviews revealed challenges in mainstreaming climate in sectors outside water and sanitation, environment and disaster risk management, demanding sustained efforts in capacity-building, awareness-raising, and dialogue. Similarly, IDB Invest operations have been mainly concentrated in two sectors: Financial Markets and Agriculture and Rural Development, although there has been a modest expansion into other sectors (such as transport, sustainable tourism, water and sanitation, and private firms and SME development) over time (Figure 2.3).

Figure 2.2. Proportion of number of climate adaptation operations by sector and year of approval (IDB), 2016-2022



Source: OVE.

Figure 2.3. Proportion of number of climate adaptation operations by sector and year of approval (IDB Invest), 2016-2023



Source: OVE.

2.7. **The introduction of the Paris Agreement Alignment Implementation Approach (PAIA) in 2023 provided clarity and structure for integrating climate adaptation into operations.** Adaptation interventions emerge either from the Environmental and Social Solutions Unit (ESG) screening process (Annex 1 for more information) or the identification of opportunities to integrate adaptation into projects, reflecting the mainstreaming of adaptation across operations.[17] Both IDB and IDB Invest have refined their disaster and climate risk assessment methodologies over the years. These methodologies constituted the basis for the introduction of the Paris Agreement Alignment Implementation Approach (PAIA) at the IDB Group in 2023 (see Annex I for more information). Under the PAIA, pre-existing procedures at IDB and IDB Invest that required operational pipeline screenings to identify climate-related risks were leveraged to screen for climate-related opportunities early in projects (prior to the eligibility review meeting, ERM). Processes established under the Environmental and Social Policy Framework (ESPF) and IDB Invest's Environmental and Social Sustainability Policy, complemented by Paris Alignment Tools (i.e., a Climate and Sustainability Filter to be filled by project teams prior to the ERM), help facilitate the assessment of alignment with the Paris Agreement and determine the need for support from a climate specialist. Prior to the PAIA, in the case of IDB, climate mainstreaming considerations were discussed in the Quality and Risk Review (QRR) meeting, marking the end of the project preparation phase.

[17] Adaptation actions stemming from ESG's work focus on compliance with the IDB's Environmental and Social Policy, particularly ensuring community and third-party safety throughout the project lifecycle. In contrast, adaptation actions led by climate and sector specialists also align with the policy but are designed to mainstream adaptation beyond risk assessments.

The inclusion of a climate specialist was then at the discretion of the operation leader.[18] At IDB Invest, the Environmental, Social, and Governance Division (SEG) performs the risk assessment of all projects and climate specialists look to potentially incorporate climate adaptation activities.

2.8. **Collaboration between team leaders and climate specialists improved over the evaluation period, though the lack of a standardized process for identifying and incorporating adaptation activities until 2023[19] limited systematic mainstreaming.** While CCAPs emphasized the importance of early integration of adaptation considerations, in practice collaboration between team leaders and climate specialists often depended on individual discretion, with climate specialists' influence varying by seniority or contractual status. Corporate climate finance targets have encouraged greater attention to adaptation, though interviews suggest they sometimes shaped incentives more toward meeting targets than clarifying adaptation objectives.

2.9. **The incorporation of climate adaptation activities into IDB Invest operations faces specific challenges due to clients' perceptions that adaptation measures do not offer immediate benefits.** Despite better internal coordination and early involvement of the Advisory Services Division in project preparation, incorporating climate adaptation considerations in private sector operations remains challenging. IDB Invest clients interviewed as part of the evaluation favor investments for mitigation purposes over adaptation measures. Mitigation often involves tangible, short-term economic returns, such as energy savings and reduced emissions. Adaptation yields long-term economic and financial returns, which are, however, more difficult to estimate. To diminish this demand gap, IDB Invest has engaged clients by showcasing successful adaptation practices and estimating potential climate-related losses. However, these strategies have had limited success, primarily resonating with clients already interested in or implementing adaptation actions. Interviews with Management revealed that the recent intensification of climate impacts in the region has increased the interest of clients in adaptation and resilience, recognizing the risks to their supply chains and business models.

D. Relevance of IDB Group support on climate adaptation to addressing countries' climate adaptation needs

2.10. **Some countries that need more support for climate adaptation have lower proportions of their IDB Group funding devoted to adaptation financing.** To assess the relevance of IDB Group interventions, OVE analyzed their alignment by comparing the share of IDB Group adaptation funding between 2016-2022[20] with countries' adaptation needs, as measured by the 2016 Notre Dame Global Adaptation Initiative (ND-GAIN) Country Index (Figure 2.4). The ND-GAIN measures

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18 For more on the PAIA, see Annex I.

19 Climate specialists are responsible for CF calculations, which occur before the Quality and Risk Review (QRR) at the end of the project preparation phase. Since the introduction of the PAIA in 2023, the IDB has implemented a climate change filter that project leaders must submit before projects become eligible. This filter identifies projects needing support from a climate specialist for the Paris Alignment assessment.

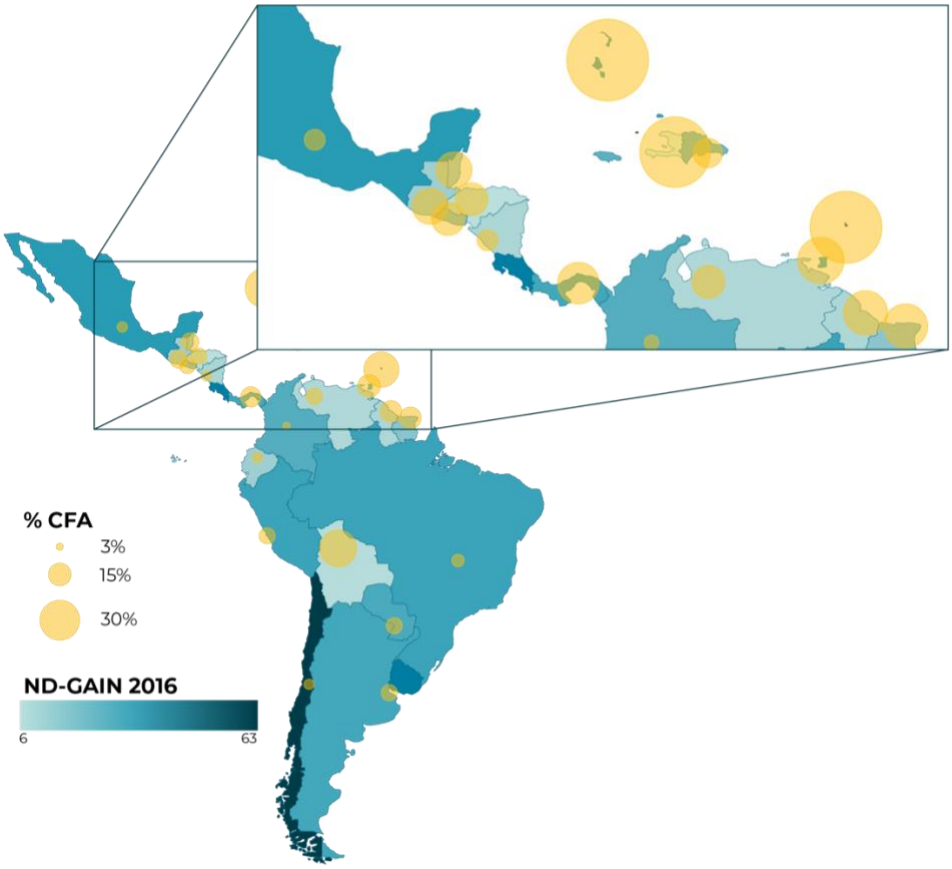
20 Given that adaptation finance has averaged around 8–10% of total MDB financing in recent years, 'low' is defined as below 8%, 'medium' as 8–14%, and 'high' as 15% or more. These categories reflect current MDB practices and provide a context-sensitive benchmark for assessing relative adaptation financing levels across countries.

a country's overall readiness to adapt, relative to its vulnerability to climate. It assesses factors such as exposure to climate hazards, sensitivity and adaptive capacity, providing a composite score to help identify areas most at risk and pinpoint opportunities for resilience-building.[21] Lower ND-GAIN scores indicate greater needs for adaptation support, as they correspond with higher vulnerability and lower preparedness; higher scores indicate lower needs for adaptation support, as they correspond with lower vulnerability and higher preparedness. Haiti stands out as a country in which IDB support is aligned with country needs. Receiving a relatively high share of adaptation finance (23%) to address its high needs (ND-GAIN of 36, the lowest in the region). Another example of alignment between climate adaptation needs and share of climate adaptation funding is Bolivia, with a low ND-GAIN score (41), indicating a high need for support, and the second-highest proportion of adaptation approvals in the period (26%). In contrast, countries, such as Nicaragua, Honduras, El Salvador, Belize and Guatemala with high needs for adaptation support (ND-GAIN lower than 45, as indicated by lighter blue on the ND-GAIN scale in Figure 2.4), had relatively low shares of their IDB Group resources devoted to climate adaptation financing (between 2% and 6%, as shown by the small yellow circles in Figure 2.4). Other countries receiving limited adaptation relative to climate needs include Jamaica and the Dominican Republic in the Caribbean (ND-GAIN of 48 and 46, respectively but low relative adaptation approvals 0.06% and 4%, respectively). In Northern South America, Guyana and Ecuador also had limited alignment (ND-GAIN scores of 42 and 43, respectively and low shares of adaptation support 2% each).

2.11. **This assessment is limited by its focus on the country level and on IDB funding only.** It provides an overview at the country level but does not consider vulnerable territories or special conditions within countries that overall have high ND-GAIN scores. Some countries with higher ND-GAIN scores, such as Chile and Uruguay (60 and 53), face comparatively lower vulnerability than many other LAC countries but still require adaptation financing, because they remain exposed to increasing climate risks (e.g., increasing aridity and glacier retreat in Chile, or water stress and droughts in Uruguay). Their share of adaptation financing was low (2% and 0.4%), respectively. Data is not available to conduct a more granular, subnational analysis. Another limitation of this assessment is that countries with high adaptation needs may receive support from other multilateral development banks or their own governments and therefore may not require or seek adaptation financing from the IDB Group.

[21] Counties with 'high' adaptation needs (less resilient) are defined with ND-Gain scores below 45; 'medium' with ND-Gain scores between 45-60, and 'less' (most resilient) with ND-Gain scores above 60. In 2016, all IDB Group borrowing countries had ND-Gain scores below 61.

Figure 2.4. ND-GAIN Country Index and financing for adaptation as a percentage of total IDB Group financing for each country, 2016-2022



Source: Own elaboration (based on the 2016 ND-GAIN Index). The % CFA represents the proportion of climate finance dedicated to adaptation over the total IDB financing from 2016 to 2022, varying between 0.7% and 31%, with a median of 5%. Smaller circles indicate a smaller share of climate finance for adaptation. The 2016 ND-GAIN Index values span from 36 to 60, with a median of 47. Lighter blue indicates a lower ND-GAIN value.

E. Relevance of IDB Group support on climate adaptation to addressing specific climate vulnerabilities

2.12. **Although IDB interventions were aligned with country priorities, a large share did not support actions that addressed specific climate vulnerabilities. Adaptive and absorptive interventions were more on target than anticipatory interventions.** IDB interventions were generally aligned with government priorities and often related to key vulnerabilities identified in CSs. However, only 52% of interventions (161 of 309) were likely to address the identified climate vulnerabilities described in approval documents (e.g., climate change annex) (Table 2.1). In 21% (64 of 309) of cases, the connection between the intervention and its potential to address specific climate vulnerabilities was limited, and in 27% (84 of 309), there was no apparent link. The *Development Program for Metropolitan Areas Outside the Capital* in Argentina II,[22] for instance, supported the creation of a contingency plan to evaluate flood risks and identify possible adaptation strategies, however, the existence of the plan alone does not reduce inundation risks unless implemented. Adaptive and absorptive interventions were more likely to tackle specific climate

[22] Investment loan, approved in 2016 for $80 million (AR-L1243).

vulnerabilities than anticipatory interventions (Table 2.2), as 63% (84 of 134) of adaptive and 59% of absorptive (10 of 17) interventions were on target compared to 42% (67 of 158) of anticipatory interventions. The *Climate Resilient Coastal Management and Infrastructure Program* in the Bahamas,[23] which aimed to enhance the country's resilience to coastal risks through support to sustainable coastal protection infrastructure and integrated coastal management, is an example of an adaptive intervention expected to tackle specific climate vulnerabilities by project closure.

