














ENABLING PRIVATE INVESTMENT IN CLIMATE ADAPTATION & RESILIENCE

Current Status, Barriers to Investment and Blueprint for Action

WORLD BANK GROUP

GFDRR
Global Facility for Disaster Reduction and Recovery

ENABLING PRIVATE INVESTMENT IN CLIMATE ADAPTATION & RESILIENCE

Current Status, Barriers to Investment and Blueprint for Action

Arame Tall, Sarah Lynagh, Candela Blanco Vecchi, Pepukaye Bardouille, Felipe Montoya Pino, Elham Shabahat, Vladimir Stenek, Fiona Stewart, Samantha Power, Cindy Paladines, Philippe Neves and Lori Kerr

WORLD BANK GROUP

GFDRR
Global Facility for Disaster Reduction and Recovery


© Boris Balabanov/The World Bank

CONTENTS

EXECUTIVE SUMMARY

The COVID-19 crisis has shown how extreme shocks can upend governments, firms, and society. It has also heightened awareness of vulnerabilities related to climate change. Prompt action to reduce, prepare for, and better manage risks is economically imperative, and there are immediate opportunities to do so. As governments develop stimulus packages and adopt policy measures to create jobs and reinvigorate growth, they can prioritize climate change adaptation and resilience objectives. And as they update their commitments under the Paris Agreement, they can enhance their adaptation and resilience efforts.

Analyses by the Global Commission on Adaptation (GCA) have shown the benefits would be significant:

1. Investing US$1.8 trillion globally in five target areas from 2020 to 2030 could produce US$7.1 trillion in total benefits. The five target areas are early warning systems, climate-resilient infrastructure, improved dryland agriculture crop production, global mangrove protection, and projects to make water resources more resilient.

2. Spending US$800 million on early warning systems in developing countries could reduce climate-related disaster losses by US$3–16 billion per year.

Yet investments in adaptation and resilience-building around the world continue to fall far short of documented needs. It is also increasingly clear that although public finance for adaptation has increased, it will not suffice. Private sector investment is critical to closing the adaptation finance gap.

Much remains to be learned, however, about *how to unlock and enable* private capital to help finance national and local adaptation priorities. There is growing knowledge of how the private sector is building its own climate resilience, but far less about its role in meeting broader adaptation financing needs. Building on pioneering literature identifying barriers to private sector investment in adaptation, this report aims to offer concrete guidance on how to overcome those barriers.

Guidance for governments is particularly urgent as nations rebuild their economies in the post-COVID era. It is important to ensure that investments contribute to both near-term economic recovery *and* longer-term resilience, mainly by anticipating and managing the growing impacts of climate change on all economic sectors. This report provides an overview of the current state of private sector investment in adaptation and resilience and the known barriers to such investment, then proposes a pragmatic Blueprint for Action for public and private stakeholders. It identifies five key entry points as well as ways to create an enabling environment and illustrates each point with case studies.

THE ADAPTATION FINANCE GAP

Climate adaptation finance flows have increased in recent years, but still fall short of what is needed to avoid severe economic and human impacts from climate change, especially in developing countries. By 2030, the United Nations Environment Programme (UNEP) estimates, the cost of adaptation will reach US$140–300 billion per year, and by 2050, US$280–500 billion. The Nationally Determined Contributions (NDCs) of just 50 developing countries identified more than US$50 billion per year in adaptation needs for 2020–2030. In addition, an estimated US$57–95 trillion worth of infrastructure is expected to be built by 2030, and it needs to be made resilient to climate change.

Global adaptation investment from public and private sources increased from about US$23 billion per year in 2015–2016, to US$30 billion per year in 2017–2018, according to the Climate Policy Initiative. The latter amounts to less than one-fifth of total climate finance in that period. Of the total adaptation finance flows, about two-thirds went to developing countries. ***Only about US$500 million (1.6 percent) of adaptation finance came from private sources.*** One important reason for the relatively low level of investment in adaptation and resilience-building is the lack of disclosure of climate-related risk data to inform capital investment planning, in both the public and private sectors.

Water and wastewater management projects received 70 percent of private sector adaptation investment; the second-largest category was energy and other infrastructure, at 17 percent. Most private adaptation investments were in higher-income countries, with Canada and the United Arab Emirates topping the list. Though some finance flows may have been missed due to accounting and measuring challenges, the figures point to alarmingly low levels of private adaptation finance in developing countries. Now, with public budgets constrained by urgent spending on post COVID-19 recovery, health care and social programs, private investment in adaptation is more critical than ever in those nations.

BARRIERS TO PRIVATE INVESTMENT IN ADAPTATION

Past research has identified several barriers to attracting the volume of private finance needed to advance most developing countries' adaptation agendas. They fall into three broad categories: 1) lack of country-level climate risk and vulnerability data and information services that can be used to guide investment decision-making; 2) limited clarity on the government's capital investment gaps to achieve adaptation goals, and/or on where private investment is needed; and 3) low perceived or actual returns on investment.

Governments can play a key role in addressing all three barriers, including by:

1. *Making localized climate risk and vulnerability data available* and embedding climate risks in capital investment planning undertaken by governments and their development partners;

2. *Setting up effective institutional arrangements for multi-sector adaptation planning*—a better articulation of adaptation and resilience goals at the national level, establishing the policies/regulations/standards, and articulating clear plans, including who will do what, where, when, and how—to enable private sector participation; and

3. *Strengthening financial incentives (or reducing risks/costs) for private participation*—through public finance instruments such as blended finance, credit enhancement, and other targeted risk reduction or revenue-boosting measures.