Table 2.1. Relevance by category and type of intervention (IDB)

Climate adaptation category of intervention	Type of intervention	Interventions	Interventions aligned with climate vulnerabilities	
		No.	No.	%
Anticipatory		**158**	**67**	**42**
	Climate risk assessments and planning	99	41	41
	Governance and institutional adaptation	24	7	29
	Disaster risk management	35	19	66
Adaptive		**134**	**84**	**63**
	Local capacity building	40	18	46
	Resilient gray infrastructure	63	45	71
	Resilient green or blue infrastructure	16	10	63
	Resilient firms and farms	15	11	73
Absorptive		**17**	**10**	**59**
	Emergency response	16	10	63
	Shock-responsive social protection	1	0	0
	Total	**309**	**161**	**52**

Source: OVE's elaboration.

2.13. **Few IDB Invest interventions included climate adaptation activities, and most did not meaningfully address countries' vulnerabilities.** Climate interventions are rarely documented in IDB Invest's board approval documents, with only 34% of IDB Invest interventions (14 of 41) including diagnostics and directly addressing them through proposed activities and outputs (Table 2.2.). For example, to face the increasing risk of heat waves, an intervention supported the installation of fans and vaporized water sprinklers to adapt warehouses. However, this case was an exception. In general, there was no explicit link between adaptation vulnerabilities of the local context and IDB Invest interventions. For example, one project that aims to increase food production and job creation and to strengthen the links in the client's value chain, discusses the impact of changes in rainfall patterns on the agricultural sector and how they affect production, but it does not include references to climate adaptation in its activities.

[23] Investment loan, approved in 2017 for $36 million (BH-L1043).

Table 2.2. Relevance by category and type of intervention (IDB Invest)

Climate adaptation category of intervention	Type of intervention	Interventions	Interventions aligned with climate vulnerabilities	
		No.	No.	%
Anticipatory		**10**	**4**	**40**
	Climate risk assessments and planning	9	3	33
	Governance and institutional adaptation	0	Na	Na
	Disaster risk management	1	1	100
Adaptive		**31**	**10**	**32**
	Local capacity building	3	3	100
	Resilient gray infrastructure	4	2	50
	Resilient green or blue infrastructure	4	2	50
	Resilient firms and farms	20	3	15
Absorptive		**0**	**n.a.**	**n.a.**
	Emergency response	0	n.a.	n.a.
	Shock-responsive social protection	0	n.a.	n.a.
	Total	**41**	**14**	**34**

Source: OVE's own elaboration.
Note: n.a.= *not applicable*.

1. Relevance of anticipatory interventions to addressing climate vulnerabilities

2.14. **The relevance of IDB's anticipatory interventions for climate risk assessments and planning was mostly limited due to insufficient planning for follow-up actions to address climate vulnerabilities.** About half of IDB interventions (158 of 309) included anticipatory elements. The majority of anticipatory interventions (99 of 158; see Table 2.1) were for climate risk assessments and planning and were mostly implemented through technical cooperations. These were distributed across sectors like water and sanitation, environment and natural disasters, and urban development and housing. However, only 41% (41 of 99) of anticipatory interventions for climate risk assessments and planning (TC and lending) had an explicit implementation mechanism linking inputs (e.g., climate diagnostics and planning) to climate action. In general, most of these interventions corresponded to water management resources from a watershed perspective. A TC in Argentina was a good example, as it included detailed climate vulnerabilities of the Arroyo Medrano watershed – including frequent floods, drought, and water scarcity – which were linked to the TC's aim of developing and implementing a comprehensive watershed management plan in vulnerable municipalities, thereby supporting the implementation of investment loans.[24] In contrast, 28% of anticipatory interventions had limited relevance, consisting mostly of studies or tools without a pathway for operationalization. For instance, a TC that aimed at developing drainage master plans lacked actionable links to specific climate risks.[25] Finally, 31% of anticipatory interventions lacked any apparent link to identified vulnerabilities.

2.15. **The relevance of IDB's anticipatory interventions for governance and institutional adaptation was limited because most lacked a clear connection between policy reforms and identified climate adaptation needs.** Interventions for governance and institutional adaptation, primarily delivered through policy-based operations, accounted for 15% of all anticipatory interventions (24 of 158; see Table

[24] *Integrated Management Plan for Drainage and Flood Control in the Arroyo Medrano Basin* (AR-T1158), approved in 2016 for $600,000, Argentina.

[25] *Drainage master plans in the cities of Riberalta and Trinidad in Bolivia* (BO-T1277), approved in 2016 for $750,000.

2.1). Although these were implemented across most regions, excluding Southern South America, and often focused on sectors such as water and sanitation and environment and disaster risk management, their relevance in addressing climate vulnerabilities was limited. Only 29% clearly responded to adaptation needs. For example, a set of policy-based operations in Barbados detailed the institutional context for climate adaptation in the country and supported cross-sectoral legal and governance frameworks for addressing it.[26] However, 29% had minimal links to specific needs or institutional context, and 42% had no link. A policy-based loan in Bolivia, for instance, lacked a connection between the climate-related context and the policy reforms supported, illustrating how institutional actions can fall short of integrating climate priorities when not explicitly linked to adaptation objectives.[27]

2.16. **IDB's interventions for risk management had the highest relevance in the anticipatory category, particularly when they supported cross-sectoral institutional capacity, decision-making tools, and financial mechanisms directly linked to managing climate-related risks.** Risk management interventions accounted for 22% of anticipatory actions (35 of 158; see Table 2.1) and were concentrated in Northern South America, primarily in sectors such as water, sanitation and disaster risk management. Of these interventions, 66% demonstrated clear alignment with climate adaptation needs. Stronger examples typically involved the development of frameworks involving different sectors, and financial instruments for ex-ante disaster risk management (DRM) or the implementation of climate information systems to support early warning and decision-making. For instance, an investment loan in Argentina aimed to enhance DRM and productive development through satellite monitoring and response capacity.[28] However, 21% were only moderately aligned to climate vulnerabilities, and another 13% had no identifiable connection to climate vulnerabilities. A TC in Peru, for example, focused on digital water quality monitoring without referencing or integrating climate adaptation objectives, highlighting how digital innovations in service delivery may miss DRM opportunities when the climate rationale is not embedded in the TC.[29]

2.17. **The relevance of IDB's policy-based anticipatory interventions for governance and institutional adaptation and DRM frameworks varied by country based on local capacities.** Anticipatory interventions in the Bahamas, Barbados and Bolivia included support for comprehensive institutional strengthening and regulatory frameworks for environmental sustainability reforms and information systems aimed at improving early action, preparedness, natural resource management, DRM and national and cross-sectoral climate governance (Box 2.3.). These interventions were mostly deployed through policy-based loans (PBLs) and policy-based guarantees (PBGs). They involved important actions across multiple national sectors, reinforcing a cohesive approach to fulfilling DRM objectives. While these interventions can

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26 *Sustainable Development Policy Program and Program to Support Environmental and Economic Development* (BA-L1048, BA-L1052, BA-U0001), a set of policy-based operations approved between 2020 and 2022 for $280 million in Barbados.

27 *Transportation Sector Policy Reform Program II* (BO-L1112), a policy-based loan approved in 2017 for $120 million in Bolivia.

28 *Satellite Technology Development Program (PROSAT II)* (AR-L1310), an investment loan approved in 2019 for $60 million in Argentina.

29 *SIRWASH: Sustainable and Innovative Water and Sanitation Services for Rural Areas in Peru* (PE-T1479), a technical cooperation approved in 2021 for $460,000 in Peru.

improve climate understanding and adaptation planning, their success depends heavily on local capacities. By contrast, the relevance of anticipatory interventions for governance and institutional adaptation and DRM frameworks in Central America and Mexico, supported by PBLs, was limited. Although some PBLs in Central America aimed to boost anticipation toward climate, the policy actions were generally of limited scope, consisting of measures such as the approval of protocols and sector plans, which were insufficient to achieve meaningful changes to enhance anticipation toward climate (Annex II).

Box 2.3. Examples of anticipatory interventions for governance and institutional adaptation and DRM that had varying relevance

Examples of anticipatory interventions for governance and institutional adaptation and DRM frameworks in the Bahamas, Barbados and Bolivia that were relevant include:

- A policy-based program in Barbados aimed to strengthen institutions for sustainable finance, resource management and disaster resilience and improve debt management with a focus on environmental and financial sustainability through policy actions such as the cabinet approval of a water bill and a financial protection instrument for natural hazard-induced disaster shocks approved and eligible for disbursement (Annex III).[a]
- A policy-based program in the Bahamas included policy actions such as the approval and implementation of a maritime security plan to enforce legal fishing and the implementation of a spatially based decision support system.[b]
- A policy-based loan in Bolivia integrated risk identification, reduction, response, and recovery into policy and planning.[c] These reforms mainstreamed DRM across various sectors and government levels, incorporating it into planning, budgeting and civil society participation. Some policy actions included the approval of a law for a comprehensive state planning system, which incorporates mandates for DRM within its scope, and the approval of regulations designating those responsible for providing technical assistance and strategic guidelines to incorporate disaster risk analysis into planning (Annex IV).

Examples of anticipatory interventions for governance and institutional adaptation and DRM frameworks in Central America and Mexico that were of limited relevance include:

- A policy-based loan in Honduras supported the adjustment of the organizational structure and responsibilities within the water sector, studies and plans such as the National Adaptation Plan.[d]
- A policy-based program in Panama primarily focused on strengthening water governance and collaboration among different institutions of the water sector and on a strategy for a DRM plan.[e]
- A policy-based loan in Mexico included policy actions that were limited to preparing risk prevention diagnostics and studies and providing training to employees.[f]

Source: OVE.

Note: [a] *Sustainable Development Policy Program and Program to Support Environmental and Economic Development* (BA-L1048, BA-L1052, BA-U0001), a set of policy-based operations approved between 2020 and 2022 for $280 million in Barbados. [b] *Boosting Resilient and Inclusive Growth in The Bahamas I & II* and *Building a Social and Inclusive Blue Economy in The Bahamas* (BH-L1050, BH-L1052, BH-U0001), approved between 2020 and 2022 for $540 million. [c] *Disaster Risk Management Program II* (BO-L1107), approved in 2016 for US$100 million. [d] *Central District Water and Sanitation Services Reform Program* (HO-L1207), approved in 2019, for $60 million. [e] *Support Program for Reforms in the Water, Sanitation and Energy Sectors I & II* (PN-L1145 and PN-L1159), approved in 2020 for $500 million. [f] *Strengthening Program for Urban Development Reform and Territorial Planning* (ME-L1294), approved in 2019, for $600 million.

2.18. **IDB's early warning systems (EWS) interventions were generally of limited relevance, with only a few initiatives linking institutional strengthening, infrastructure, and operational capacity to address identified risk needs.** EWS interventions can improve risk identification, monitoring, and forecasting. Of the 10 IDB interventions in this area, only four were relevant – those that combined institutional strengthening with operational capacity and infrastructure development to support risk responsiveness corresponding to needs. For example, an investment loan in Ecuador aimed to strengthen national monitoring, forecasting, and alert capacities for tsunamis and riverine floods through integrated equipment,

information systems, training and community-based early warning actions.[30] Similar comprehensive efforts to expand EWS coverage at the local level include an investment loan in Bolivia that integrated drainage infrastructure with early warning tools[31] and an investment loan in Brazil that integrated drainage infrastructure with early warning tools.[32] However, EWS efforts have often focused on fragmented training or diagnostics without enabling a full operational system. For example, technical cooperations in Peru and Trinidad and Tobago concentrated on institutional support and capacity building but lacked follow-through infrastructure or implementation.[33] Likewise, an investment loan in Belize provided important inputs for the development of a climate information platform but was limited in scope to inform about current climate risks.[34]

2.19. **IDB Invest played a limited role in building private sector clients' anticipatory capacities.** Ten of the 41 IDB Invest climate adaptation interventions supported the ability to anticipate climate events. All 10 were implemented through advisory services embedded in operations. Four of these 10 were relevant. One relevant intervention contributed to DRM by implementing a system to identify and monitor climate risk in the agricultural value chain finance portfolio. The remaining nine interventions included diagnostics and climate vulnerability plans. Of these, only 3 were relevant in that they included the implementation of those plans. For example, one produced a roadmap for a company's climate-smart agricultural measures to increase climate adaptation and resource efficiency. Another one validated the design of new technologies to ensure the optimization of water and energy resources.

2. Relevance of adaptive interventions to addressing climate vulnerabilities

2.20. **The IDB's adaptive interventions were generally more relevant than its anticipatory ones, as they more consistently aligned with country priorities and attempted to address identified climate vulnerabilities through local public works and services.** Forty-three percent of IDB adaptive interventions (134 of 309; see Table 2.1) supported activities aimed at strengthening local adaptive capacities. They were typically implemented through investment loans and grants (75%) and deployed throughout the region but mostly in South America (both Northern and Southern). Compared to anticipatory interventions, adaptive interventions – particularly those focused on resilient gray infrastructure, resilient green or blue infrastructure, and support to resilient firms and farms – tended to be better aligned with identified climate needs, often incorporating tangible adaptation measures at the local level. Adaptive interventions were mostly aligned with country needs and government priorities (91%), and also addressed climate vulnerabilities in most cases (63%).

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30 *Program to Strengthen the National Early Warning System* (EC-L1221), approved in 2017, for $12.4 million.

31 *Storm Drainage for the Cities of La Paz and El Alto III* (BO-L1114), investment loan, approved in 2016 for $30 million.

32 *Tietê River Recovery Project Upstream of the Penha Dam in the State of Sao Paulo - Renasce Tietê* (BR-L1536), investment loan, approved in 2019 for $79.8 million.

33 *Support to the National Platform for Sustainable Cities and Climate Change in Lima* (PE-T1355), approved in 2017 for $6.4 million, and *Strengthening the Integrated National Early Warning System in Trinidad and Tobago* (TT-T1116), approved in 2022 for $420,000.

34 *Climate Vulnerability Reduction Program* (BL-L1028), approved in 2017 for $10 million.

2.21. **Interventions supporting resilient gray infrastructure, which were the most common IDB adaptive interventions, were generally relevant when they incorporated climate-resilient design standards and directly addressed identified climate risks.** Of IDB adaptive interventions, 47% (63 of 134; see Table 2.1) aimed to increase the supply of resilient gray infrastructure such as roads and enhance access to resilient basic services such as housing and water and sanitation systems. Interventions in transport were common across all countries, especially in Central America. Projects in Northern South America focused on water and sanitation. In Southern South America, urban development and housing solutions were more prevalent, with Brazil featuring a mix of both. Gray infrastructure interventions that embedded engineering and technical standards to withstand climate events increased during the evaluation period. In 71% of cases (45 of 63) the interventions aligned with adaptation needs. For example, an investment loan in Brazil that aimed to develop infrastructure with resilience standards to reduce its vulnerability to natural disasters identified flooding and intense rain as climate risks, and implemented climate adaptation measures (e.g., management of horizontal and transverse drainage of the road, retrofitting of railway slopes) to mitigate their impacts.[35] In contrast, the remaining 28% of IDB adaptive interventions had limited or no links to climate. For example, an investment loan in Honduras that aimed at improving the quality of road infrastructure mentioned that flooding in the area would be considered, but it is not clear in the loan proposal what adaptation measures would be incorporated into road design. At closure, the PCR revealed that no adaptation measures had been included at design.[36]

2.22. **Interventions supporting resilient green or blue infrastructure, although not common, were among the most relevant IDB adaptive interventions tackling identified risks in different ecosystems.** Sixteen of 134 IDB adaptive interventions supported resilient green or blue infrastructure (see Table 2.1). Ten explicitly addressed climate risks and outlined how nature-based solutions would strengthen local adaptation. For example, an investment loan in Honduras supported ecosystem services in drought-affected priority watersheds by promoting forest conservation and restoration.[37] Similarly, the *Blue Economy PBL*[38] series in the Bahamas aimed to expand marine protected areas and improve coastal resilience through integrated governance and financing mechanisms.

2.23. **IDB resilient firms and farms interventions were also highly relevant as they demonstrated potential win-win solutions in terms of enhancing both adaptation and productivity.** Of 15 resilient firms and farms interventions in the portfolio of 134 IDB adaptive interventions (see Table 2.1), 11 demonstrated clear links between adaptation measures and increased productivity for small producers. An investment loan in Colombia exemplified this approach by promoting environmental and socioeconomic sustainability in conflict-affected municipalities and restoring degraded natural capital to reduce climate vulnerability.[39]

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35 *Strategic Program for Transportation Infrastructure and Logistics in Paraná* (BR-L1434), approved in 2017 for $235 million.

36 *Roads Integration Program II*, approved in 2016 for $75 million (HO-L1121).

37 *Sustainable Forest Management*, approved in 2016 for $25 million (HO-L1079).

38 *Boosting Resilient and Inclusive Growth in The Bahamas I & II and Building a Social and Inclusive Blue Economy in The Bahamas* (BH-L1050, BH-L1052, BH-U0001), approved between 2020 and 2022 for $540 million.

39 *Sustainable Colombia Program*, approved in 2017 for $100 million (CO-L1166).

2.24. **In contrast, the relevance of the IDB's institutional and local capacity building interventions was generally limited due to insufficient knowledge transfer connected with tangible outputs.** Institutional and local capacity building interventions comprised 30% (40 of 134; Table 2.2) of IDB adaptive interventions. They were relevant when providing tailored local assistance for associated green and blue infrastructure and resilient firms and farms interventions (in 46% of cases). For instance, an investment loan in the Dominican Republic integrated farmer training on climate adaptation practices, contributing to the implementation of adaptation technologies.[40] However, many other interventions (22 of 40) lacked coherent capacity building strategies. Interviews with IDB staff and government counterparts noted persistent challenges in translating diagnostics into action, especially at the local level. For example, despite the inclusion of institutional strengthening components in the Bahamas PBL series, interviewees reported limited awareness and understanding of climate impacts across public agencies, pointing to a gap in knowledge transfer and capacity-building that undermined implementation.

2.25. **The relevance of IDB Invest's adaptive interventions was mixed, mainly constrained by limited alignment with specific climate vulnerabilities and support for end beneficiaries.** Most IDB Invest interventions (31 of 41; see Table 2.2) were adaptive, primarily focused on supporting resilient firms and farms (20 of 31). These were deployed either through financial intermediaries' operations (13 of 20), offering green lines of credit to micro, small and medium enterprises (MSMEs), or through corporate senior loans (7 of 20). Four interventions supported green infrastructure, 4 gray infrastructure and the remaining 3, local capacity building. Of the resilient firms and farms interventions, while financial intermediary operations often targeted renewable energy, energy efficiency, and climate adaptation projects, they were rarely designed exclusively for adaptation (4 of 13).[41] Training efforts mainly targeted intermediaries to facilitate loan origination rather than climate-related issues. One notable case in Colombia assessed climate risks for smallholder farmers and laid the groundwork for client-led development of climate-adaptive financial products. Of the 13 interventions channeled through financial intermediaries, only one was relevant, while 12 had mixed focus. Meanwhile, corporate senior loans supporting green infrastructure showed limited relevance. Only 2 of 4 aligned with climate adaptation needs. One example was a sustainable tourism operation that dedicated 45% of its capital expenditures to land conservation – an innovative approach in a sector critical to regional economies. The other two interventions lacked clear diagnoses of climate vulnerabilities. Similarly, only 1 of 4 gray infrastructure investments demonstrated alignment with climate risks, with the intervention supporting warehouse operations to adapt to rising temperatures. Finally, although scarce, capacity building interventions played a key role in supporting the needs of IDB Invest clients. Examples include advisory services to

40 *Sustainable Agricultural Development Program in the Dominican Republic*, approved in 2018 for $150 million (DR-L1134/DR-L1135)

41 They included investments in (i) energy efficiency; (ii) green buildings; (iii) clean transportation; (iv) environmentally sustainable management of living natural resources and land use; (v) sustainable water and wastewater management; (vi) renewable energies; (vii) pollution prevention and control; (viii) affordable basic infrastructure (i.e., power lines intended to provide target populations with access to essential services); (ix) access to essential services (e.g., construction and renovation of public hospitals, financing of telecommunications infrastructure aimed at underserved populations); and (x) employment generation.

financial institutions for green lending structuring, and support to corporates on sustainable finance and climate-smart agriculture to increase productivity and resource efficiency.

2.26. **IDB Group's adaptive interventions that were explicitly conceptualized as adaptation projects, were more likely to address concrete adaptation needs by incorporating local and territorial dimensions into their design.** These interventions often recognized specific climate needs and tailored their responses accordingly. For example, initiatives focused on integrated water basin management directly tackled water scarcity and flooding challenges at the territorial level (e.g., AR-L1346, BO-L1188, BO-L1226, BO-L1106, BR-L1542), while projects aimed at responding to environmental degradation sought to strengthen the resilience of ecosystems and communities most exposed to climate pressures (e.g., CO-L1066, HO-L1079). By considering local realities from design, these interventions were better positioned to tackle specific climate vulnerabilities. In contrast, interventions that treated adaptation as a co-benefit tended to be less targeted to local vulnerabilities, often addressing climate risks only indirectly and without fully integrating territorial needs into their design. For example, some transport projects (e.g., HO-L1121, NI-L1097), although proposed climate considerations, were less focused on addressing the most pressing local or territorial climate vulnerabilities, highlighting that the relevance of adaptation actions can vary across sectors depending on how interventions are conceptualized.

3. Relevance of absorptive interventions to addressing climate vulnerabilities

2.27. **IDB lending interventions to enhance absorptive capacity (11 of 17) for emergency responses to natural disasters were limited to a few countries (5), although they were relevant when present.** Six of the 17 absorptive interventions, corresponded to Contingent Credit Facilities (CCFs).[42,43] They were relevant to providing rapid access to resources and fostering improvements in DRM frameworks, risk assessment, and response strategies (Box 2.5). For example, the CCF for the Dominican Republic, approved in 2017, for $16 million, supported the emergency response to Hurricane Maria by disbursing immediate financial resources. To access the contingent credit line, the country needed to successfully implement its comprehensive Natural Disaster Risk Management Program (PGIRDN). Four of the 17 absorptive interventions were Immediate Response Facilities (IRFs). These provided countries with resources to cover the costs of restoring basic services to populations affected by a disaster. To access this funding, one of the conditions is that the country has or is willing to strengthen its internal capacity for prevention, mitigation, risk reduction, and emergency preparedness with an appropriate organizational structure, given the risk it faces. For example, the $20 million *Emergency Program for an Immediate Response to*

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42 Between 2016 and 2022, CCFs were active for 16 countries were: Argentina (AR-O0008, AR-O0016); Bahamas (BH-O0003); Barbados (BA-O0004); Belize (BL-O0005); Dominican Republic (DR-X1003, DR-X1011); Ecuador (EC-O0006, EC-X1014); El Salvador (ES-O0011); Guatemala (GU-O0006); Honduras (HO-O0008, HO-X1016); Jamaica (JA-O0004); Nicaragua (NI-X1007); Panama (PN-O0008, PN-X1007); Paraguay (PR-O0006); Peru (PE-X1006); Suriname (SU-O0005); and Uruguay (UR-O1157).

43 CCFs were disbursed during the evaluation period in the Bahamas (BH-L1049, 2019), the Dominican Republic (DR-L1125, 2017), El Salvador (ES-L1161, 2022), and Nicaragua (NI-L1163, 2020; NI-L1164, 2022).

the Flooding in Argentina, approved in 2016, supported the restoration of infrastructure and basic services affected by the heavy rains that caused varying degrees of flooding in seven provinces along Argentina's coast. At the time, Argentina lacked specific regulations defining responsibilities for risk management across different government levels. However, before the disbursement of the loan, it approved Law 27,287 to establish the National System for Comprehensive Risk Management and Civil Protection (SINAGIR). The law and its regulations (National Decree 383/2017) made progress in building a comprehensive institutional regulatory framework for risk management governance in Argentina. Finally, only one intervention focused on conditional shock-responsive cash transfers in response to climate emergencies. This intervention, implemented through a loan in Honduras[44], was relevant as it aimed to protect the income of vulnerable households from climate shocks. It supported the development of a shock-responsive cash transfer mechanism, including governance and coordination frameworks, digital tools to identify affected populations, climate vulnerability indicators for households, and operational protocols for activating transfers.

Box 2.4. Contingent credit facilities and disaster risk management

The region has benefited from contingent credit facilities (CCFs), providing countries with rapid access to funds in the event of a severe or catastrophic natural disaster. Under CCFs, loans are only made available for disbursement after the Bank has verified the occurrence of a contractually agreed-upon disaster (in terms of type, location, and intensity) and has confirmed the fulfillment of other drawdown requirements. A requirement for financing is a Comprehensive Natural Disaster Risk Management Program (CDRMP). During the period of analysis, the Bank disbursed six CCFs. Some of these operations include: DR-L1125 approved in 2017 in the Dominican Republic for US$16 million; and ES-L1161, approved in 2022 in El Salvador for US$27 million.

Source: Own elaboration.

2.28. **The remaining absorptive interventions (6 of 17), deployed through technical cooperations (TCs), aimed to provide relief following climate shocks, but their relevance was limited by their scope and lack of coordination with other emergency response instruments (CCFs or IRFs).** Though necessary for immediate relief and reconstruction, TC's purpose is to deliver technical assistance, knowledge, and institutional strengthening. The use of TCs as absorptive interventions, raises the question of whether it reflects a gap in dedicated response/absorptive instruments designed specifically for emergency situations. Technical cooperations have been increasingly employed for absorptive interventions, especially in Central America since 2017 with a peak in 2022. However, their inherent short-term and reactive nature, combined with a lack of follow-up mechanisms or coordination with other absorptive instruments, limits their relevance beyond the aftermath of an emergency. Only one of these TCs coordinated efforts with the deployment of a CCF to support the provision of humanitarian aid to those affected by hurricane and tropical storm Julia.[45]

44 *Program to Support the Comprehensive Social Protection System II*, approved in 2022, for $75.9 million (HO-L1230).

45 *Support for the Hurricane and Tropical Storm Julia Emergency in El Salvador*, approved in 2022, for $200,000.

III. EFFECTIVENESS

3.1. **This chapter assesses whether the IDB Group's interventions achieved their objectives to enhance anticipatory, adaptive, and absorptive capacities for climate adaptation.** Because effectiveness can only be assessed for projects that are closed or have disbursed the majority of their funds, we use the effectiveness portfolio described in Chapter 1, comprising 69 projects (with a total of 98 interventions) for IDB and 33 projects (35 interventions) for IDB Invest. Assessing the effectiveness of climate adaptation interventions is challenging as it often requires the occurrence of climate shocks, which are usually rare and unpredictable (Box 4.1). As a result, the evaluation relied not only on outcome indicators but also on intermediate outcome and output indicators as proxies for effectiveness[46].

Box 3.1. Outcome indicators for climate adaptation

Defining outcome indicators for climate adaptation is difficult because the results of adaptation tend to have long time horizons. In some cases, outcome indicators can be defined in a way that allows them to be measured within a project's time frame, for example, the number of people benefiting from resilient infrastructure (e.g., dunes that have been reinforced or increased in height or storm walls built in ports). In other cases, however, it is only possible to assess an outcome if and when an extreme weather event (such as a hurricane) occurs. A project may have been highly effective in building infrastructure resilient to a 100-year flood,[a] but its effectiveness in that regard cannot be proven until such a flood occurs, which may take 100 years or longer. In many of these cases, the intention is to create resilience not merely in the face of a single extreme weather event but in the face of several of them or given slow-onset climate events. This extends the time horizon for assessing effectiveness even further.

Addressing this challenge may require relying on output or intermediate outcome indicators for climate adaptation projects or tracking project results over a longer time horizon. It may be desirable to assess the effectiveness of climate adaptation projects based on substantiated progress toward resilience, for example, by building redundant roads or achieving reforestation targets. Substantiated progress could be measured through well-designed intermediate outcome or output indicators. This is the approach used in this evaluation. It may also be desirable to track project results, at least for a subset of projects, well beyond project closure. However, doing so would require budgeting and planning beyond the usual horizon for IDB operations.

Current initiatives from Management aim to develop indicators for adaptation for future operations. For example, the MDB Climate Action Group published in 2024 an outcome metrics report with a non-exhaustive list of adaptation outcome indicators that MDBs will be piloting in the coming years, further work on definitions and methodologies to standardize adaptation indicators for the private sector is still pending.

Source: OVE. World Bank Group (2024).
Note: [a] A 100-year flood, by definition, is a flood of such magnitude that it has a 1% probability of occurring in any given year.

3.2. **A lack of specific climate adaptation indicators, combined with the general absence of reporting on adaptation measures in supervision reports, limited the assessment of effectiveness, especially for IDB operations.** Only 64% of IDB interventions (63 of 98) included at least one relevant outcome (final or intermediate) or output indicator at design (Table 3.1.). By contrast, 94% of IDB Invest interventions (33 of 35) included at least one relevant indicator at design (table 4.2). Resilient gray infrastructure was the most common type of adaptive intervention in the IDB portfolio (with 19 interventions). However, most resilient gray infrastructure interventions lacked indicators to measure progress toward adaptation (only 7 interventions, or 37%, had relevant indicators). While climate adaptation narratives were often included in loan proposal documents, they were frequently

46 For each intervention in the effectiveness portfolio, OVE reviewed the results indicators reported in semestral reports, Annual Supervision Reports (ASRs), Progress Monitoring Reports (PMRs), mid-term reports, Project Completion Reports (PCRs), Expanded Supervision Reports (XSRs), and OVE's validations.

absent from implementation and project completion reports (PCRs). This issue was also common in emergency response interventions (4 interventions, or 40% had relevant indicators). Contingent Credit Facilities for building absorptive capacity also lacked robust monitoring and evaluation frameworks built around climate adaptation indicators. This constraint limited OVE's ability to assess their impact on emergency relief and reconstruction efforts beyond availability of funding, and the speed of disbursement. The most common interventions for IDB Invest were resilient firms and farms (18), followed by climate risk assessments and planning (9) (Table 3.2.). Most of the resilient firms and farms interventions were channeled through financial intermediaries (13 of 18) and often applied a broad definition of green portfolios (8 of 13), which limited the ability to identify their contribution to adaptation.

Table 3.1. Indicators[a] by category and type of intervention for the effectiveness assessment (IDB)

Climate adaptation category of intervention	Type of intervention	Interventions	Interventions with climate adaptation indicators at design	
		No.	No.	%
Anticipatory		**43**	**32**	**75**
	Climate risk assessments and planning	11	11	100
	Governance and institutional adaptation	15	11	73
	Disaster risk management	17	10	59
Adaptive		**44**	**27**	**61**
	Local capacity building	11	7	64
	Resilient gray infrastructure	19	7	37
	Resilient green or blue infrastructure	7	6	86
	Resilient firms and farms	7	7	100
Absorptive		**11**	**4**	**36**
	Emergency response	10	4	40
	Shock-responsive social protection	1	0	0
	Total	**98**	**63**	**64**

Source: OVE's own elaboration.
Notes: [a] Considers relevant outcome, intermediate outcome or output indicators.

Table 3.2. Indicators[a] by category and type of intervention for the effectiveness assessment (IDB Invest)

Climate adaptation category of intervention	Type of intervention	Interventions	Interventions with climate adaptation indicators at design	
		No.	No.	%
Anticipatory		**10**	**10**	**100**
	Climate risk assessments and planning	9	9	100
	Governance and institutional adaptation	0	n.a.	n.a.
	Disaster risk management	1	1	100
Adaptive		**25**	**23**	**92**
	Local capacity building	3	3	100
	Resilient gray infrastructure	1	0	0
	Resilient green or blue infrastructure	3	3	100
	Resilient firms and farms	18	17	94
Absorptive		**0**	**n.a.**	**n.a.**
	Emergency response	0	n.a.	n.a.
	Shock-responsive social protection	0	n.a.	n.a.
	Total	**35**	**33**	**94**

Source: OVE's own elaboration.
Notes: [a] Considers relevant outcome, intermediate outcome or output indicators. n.a. = not applicable.

3.3. **To assess the effectiveness of IDB Group adaptation interventions, OVE focused on the adaptation-related components or activities within projects that aimed to deliver adaptation results.** Adaptation-related components were

linked to adaptation indicators – such as outputs, intermediate outcomes, or final outcomes captured in the project's results framework. In cases where entire projects were fully dedicated to adaptation, they were assessed according to their corresponding intervention types and categories. Interventions effectiveness was rated using a three-tier scale (high, mixed, and limited), based on two dimensions: (i) the extent of documented progress toward the achievement of intended adaptation results that each intervention set out to deliver, as measured by the indicators included in the result matrix; and (ii) the quality of evidence available to validate progress. These ratings were applied consistently across the three intervention categories (anticipatory, adaptive, and absorptive) and nine intervention types (as described in Tables 3.1. and 3.2.). To assess performance at the intervention category and type levels, OVE aggregated the individual intervention ratings and calculated averages to determine the overall classification for each group. Box 3.2. summarizes the criteria used for rating individual interventions and category-level results.

Box 3.2. Effectiveness three-tier rating scale

- **High:** at least 80% of the targets of the results indicators were met for each intervention,
- **Mixed:** between 51% and 79% of the results indicators were met for each intervention, or the intervention had evidence gaps.
- **Limited:** only 50% or less of the results indicators were met for each intervention.

Source: OVE.

3.4. **IDB absorptive and adaptive interventions were generally highly effective, while anticipatory interventions had more mixed results – highlighting the need to strengthen the design and follow-through of anticipatory interventions to ensure they translate into meaningful adaptation outcomes.** Overall, 52% (33 of 63) IDB interventions with climate adaptation indicators at design were highly effective. (Table 3.3.). Among IDB interventions, adaptive ones were more effective than anticipatory ones. Fifty-nine percent (16 of 27) of adaptive interventions had high effectiveness, compared to 41% (13 of 32) of anticipatory interventions. All 4 absorptive interventions (Immediate response Facilities) were highly effective. Interventions rated as mixed (22% of the total, in particular anticipatory interventions) often demonstrated partial progress toward intended results or had uneven implementation, such as delivering relevant diagnostics without translating them into action.

3.5. **About fifty percent of IDB Invest's anticipatory and adaptive interventions had high or mixed effectiveness, and about one third were highly effective.** For IDB Invest adaptive interventions with climate adaptation indicators at design, 8 of 23 or 35% had high effectiveness; for its anticipatory interventions, 3 of 10 or 30% had high effectiveness. However, their overall performance diverged: anticipatory interventions were more likely to have limited effectiveness (7 of 10 interventions, 70%), while adaptive interventions showed a wider distribution across mixed (6 of 23 or 26%) and limited (9 of 23 or 39%) ratings, (Table 3.4). The relatively greater number of mixed effectiveness operations among IDB Invest's adaptive operations suggests that, similar to the IDB, IDB Invest's adaptive operations are more likely to be effective than its anticipatory operations. The relatively higher number of mixed results among adaptive interventions may reflect partial progress or promising designs that require stronger implementation for adaptation outcomes. IDB Invest did not undertake any absorptive interventions.

Table 3.3. Effectiveness by category and type of intervention (IDB)

Climate adaptation category of intervention	Type of intervention	Interventions with climate adaptation indicators at design	Frequency of ratings No. (%)		
		No.	High	Mixed	Limited
Anticipatory		**32**	**13 (41)**	**6 (19)**	**13 (41)**
	Climate risk assessments and planning	11	3 (27)	0 (0)	8 (73)
	Governance and institutional adaptation	11	5 (45)	4 (36)	2 (18)
	Disaster risk management	10	5 (50)	2 (20)	3 (30)
Adaptive		**27**	**16 (59)**	**4 (15)**	**7 (26)**
	Local capacity building	7	5 (71)	0 (0)	2 (29)
	Resilient gray infrastructure	7	3 (43)	0 (0)	4 (57)
	Resilient green or blue	6	3 (50)	2 (33)	1 (17)
	Resilient firms and farms	7	5 (71)	2 (29)	0 (0)
Absorptive		**4**	**4 (100)**	**0 (0)**	**0 (0)**
	Emergency response	4	4 (100)	0 (0)	0 (0)
	Shock-responsive social protection	0	n.a.	n.a.	n.a.
	Total	**63**	**33 (52)**	**14 (22)**	**24 (38)**

Source: OVE's own elaboration.
Note: n.a. = not applicable.

Table 3.4. Effectiveness by category and type of intervention (IDB Invest)

Climate adaptation category of intervention	Type of intervention	Interventions with climate adaptation indicators at design	Frequency of ratings No. (%)		
		No.	High	Mixed	Limited
Anticipatory		**10**	**3 (30)**	**0 (0)**	**7 (70)**
	Climate risk assessments and planning	9	2 (22)	0 (0)	7 (78)
	Governance and institutional adaptation	n.a.	n.a.	n.a.	n.a.
	Disaster risk management	1	1 (100)	0 (0)	0 (0)
Adaptive		**23**	**8 (35)**	**6 (26)**	**9 (42)**
	Local capacity building	3	3 (100)	0 (0)	0 (0)
	Resilient gray infrastructure	0	n.a.	n.a.	n.a.
	Resilient green or blue	3	2 (33)	1 (33)	0(33)
	Resilient firms and farms	17	3 (18)	5 (29)	9 (53)
Absorptive		**n.a.**	**n.a.**	**n.a.**	**n.a.**
	Emergency response	n.a.	n.a.	n.a.	n.a.
	Shock-responsive social protection	n.a.	n.a.	n.a.	n.a.
	Total	**33**	**11 (30)**	**6 (18)**	**16 (51)**

Source: OVE's own elaboration.
Note: n.a. = not applicable.

A. Effectiveness of anticipatory interventions

3.6. **The overall effectiveness of anticipatory interventions is mixed for IDB and limited for IDB Invest.** Of the 32 IDB anticipatory interventions with climate adaptation indicators at design (13 investment loans, 1 grant, 18 policy-based operations), more than half (13) had high effectiveness. The remainder had mixed (6) or limited (13) effectiveness. Of 10 IDB Invest anticipatory interventions with climate adaptation indicators at design (5 in agribusiness, 4 in financial markets, and 1 in sustainable tourism), 3 had high effectiveness, whereas 7 had limited effectiveness.

3.7. **The IDB's interventions for climate risk assessment and planning had limited effectiveness because they did not implement their findings.** For the IDB, interventions consisting of climate risk assessments and planning were the least effective of the three anticipatory intervention types. Although all these interventions were part of broader projects, of the 11 IDB climate risk assessments and planning interventions with climate adaptation indicators at design, only three had high effectiveness, supported by evidence of implementation of the climate studies and assessments conducted. An intervention aimed to strengthen the adaptive capacity of five Indigenous communities through climate-resilient agriculture in Honduras[47] provides a positive example. It conducted four climate vulnerability assessments, which led to the implementation of agroforestry projects and capacity-building activities. Similarly, in Uruguay[48], an infrastructure project included adaptation diagnostics, whose findings were integrated into the gray infrastructure components of the project – such as new paving and hydraulic works – and also into the rural road maintenance strategy. These diagnostics were embedded within the implementation of broader lending operations, helping to ensure their practical application and leading to high effectiveness. In contrast, the remaining 7 interventions either did not implement the assessments or lacked evidence of their use. For example, in Brazil's BR-L1445,[49] the intervention involved the implementation of a municipal climate risk reduction plan; according to the PCR, although the plan was finished, it was not implemented or used. Another example includes BR-L1412,[50] which developed Salvador's mitigation and adaptation plan for climate; to date, there is no evidence of its use or application. These diagnostics were not integrated into the broader implementation of operations; instead, they were produced as isolated outputs, with their use left to the discretion of the counterparts. PCRs, and interviews with IDB staff and government officials reveal that limited local capacity to interpret diagnostics and develop actionable adaptation plans or interventions, hinders the practical use of climate assessments and reduces their overall effectiveness.

3.8. **Similarly to IDB, IDB Invest's climate risk assessment and planning interventions had limited effectiveness because their findings rarely translated into implementation.** Climate risk assessment and planning interventions were the most frequent at IDB Invest (9 of 10 anticipatory interventions) and the least effective type of anticipatory intervention. They were delivered through advisory services and framed as non-financial additionality to senior loans. Only 2 were highly effective, whereas 7 had limited effectiveness. The effective interventions provided evidence of using studies and assessments to inform implementation. In Colombia and Nicaragua, for example, the interventions assessed climate risks faced by local small farmers and informed adaptation measures. In contrast, the remaining interventions consisted of adaptation studies with no evidence of implementation. For example, in the Caribbean, two advisory services linked to regional senior loans delivered studies and assessments of resilient measures for infrastructure or agricultural practices.

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47 Honduras grant *Ecological Restoration, Renewable Energy, Irrigation, and Protected Agriculture in Nahua, Tolupan, and Lenca Communities*, approved in 2016 for $745,000 (HO-G1243).

48 Uruguay investment loan *Productive Rural Roads Improvement* (UR-L1114), approved in 2016 for $75 million.

49 *Maracanaú Transportation and Urban Logistics Program*, approved in 2017 for $31.8 million in Brazil (BR-L1445).

50 *Tourism Development Program in Salvador*, approved in 2016 for $52.5 million in Brazil (BR-L1412).

However, there is no evidence of the advisory services or the loans supporting the implementation of eligible climate adaptation projects.

3.9. **IDB anticipatory interventions supporting governance and institutional frameworks for adaptation performed well when they were cross-sectoral and complementary.** Of 11 IDB governance and institutional adaptation interventions with climate adaptation indicators at design (of which 1 was a grant and the rest policy-based operations), 5 were highly effective, 5 had mixed effectiveness and 1 had limited effectiveness**.** Efforts to enhance environmental management, climate resilience, and natural resource sustainability through actively coordinated policy-based operations across sectors (e.g., water and sanitation, agriculture, disaster risk management) have yielded improvements in regulatory frameworks and sector management in Bolivia[51], the Bahamas[52], and Ecuador[53]. Among these, Bolivia stands out as a notable case of effective complementary interventions (Box 3.3). In the Bahamas, policy-based lending supported diagnostic work on risk management governance and the preparation of climate- and disaster-related measures necessary for identifying climate-related public expenditures. In Honduras, a policy-based loan[54] enabled formal identification and publishing of climate-related public spending. Interventions with mixed effectiveness showed progress in integrating climate adaptation considerations into planning or policy processes in institutional frameworks or governance but lacked clear evidence of follow-through or results on the ground. For example, a policy-based loan in Guyana[55] approved an action plan to initiate the identification of public spending; however, there is no available evidence on its implementation. In Mexico[56] and Panama[57], policy actions in urban development and water sectors, respectively, have incorporated climate considerations into plans, but their implementation remains uncertain. In Barbados,[58] policy-based operations have shown limited progress in strengthening institutional capacity to finance the blue and sustainable economy. Progress on the Barbados marine spatial planning reform, for example, has been limited. Although Barbados remains committed to achieving sustainability and conservation outcomes, the process is iterative and ongoing, involving substantial data collection and public consultations to gather broader feedback.

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51 *Program for the Strengthening of Environmental and Natural Resource Management I and II*, approved in 2016 and 2019 for $140 and $100 million respectively (BO-L1183, BO-L1199).

52 *Boosting Resilient and Inclusive Growth I and II,* approved between 2019 and 2022 for $220 million (BH-L1050, BH-L1052); *and Building a Social and Inclusive Blue Economy*, guarantee approved in 2022 for $200 million (BH-U0001).

53 *Sustainable Development and Biodiversity Program in Ecuador*, guarantee approved in 2022 for $85 million (EC-U0005).

54 *Transparency and Integrity Program for Sustainable Development*, approved in 2022 for $195 million (HO-L1207).

55 *Program to Strengthen Public Policy and Fiscal Management in Response to the Health and Economic Crisis Caused by COVID-19 in Guyana II*, approved in 2022 for $130 million (GY-L1083).

56 *Strengthening Program for Urban Development Reform and Territorial Planning II*, approved in 2019 for $600 million (ME-L1294).

57 *Support Program for Reforms in the Water, Sanitation and Energy Sectors II*, approved in 2020 for $200 million (PN-L1159).

58 *Sustainable Development Policy Program I and II*, approved between 2020 and 2021, for $180 million (BA-L1048 BA-L1052); and *Program to Support Environmental and Economic Development*, guarantee approved in 2022 for $100 million (BA-U0001).

Box 3.3. The effectiveness of IDB complementary interventions in Bolivia

Complementary IDB interventions in Bolivia demonstrated success in strengthening institutional frameworks for adaptation. The IDB's climate engagement in Bolivia was grounded in the 2016–2020 Country Strategy, prioritizing disaster and climate vulnerability reduction. It supported legal reforms to strengthen institutional frameworks for DRM and climate adaptation. A series of policy-based loans (*Program for the Strengthening of Environmental and Natural Resource Management I and II*, approved in 2016 and 2019 for $140 and $100 million, respectively) modernized Bolivia's environmental management, focusing on sustainable forestry. These programs developed fire management strategies, improved deforestation monitoring, and partially reforested degraded areas – achieving 38% of its 30,000-hectare target. Additional policy-based lending in water, sanitation, and resource management (*Program for the Water, Sanitation, and Water Resources Sectors in Bolivia II*, approved in 2016 for $90 million, and *Program for the Water, Sanitation, Solid Waste, and Water Resources sectors in Bolivia*, approved in 2019 for $100 million) led to regulatory and governance improvements. Support for institutional frameworks for adaptation was strengthened through these coordinated efforts, mainly driven by organic sectoral collaboration stemming from the Country Office.

Source: OVE.

3.10. **IDB interventions to enhance governance for disaster risk management (DRM) were highly effective when supporting planning, institutional coordination and response to emergencies.** Among the three anticipatory intervention types, the IDB's DRM interventions yielded the strongest results overall, with half (5 of 10 interventions with climate adaptation indicators at design) being highly effective and only 2 having limited effectiveness. Of the 10 IDB DRM interventions analyzed (6 investment loans and 4 policy-based operations), 5 focused on DRM governance, and 5 on information systems for DRM. Of the 5 DRM governance operations, 3 were highly effective. Policy-based operations in the Bahamas,[59] Barbados[60] and Bolivia[61] supported improvements in DRM governance by strengthening risk understanding, prioritization, and response mechanisms, including resource allocation for emergency response. For example, the Bahamas program conducted a diagnosis of DRM governance and improved the national building code to account for coastal climate hazards. Although DRM policy actions have been implemented, progress on outcome indicators has not yet been reported. Management expects the Index of Governance and Public Policy in Disaster Risk Management (iGOPP)[62] – which measures governance conditions for effective DRM policies, such as frameworks for risk identification, reduction, and preparedness to emergencies - to increase from 32% to 35% (slightly above the IDB borrowing countries average of 33%). The Barbados program supported the integration of the National Coastal Risk Information and Planning Platform within the development, planning, hazard management and national budgeting processes of the government and the approval of a financial instrument – the Contingent Credit Facility (CCF) BA-O0004 – for natural hazard-induced disaster shocks. DRM results from these policy actions are expected to

59 Ibid.

60 Ibid.

61 *Disaster Risk Management Program II*, approved 2016 for $100 million (BO-L1107).

62 The iGOPP was developed by the IDB in 2012. It is measured in percentage terms, with 0% and 100% being the lowest and highest scores, respectively. Higher scores correspond to better DRM governance. The average value for IDB borrowing countries is 33%, indicating "incipient" levels of governance and public policy readiness for DRM. Countries such as Colombia (58%) and Costa Rica (55%) have relatively advanced frameworks for risk identification, reduction, and preparedness. Countries such as Suriname (5%), Haiti (8%) and Belize (12%) have limited DRM governance capacity.

materialize with the approval of a complementary operation of the series.[63] According to Management, the risk reduction component from the iGOPP is expected to increase from 20% to 60%. In Bolivia, a legal framework and dedicated investment fund for DRM were established along with the identification of climate risks. These actions resulted in an iGOPP increase from 35% to 53%. These results highlight how policy-level actions can strengthen the enabling environment for climate adaptation and DRM.

3.11. **However, the effectiveness of some interventions to enhance governance for DRM was constrained by limited implementation progress and follow-up, particularly in investment loans and early-stage policy actions.** In Bolivia, despite institutional progress, the implementation of four drought plans covering eight municipalities that aim to improve water resource and drought management has been limited. The remaining two interventions had mixed results. An investment loan in Belize,[64] although limited in scope, partially contributed to the improvement of the iGOPP's Risk Identification component from 62.5% to 66.6% through the Climate Risk Financial Strategy for the Agricultural and Tourism Sectors, as well as its 5-year operational plan. Finally, a PBL in Guyana[65] implemented policy actions to outline the procedures for accessing funding in the event of disasters – including climate-related disasters – and identified fiscal risks, including risks associated with climate events. However, there is no evidence of follow-up. These cases suggest that, while institutional and policy reforms are critical, their full impact depends on sustained implementation and monitoring beyond initial policy adoption.

3.12. **The effectiveness of IDB Group interventions supporting information systems for DRM has been mixed, largely due to challenges in integrating early warning systems (EWS) to meet user needs.** The IDB's interventions targeting information systems for DRM had suboptimal performance overall, with two having mixed results and two showing limited progress. In Bolivia, two investment loans established and strengthened EWS in La Paz and other municipalities.[66] The projects improved rainfall and watershed monitoring to identify risk zones, which increased the number of households protected against flood risks and reduced the expenses on sediment removal and emergency care. In Ecuador, the national EWS, implemented through an investment loan,[67] showed mixed results. Although it increased the population covered by EWS against tsunami (from 408,681 to 1 million) and flood (from 0 to 575,396) risks, achieving targets of 96% and 80% respectively, the participation of the exposed population in evacuation drills only achieved 55% of its target (166,000 of 300,000). Furthermore, there was no progress on the number of basins where at least one bulletin is issued monitoring flood risk in real-time (no progress on the target of three basins). In Argentina[68] and Belize[69], investment loans established platforms of climate information; however, their use to facilitate the exchange of climate risk information remains unclear. The variability in IDB's results highlights the challenges

63 *Sustainable Development Policy Program III*, approved in 2024 for $50 million (BA-L1061).

64 *Climate Vulnerability Reduction Program*, approved in 2017 for $10 million (BL-L1028).

65 Ibid.

66 *Storm Drainage for the Cities of La Paz and El Alto III*, approved in 2016 for $30 million (BO-L1114); and *Bolivia Resilient to Climate Risks*, approved in 2017 for $40 million (BO-L1188).

67 Program to Strengthen the National Early Warning System, approved in 2017 for $12.5 million (EC-L1221).

68 *Satellite Technology Development Program*, approved in 2019 for $60 million (AR-L1310).

69 Belize *Climate Vulnerability Reduction Program,* approved in 2017 for $10 million (BL-L1028).

faced by standalone EWS and climate information system interventions, such as technical difficulties, data sharing barriers and limited user engagement. IDB Invest supported only one DRM information system intervention, which was highly effective. The intervention – delivered through advisory services – supported the implementation of a risk identification information system for crops that is currently used by the client. This intervention not only identifies risks but is complemented with adaptation measures when necessary to respond to client needs.

B. Effectiveness of adaptive interventions

3.13. **The overall effectiveness of adaptive interventions has been high for IDB and mixed for IDB Invest.** Of the 27 IDB adaptive interventions with climate adaptation indicators at design (19 investment loans, 5 grants and 3 policy-based operations), 16 were highly effective, 4 mixed and 7 limited. For IDB Invest, 8 of 23 interventions with climate adaptation indicators at design were highly effective, 6 were mixed and 9 were limited.

3.14. **Local capacity-building interventions, supported by both IDB and IDB Invest, have been integral components of larger programs.** IDB interventions focused on local capacity building (7 with climate adaptation indicators at design) performed well, with 5 having high effectiveness and 2 having limited effectiveness. For the IDB, training and workshops across the region have complemented larger adaptation initiatives. For example, in Bolivia[70] and Guyana[71] these interventions were integrated into resilient gray infrastructure projects and initiatives supporting resilient firms or farms. These included training for government officials and farmers on topics such as risk management, climate adaptation, and climate-smart agriculture. The most common interventions involve technical assistance for agricultural producers and natural resource management, such as in the forestry and water sectors. All but one intervention successfully met targets for training beneficiaries.[72] IDB Invest local capacity-building interventions also performed strongly, with all 3 interventions being highly effective. IDB Invest integrated capacity-building efforts into financing interventions through advisory services, primarily intended to enhance or expand the green lending capacities of financial intermediaries. In Ecuador and Peru, for example, the advisory services aimed to strengthen clients' capabilities to structure and expand their green portfolio.

3.15. **IDB's resilient gray infrastructure projects yielded mixed progress, mainly due to design shortcomings in the adaptation interventions.** The IDB's 6 resilient gray infrastructure interventions with results indicators at design were mixed, with 3 having high effectiveness and 3 having limited effectiveness. The highly effective interventions resulted in resilient infrastructure protecting households due to reduced flooding,[73] and enhancing roads transit[74]. For example, in Bolivia, the third storm drainage project in La Paz and El Alto (BO-L1114) demonstrated strong progress toward reducing flood and landslide risks. In La Paz, 2,376 households were protected—exceeding the target—and emergency-related costs were reduced by

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70 *Bolivia resilient to climate risks*, approved, approved in 2017 for $40 million (BO-L1188).

71 *Sustainable agricultural development program*, approved in 2016 for $15 million (GY-L1060).

72 For example, UR-L1111, BO-L1188, GY-L1060, HA-L1107, HO-G1243, HA-G1041.

73 *Belize Climate Vulnerability Reduction Program*, approved in 2017, for $10 million (BL-L1028), and *Storm Drainage for the Cities of La Paz and El Alto III* approved in 2016 for $30 million (BO-L1114).

74 *Additional Financing for George Price Highway Rehabilitation Project*, approved in 2018 for $7 million in Belize (BL-1029).

US$3.3 million[75]. In El Alto, 12,305 households were protected through drainage works, nearing the project's expected target of 13,612. While economic losses due to flooding are not yet measured, a reduction from US$0.78 million in 2016 to an expected US$0.46 million in 2023 was projected[76]. The remaining 3, all of them transport interventions, showed limited evidence of results. Although implementation reports and PCRs do not detail progress in adaptation activities in these 3 interventions, the sustainability criterion emphasizes the risk associated with inadequate climate considerations in infrastructure design. For example, the PCR of a project in Honduras[77] mentions potential effects of climate not being identified at project design. The PCR of a project in the Dominican Republic[78] indicates that out of the 438 kilometers rehabilitated, 41 km are at risk of not remaining waterproof due to slope and heavy rain. It also indicates that another 189 km of roads already show significant erosion from rain and that the deterioration is expected to worsen. This was a result of engineering designs that lacked depth and precision, especially regarding topography and hydrological and hydraulic analyses for drainage works. The only IDB Invest resilient gray infrastructure intervention lacked indicators to track progress.

3.16. **Some transport projects improved connectivity, resulting in improved travel times and reduced vehicle operating costs; yet they had unintended negative effects on natural capital.** For transport projects without adaptation indicators, OVE complemented the documentary analysis with geospatial analysis to examine visible adaptation outcomes. Of the 19 IDB gray infrastructure interventions, 9 were in transport, 6 of which did not include adaptation indicators. OVE analyzed the progress of 5 of the 6 operations without indicators[79] comparing before-and-after satellite images. These projects financed road infrastructure with built-in climate adaptation features. Their main objective was to connect rural areas with cities and regional hubs, improving access to social services, essential infrastructure, and markets. Some interventions focused on enhancing cross-border and domestic connectivity, while others aimed to reduce isolation in high-poverty rural areas by facilitating access to essential services. In other cases, the focus was access to markets (e.g., agro-industrial and forestry sectors). Together, these projects looked to enhance connectivity, reduce travel time, and lower transportation costs. While PCRs and OVE validations report improved connectivity of roads, OVE geospatial analysis suggested that 3 out of 5 projects (AR-L1279, NI-L1097, UR-L1153) may have been associated with negative effects on natural capital (see Annexes II and V). The Nicaragua *Road Integration Program II*, for example, aimed at improving transportation infrastructure in rural, high-poverty areas to enhance integration, access to services, and connectivity. This includes reducing vehicle operating costs[80], saving travel time, and promoting sustainable freight and passenger transport through better roads and the adoption of specific environmental and social management measures. The program achieved its results in terms of reducing

75 Baseline US$ 4.1 million, EoP target US$ 2.6 million, achieved US$ 0.8 million.

76 Based on BO-L1114 Semi-annual report for El Alto January-June 2023, and BO-L1114 Semi-annual report and closing report for La Paz January-June 2023.

77 *Roads Integration Program*, approved in 2016 for $75 million in Honduras (HO-L1121).

78 *The Sustainable Agroforestry Development Program* – approved in 2018 for $150 million in the Dominican Republic (DR-L1134/DR-L1135).

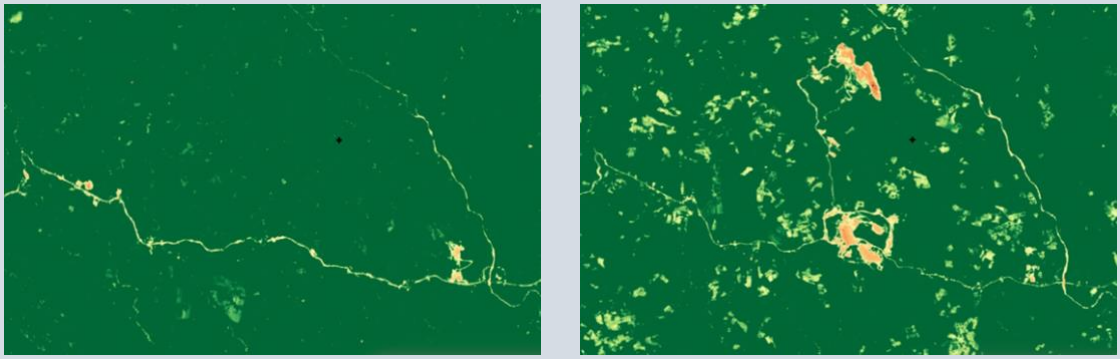
79 AR-L1279, BO-L1186, DR-L1034, NI-L1097, UR-L1053.

80 Vehicle operating costs encompass all expenses associated with running a vehicle, including both fixed and variable costs. Road improvements generally lead to lower vehicle operating costs due to reduced fuel consumption, decreased wear and tear on vehicles, and less time spent on the road.

average vehicle operating costs and saving travel time. OVE's geospatial analysis reveals however a loss of vegetation that followed the construction of the resilient road (see yellow areas in the 2023 image compared to the 2019 image in Box 4.3). Because the analysis was not based on a counterfactual experiment, it is difficult to attribute the negative impact on natural capital (maladaptation)[81] solely to the intervention. Although the Nicaragua project was classified as "Category A", neither environmental, social and governance reports nor the PCR mention the risk of environmental impacts.[82]

Box 3.3. Impact of Road Infrastructure Projects on Vegetation: Nicaragua's Case El Comején-Wasala trench

2019 pre-intervention | **2023 post-intervention**



The *Road Integration Program II* (approved in 2016 for $87 million in Nicaragua, NI-L1097) aimed to improve road quality, accessibility, and safety. It included upgrading rural roads incorporating climate resilience measures. An Environmental and Social Management Framework (ESMF), including a natural reserve management plan, was developed to ensure environmental and social sustainability. However, the images above suggest worsening of the vegetation area as measured by the difference of the Normalized Difference Vegetation Index (NDVI)[1] before and after the intervention.

Source: Own elaboration.
Notes: [1]The NDVI is a simple but effective index for quantifying green vegetation. It is a measure of the health of vegetation based on how plants reflect light at specific wavelengths. The color green typically represents areas with healthy and abundant vegetation, while yellow often indicates moderate vegetation cover.

3.17. **Most IDB and IDB Invest resilient green or blue infrastructure interventions were effective, highlighting the benefits of nature-based solutions for climate adaptation.** Of the 6 IDB resilient green or blue infrastructure interventions with climate adaptation indicators at design (3 investment loans and 3 policy-based operations), 4 had high effectiveness, and 2 were mixed. Nature-based solutions, such as agroforestry, reforestation, water-basin management, or marine protected areas were used in a number of highly effective interventions. In Honduras, an investment loan[83] helped restore over 45,000 hectares of pine forest cover, supporting vital watersheds, stabilizing soil, reducing runoff, filtering pollutants, and maintaining groundwater recharge, all of which contribute to healthy water

81 An extensive empirical literature discusses the negative unintended effects of road construction and improvement projects on natural resource degradation. For example, the construction of roads in forested areas can lead to forest cover reduction, fragmentation of habitats, and degradation of ecosystem functions especially in adjacent areas of newly constructed or improved roads (Asher et al., 2018; Dissanayake et al., 2022; Nayak et al., 2020; Poor et al., 2019).

82 Vegetation loss may occur in transport projects with or without adaptation components.

83 *Sustainable Forest Management Program*, approved in 2016 for $25 million (HO-L1179).

sources and ecosystem stability. In Colombia, an investment loan[84] surpassed the goals in terms of restored (almost 7,000 hectares of a goal of 1,875) and conserved special environmental areas (4,538 hectares of a goal of 3,874). There was also progress in erosion control and establishment of ecological corridors in Salvador Bahia, Brazil through coastal restoration efforts supported by a tourism investment loan[85]. The loan doubled the goal in terms of protected areas repopulated with native vegetation (almost 27 km versus a goal of 13 km). Policy-based operations in The Bahamas[86] and Barbados[87] supported the implementation of blue infrastructure interventions at the national level. In the Bahamas, the PBL led to the creation of marine protected areas (MPAs), with four having management plans although no outcome of the MPAs have been reported to date and Management confirms that it is still too early to assess results. In Barbados, the reform aimed to increase financing for conservation activities through the Barbados Environmental Sustainability Fund, with an expected outcome of expanding marine areas under biodiversity protection from 0% to 10%. Progress toward this goal has been limited as ecosystems require more time to deliver tangible benefits. IDB Invest resilient green, or blue infrastructure interventions were also effective (2 high, 1 mixed). One intervention, met its target for the area under sustainable management (6,000 hectares), while another exceeded its goal for sustainable pine tree reforestation, achieving 1,274 hectares against a target of 1,250. A third intervention is on track to meet its targets for eucalyptus plantation; although it lacks a clear narrative explicitly linking these efforts to climate adaptation objectives. Although with lower disbursement levels by December 2023, two IDB operations[88] in Brazil showed positive progress combining resilient gray and green infrastructure interventions. Preliminary results indicate decrease in the number of families living in at-risk areas, after the implementation of drainage works and urban resettlement, while improving density of green areas. Adaptation activities were gradually introduced in more recent editions of these programs.

3.18. **An IDB resilient blue infrastructure intervention in the Bahamas has led to early stages of enhanced ecosystem resilience in maritime protected areas (MPAs) with management plans and mangrove restoration activities.** In the Bahamas, the PBL established 43 new MPAs, with 4 implementing management plans. Mangrove restoration activities in key islands like Andros and Grand Bahama were initiated. The results of these policy actions were to be assessed through lobster fishery production. However, Management did not report progress as the implementation of MPAs was too recent to yield measurable results. OVE's geospatial analysis found that the water is more transparent in some areas targeted by the interventions, which indicates better marine vegetation, or that a coral reef is present. Other areas appear slightly more densely vegetated, suggesting improvements in ecosystem conservation in the territory. Finally, while denser vegetation appears in some MPAs where the management plan has not been

84 Sustainable Colombia Program, approved in 2017 for $100 million (CO-L1166).

85 *National Tourism Development Program in Salvador*, investment loan approved in 2016 for $52.5 million (BR-L1412).

86 Ibid.

87 Ibid.

88 *Environmental Sanitation and Urban Development Program in the Mané Dendê River Basin*, approved in 2017 for $67.5 million (BR-L1487); *Social and Environmental Program of Manaus and the Interior – PROSAMIN*, approved in 2021 for $80 million (BR-L1553).

implemented, higher human intervention is also evident. Because the restoration of marine ecosystems through MPAs is a medium or long-term endeavor, the differences detected above can be considered as early signs towards successful policy implementation (Annex III).

3.19. **The IDB's resilient firms and farms interventions, which focused on the agriculture sector, have generally been effective, most of them advancing toward the implementation of climate-smart technologies.** IDB interventions targeting resilient firms and farms (5 investment loans and 2 grants) performed strongly, with 5 having high effectiveness, and 2 mixed. They have focused on improving agricultural productivity through the implementation of climate-smart technologies[89] and sustainable use of natural capital.[90] In Colombia, 2 interventions,[91] showed progress in terms of farmers adopting climate-resilient agricultural practices in areas experiencing high deforestation (687 of the 650 target) and the implementation of agricultural and agribusiness practices that promote sustainable, climate resilient crops through soil improvements and climate-resilient technologies (35 out of the 36 target). *Bolivia's National Irrigation Program*[92] completed 221 irrigation projects (of the 190 target), expanding irrigation by 22,660 hectares (of the 25,00 target). Argentina's *Provincial Agricultural Services Program*[93] delivered irrigation systems (61 kilometers of the 53.6 target) and fire prevention services in rural areas (6 of the 13 targeted). It also implemented 331 climate-smart agriculture projects, surpassing the target of 220. In the Dominican Republic[94], 1 intervention achieved 98% of its short-term target for the adoption of climate-resilient technologies (i.e., agroforestry systems) covering 18,328 out of 18,587 hectares. However, it reached only 64% of its long-term adoption target (i.e., (i.e., adoption of agroforestry systems measured three years after implementation). In Haiti, 2 interventions[95] have promoted the adoption of climate-smart agriculture (that is, agroforestry systems and sustainable soil management techniques), with mixed results. Although they have reached 83% of target producers benefiting from improved management and sustainable use of natural capital (up until 2024, the program had reached 50,541 producers out of the target of 61,224), and 97% of hectares of land with agroforestry technologies-soil conservation practices- (up until 2024, the program had reached 27,253 hectares of the target of 27,900), Management has not reported progress on producers adopting new technologies. In Guyana, the *Sustainable Agricultural Development Program*[96] promoted the

89 Climate smart-agriculture includes practices and innovations such as drought-resistant and climate-resilient crop varieties, efficient water management systems, improved irrigation techniques, and climate-sensitive infrastructure. These technologies aim to enhance resilience to changes in weather patterns while promoting sustainable development in sectors like agriculture, and forestry.

90 Natural capital refers to the Earth's ecosystems, natural resources, and biodiversity that provide essential goods and services – such as clean water, air, forests, and soil – that sustain human well-being and economic activity.

91 *Social and Economic Entrepreneurship with Sustainable Productive Projects for the Fight Against Deforestation*, investment grant, approved in 2020, for $2.36 million (CO-G1027); and the *Sustainable Colombia Program*, investment loan, approved in 2017 for $100 million (CO-L1166).

92 Investment loan, approved in 2016 for $158.4 million (BO-L1106).

93 Investment loan, approved in 2016 for $100 million (AR-L1198).

94 Ibid.

95 *The Agricultural and Agroforestry Technological Innovation Program* - PITAG, investment grants, approved in 2018 for $65.8 million (HA-L1107/HA-G1041).

96 Investment loan, approved in 2016 for $15 million (GY-L1060).

adoption of sustainable agricultural practices. Although there are no reported advances on this, 4,600 producers received incentives to adopt such technologies.

3.20. **IDB Invest's direct support to resilient firms and farms proved more effective than indirect approaches, suggesting that targeted, firm-level interventions are better suited to deliver measurable adaptation outcomes.** Resilient firms and farms interventions were the most common type of IDB Invest intervention, with 18 interventions (13 finance, 5 agribusiness), 17 of which had climate adaptation indicators at design. Of these, only 3 were highly effective, 5 had mixed and 9 limited effectiveness. The most successful interventions were deployed directly to corporate firms aiming to enhance the productivity of agricultural producers through climate-smart technologies. One focused on the efficient use of water, and the other on sustainability practices for coffee crops. The interventions reported increases in the productivity of sugar crops, decreases in the use of water and increases in the number of producers incorporating sustainability practices. The third highly effective intervention involved subloans to eco-businesses through financial intermediaries, which exceeded its green portfolio growth target.

3.21. **In contrast, IDB Invest's support through financial intermediaries faced limitations due to structural challenges in the MSME ecosystem.** The 5 interventions that had mixed effectiveness were all channeled through financial intermediaries , with one targeting climate-smart agriculture for micro enterprises, and others targeting micro, small and medium enterprises (MSMEs) offering broader green credit lines that did not distinguish between adaptation and mitigation, often defining green lending as activities exclusively for mitigation (i.e., energy efficiency and renewable energy). Although they increased their portfolio as expected, little is known about their climate adaptation results. Finally, the remaining 9 interventions had limited effectiveness. Three of them were corporate interventions that did not show progress on adaptation outcomes. The remaining 6, all financial intermediaries targeting green lending to MSMEs, reported modest increases in green portfolio growth that were far below target. According to management, one of the primary reasons for underperformance is the macroeconomic downturn in the region in 2020 resulting from the COVID-19 pandemic, which made it more challenging to develop green portfolios. However, other aspects hindering effectiveness include MSMEs' limited technical capacity to design and carry out adaptation projects, and limited access to credit due to collateral requirements and information asymmetries.

C. Effectiveness of absorptive interventions

3.22. **The overall effectiveness of the IDB's Immediate Response Facilities for absorptive interventions, which have provided relief support to affected populations, has been high.** The four IDB interventions with climate adaptation indicators at design, all of them IRFs, were highly effective. They played a crucial role in supporting post-disaster reconstruction. In Haiti, after Hurricane Matthew in 2016, the IDB[97] contributed to the restoration of connectivity and electricity. In Costa Rica,[98] the roads reconstructed after Tropical Storm Nate in 2017 remained resilient against Hurricane Bonnie in 2022, showcasing adaptive infrastructure features. This operation also contributed to the restoration of water and sanitation services.

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97 *Emergency Program in Response to Hurricane Matthew*, investment grants approved in 2016 for $20 million *(*HA-L1130).

98 *Tropical Storm Nate Emergency Response Program*, investment loan approved in 2017 for $20 million *(*CR-L1135).

Argentina's intervention[99] successfully met its targets for evacuations and for flood-affected individuals resuming normal activities. IDB Invest did not deploy absorptive interventions in the effectiveness portfolio.

3.23. **IDB's support for adaptation took shape through long-term, programmatic approaches in both urban and rural sectors in selected cases, demonstrating that sustained engagement, iterative learning, and cross-sectoral coordination are critical to embedding adaptation.** In Brazil, with an engagement of more than 20 years, PROSAMIN evolved over multiple series to reduce vulnerability to floods in Manaus through urban drainage and resettlement. In Argentina, PROMEBA and PROSAP combined successive series of interventions in housing, basic infrastructure, and rural development, gradually incorporating more sophisticated adaptation considerations. In Bolivia, the IDB deployed multiple instruments—policy reforms, investment loans, and technical cooperation—under a sustained engagement that strengthened DRM and supported climate-proofing of water and sanitation systems, alongside PRONAREC to promote resilient agricultural technologies in rural areas. Bolivia's approach has informed other countries, while in the Bahamas and Barbados, adaptation initiatives following Hurricane Dorian and government priorities focused on DRM, natural resource management, and the Blue Economy. In these Caribbean cases, however, technical assistance was fragmented, and investment operations were not consistently aligned with reforms, limiting their potential to consolidate adaptation gains. Overall, these examples show that long-term programmatic series, the use of multiple instruments, and cross-country lesson-sharing are critical to embedding adaptation into development pathways.

IV. CONCLUSIONS AND RECOMMENDATIONS

4.1. **Between 2016 and 2022, the IDB Group increasingly prioritized climate adaptation in its institutional strategies.** Since 2010, with the Ninth General Capital Increase, climate adaptation has been an institutional priority for the IDB Group, which was confirmed at various points during the evaluation period and in the 2024 IDB Group strategy. The IDB Group has advanced climate adaptation at the strategic level -efforts include institutional targets, the development of action plans, the establishment of dedicated climate units, the hiring of specialized staff and climate-related training across sectors, and the mainstreaming of climate considerations in sectoral documents. During the 2016-2022 period, climate finance allocations represented 31% of total approved amounts, exceeding the 30% institutional target. The number of climate specialists in country offices more than doubled between 2020 and 2023, and most Sector Framework Documents (SFDs) included adaptation considerations and proposed lines of action.

4.2. **However, gaps remain between strategic considerations and targeted action.** The strategic efforts have not consistently translated into effective implementation of adaptation interventions. Among the 41 Country Strategies that assessed climate vulnerabilities, only 20 included in-depth analysis and just 9 proposed concrete responses. Similarly, while 7 of 28 SFDs referenced climate adaptation, they lacked clear operational pathways. At the project level, both IDB and IDB Invest interventions often did not implement the findings of climate diagnostics.

[99] *Emergency Program for an Immediate Response to the Flooding in Argentina,* investment loan approved in 2016 for $20 million (AR-L1245).

Climate risk assessments, although widely conducted, were frequently disconnected from the design and execution of operations, particularly in IDB Invest advisory services, where only 4 of 10 anticipatory interventions were relevant and just 3 translated plans into action. These disconnects have limited the effectiveness of adaptation interventions.

4.3. **The relevance of IDB Group adaptation interventions to addressing specific climate vulnerabilities was generally mixed.** Seventy-one percent of Country Strategies showed limited or no alignment with identified adaptation vulnerabilities or institutional contexts. Fifty-two percent of IDB interventions and 34% of IDB Invest interventions were aligned with the climate vulnerabilities identified in the approval documents. Some interventions demonstrated strong alignment – for example, in Bolivia, a coordinated set of policy and investment loans linked regulatory reforms to localized climate risks, including resilient gray infrastructure and capacity-building for farmers and government officials. Others had limited links to climate vulnerabilities. For example, the *Development Program for Metropolitan Areas Outside the Capital* in Argentina II focused on creating a contingency plan to evaluate flood risks and identify possible adaptation strategies but did not propose to implement such measures, nor is there a complementary intervention for doing so. Adaptive interventions in infrastructure and the environment – particularly those involving green and blue infrastructure – were often highly relevant when tailored to local ecosystem vulnerabilities and complemented by capacity building. Resilient firms and farms interventions also emerged as win-win solutions, enhancing both adaptive capacity and productivity, though their relevance depended on clear links to context-specific climate risks.

4.4. **Adaptation interventions focused on some key vulnerable sectors but were not always aligned with country needs at the portfolio level.** Overall, adaptation interventions focused on infrastructure and agriculture, reflecting the region's exposure to climate-related risks in these sectors. Other vulnerable sectors such as tourism and health were not covered. Adaptation resources were also not neccesarily directed to the countries with the most needs. For example, Nicaragua, Honduras, El Salvador, Belize and Guatemala had high needs for adaptation support (as measured by the ND-GAIN Index) but had relatively low shares of their IDB Group resources devoted to climate adaptation financing. Subnational dynamics, however, were not systematically captured in the available information. Likewise, while other actors may have contributed to adaptation in these countries, this was not explicitly mentioned in the IDB Group's CSs.

4.5. **Combining IDB Group's instruments improves adaptation results, but the IDB Group has not consistently pursued synergies across intervention types.** Evidence from countries like Bolivia, the Bahamas, and Ecuador shows that when policy-based instruments (e.g., PBLs and PBGs) are complemented by other instruments (such as technical cooperation or investment loans) or local capacity-building components, they yield tangible improvements in institutional frameworks, risk governance, and sector management. In Bolivia, coordinated operations across sectors effectively linked regulatory reforms to resilient infrastructure and local training. Local capacity-building – whether through government or private sector channels – has also proven effective, particularly when embedded in broader programs such as resilient infrastructure or financial advisory services. Despite the benefits demonstrated, the IDB Group has not consistently pursued synergies across intervention types. This might be explained by variation in levels of technical

and institutional capacities required from multiple agencies at both national and subnational levels. The three intervention types were implemented together in only a handful of countries, whereas the countries with the most needs had programs that focused on adaptive interventions. Efforts to engage private clients – especially by IDB Invest – have also met resistance, with successful adaptation financing often limited to clients already predisposed to act. This demand gap persists despite initiatives offering technical support.

4.6. **More local and regional evidence is needed on the impact of combining specific interventions within and across the three adaptation categories.** Evidence from the literature demonstrates that combining anticipatory, adaptive and absorptive interventions leads to increased productivity, reduced vulnerability and strengthened long-term resilience. Yet, evidence is limited on the impact of the combination of specific interventions across (and within) the three categories (e.g., a combination of early warning systems, gray and green infrastructure and emergency relief) at the country level.

4.7. **The IDB's effectiveness in strengthening adaptive, anticipatory, and absorptive climate resilience capacities varied by intervention type, with adaptive interventions achieving the most consistently strong results.** Among 27 adaptive interventions with adaptation indicators at design, nearly 60% were rated highly effective. Successful interventions promoted climate-smart agriculture and sustainable natural resource management, such as in Colombia, Bolivia, and the Dominican Republic, where productivity and environmental benefits were closely linked. Green and blue infrastructure interventions leveraging nature-based solutions (such as reforestation, coastal restoration, and water basin management) also performed well, as seen in Honduras, Brazil, and the Bahamas. Meanwhile, results for resilient gray infrastructure were mixed, often hindered by marginal integration of adaptation designs, sometimes leading to maladaptive outcomes such as vegetation loss or degradation of protected areas. Capacity-building components across interventions – particularly when embedded in broader investment loans – proved highly effective, with strong examples in Bolivia, Guyana, and regional agricultural training programs. Anticipatory gains were mostly linked to these localized training efforts and sectoral planning improvements. Absorptive interventions, notably Immediate Response Facilities in Haiti, Costa Rica, and Argentina, were highly effective in supporting post-disaster recovery and restoring essential infrastructure.

4.8. **Assessing the effectiveness of climate adaptation interventions remains a significant challenge for the IDB Group due to the unpredictable and infrequent nature of climate shocks, as well as underdeveloped M&E frameworks.** Demonstrating the effectiveness of climate adaptation interventions would, in some cases, require the occurrence of a severe weather shock, an event that would be both rare and undesirable. The evaluation, therefore, measured progress not only through outcome indicators (such as reduction in climate-related economic losses) but also through intermediate outcomes (such as improved water resource management or adoption of climate-resilient practices) and even through adaptation-related output indicators (such as the construction of flood-resistant infrastructure, climate-resilient road networks, or the deployment of early warning systems). However, the absence of climate-specific indicators (including outcomes and outputs) and inconsistent reporting practices – especially during implementation and project completion – limited the ability to assess impact. Few

interventions in the effectiveness sample included relevant indicators at either output or outcome levels. Climate finance is for example only documented during the design phase. Furthermore, only 37% of resilient gray infrastructure interventions had relevant adaptation indicators, and many adaptation narratives included in approval documents were dropped from supervision and completion reports. Similar issues were observed in emergency response interventions and contingent credit facilities, where climate-related results were not systematically monitored beyond disbursement. In IDB Invest, the broad use of "green portfolio" classifications – particularly in resilient firms and farms interventions – limited the identification of adaptation outcomes, especially when projects were channeled through financial intermediaries.

4.9. **From the findings of this evaluation, OVE recommends these actions:**

1. **Focus IDB Group's adaptation support in vulnerable countries, sectors, and regions.** The IDB Group should prioritize adaptation strategies and interventions where adaptation is critical, including highly climate-vulnerable countries (e.g., El Salvador, Honduras, and Guatemala), regions (e.g., coastal zones, urban poor), sectors with high exposure (e.g., agriculture, environment and infrastructure), as well as sectors that can positively promote climate adaptation (e.g. water resource management and urban planning). To ensure appropriate targeting, the IDB Group could use indicators like ND-GAIN (at the country level) complemented by the findings of climate diagnostics, and risk and vulnerability assessments at the local level, such as frequency of slow- and fast-onset climate events, dependency on climate-sensitive livelihoods (e.g., for agriculture and tourism), and capacity for disaster response. When IDB Group's country and sector strategies do not address the needs of highly vulnerable countries, sectors, or subnational regions, they should document whether the country is already addressing those needs (independently or in partnership with other development institutions).

2. **Close the gap between strategic adaptation planning and operational implementation, mitigating the risks of maladaptation.** This entails: (i) ensuring that climate vulnerability assessments in CSs are in-depth and that projects' objectives align with their findings, (ii) ensuring follow through during project implementation, and defining adequate monitoring frameworks including expected results, indicators and targets; and (ii) detecting and responding to unintended adverse effects during implementation in projects at risk of maladaptation, such as reduced vegetation or degradation of protected areas, especially when implementing gray infrastructure interventions.

3. **Enhance synergies across adaptation intervention types and instruments and conduct further country-level empirical research at the regional and local levels on synergies.** To increase the relevance and effectiveness of climate adaptation interventions, the IDB Group should: (i) further increase synergies across anticipatory, adaptive and absorptive interventions, with a stronger focus on local capacity-building and instruments (e.g., combining policy-based loans with technical cooperation, or advisory services with IDB Invest loans), and (ii) generate empirical country-level evidence at the regional and local levels to understand which combinations of specific anticipatory, adaptive and absorptive interventions work best in different contexts and use this evidence to inform program design and improve resource targeting.

4. **Improve measurement and reporting on climate adaptation interventions, while acknowledging inherent limitations in assessing their outcomes.** This entails: (i) including specific result indicators and reporting on climate adaptation interventions in both IDB and IDB Invest operations to assess their results effectively; and (ii) adjusting measurements for climate adaptation interventions, focusing on robust proxy indicators such as intermediate outcomes where feasible. Using output remains a valid approach in cases where intermediate outcomes are not possible to measure, given the long timeframes and the uncertainty that characterizes climate adaptation interventions.

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