A BLUEPRINT FOR ACTION TO BOOST PRIVATE INVESTMENT IN ADAPTATION AND RESILIENCE

The Blueprint for Action presented in this report proposes a concrete, stepped approach for governments to address barriers to private investment in adaptation and resilience, so private capital can actively contribute to financing national and local priorities. The Blueprint for Action provides guidance and a draft engagement plan for governments to create an enabling environment as well as business models for private sector investment in adaptation and resilience.

A coordinated approach to developing, financing, and executing priority adaptation investments, driven by countries' goals and national investment plans, can help accelerate and scale up private investment to meet the needs of climate-vulnerable communities and economies. The public sector—government agencies, policy makers, bilateral and multilateral development finance institutions, public sector funds, and development organizations—thus plays a critical role in mobilizing private investment. Multilateral development banks (MDBs), and the World Bank Group in particular, have an important role to play as conveners and facilitators for this approach to take root.

The Blueprint describes three areas for intervention for public sector stakeholders: policy, incentives, and standards, metrics and regulations. It also identifies five entry points to enable private investment in adaptation:

1. **Support long-term adaptation planning, taking a whole-of-government approach.** National adaptation goals need to be articulated clearly, along with the associated tangible investments in each climate-vulnerable sector. This should be done as part of a country's adaptation strategy, through the National Adaptation Plan (NAP) and Nationally Determined Contribution (NDC) planning processes. This foundational step is vital for signaling demand to a range of public and private stakeholders, including developers and financiers. It is equally vital for both the public and private sectors to clearly understand climate risks and vulnerabilities as well as opportunities for early investment.

2. **Develop a national adaptation investment plan, which flows naturally from a well-developed national adaptation and resilience strategy,** to outline a portfolio of projects that are ready for investment by public or private entities, domestic and international. Ministries of finance are central to setting up a multi-sector, multi-stakeholder, iterative process to translate needs and opportunities identified at the local level into a national list of priority investments. MDBs, including the International Finance Corporation (IFC), the World Bank, and the Multilateral Investment Guarantee Agency (MIGA), will be important conveners of internal finance and guarantors of financing. This process also includes an assessment of regulatory and policy gaps in enabling private sector adaptation, with recommendations for filling them, and, separately, an iterative process to identify evolving adaptation investment needs and priorities.

3. **Conduct a market assessment and screen the pipeline for "bankable" projects for different investors.** Once adaptation investment priorities have been identified, the projects need to be assessed to determine which are "bankable"—that is, potentially attractive to investors, whether MDBs and impact investors, or purely commercial investors. The rest will require entirely public finance (domestic, through development partners, or from climate funds). A key requirement for bankable projects is identifiable and stable revenue streams. Some investments can be made bankable through relatively simple structuring, while in others, there may be no obvious direct revenue streams. There are approaches that can help, such as conditional use of blended finance and other innovative financing mechanisms.

4. **Provide ongoing support for project preparation.** Once a project has been identified as bankable, it needs to receive targeted support to prepare it to go to market and attract commercial financing. This involves detailed pre-feasibility and feasibility studies to ensure the project will actually be able to attract private investment; changes to policies, incentives, metrics, and market signals may be needed. This step also includes assessing value at risk and return on investment, mapping project cash flow, identifying funding gaps, identifying potential investors, and supporting project structuring and procurement. At a system level, an adaptation-oriented project preparation facility may be needed to attract private sector investment at scale.

5. **Support individual projects to close the transaction.** This involves helping coordinate project financing with relevant investors for projects that are ready for investment, including through technical assistance. Depending on the structure of the project, it will not necessarily be the World Bank or another MDB playing that role. Instead, MDBs may be better suited to implementing and supervising the project, depending on the financing modalities.

There is great potential in the use of policy instruments, incentives, and standards to advance private investment in adaptation. However, there is limited practical knowledge on how to do it, or how different policy instruments have been used to date. This report begins to fill this gap, testing new approaches to create an enabling environment and develop effective business models. By providing these tools and methodologies, it aims to help public and private sector stakeholders to jointly advance the agenda of adaptation and unlock financing for urgently needed adaptation investments.

Most immediately, the Blueprint for Action will be implemented by the World Bank Group to support five country pilots in 2021–2023. The pilots will focus on different sectors and test different entry points, as part of the Bank's Enabling Private Investment in Adaptation initiative. During this time, the Blueprint will be refined, amended, and finalized, incorporating lessons from the five pilots as well as co-design with pilot countries and key global partners in adaptation finance.

The ultimate goal is to produce a ground-tested Blueprint for Action to boost private investment in adaptation and resilience that global, regional, national and local adaptation stakeholders can use to mobilize as much private investment as possible to meet countries' fast-growing needs. This work will build on and complement existing project preparation facilities for adaptation, including from the Green Climate Fund, the Global Environment Facility, the Global Commission on Adaptation, and other initiatives.

ACRONYMS

A&R	Climate change adaptation and resilience
BDP	Bangladesh Delta Plan
CCRI	Coalition for Climate Resilient Investment
CIF	Climate Investment Funds
CRAFT	Climate Resilience and Adaptation Finance and Technology-transfer Facility
CRRP	Climate Resilience and Recovery Plan
DFIs	Development finance institutions
EDC	Energy Development Corporation
GCF	Green Climate Fund
GEF	Global Environment Facility
GIF	Global Infrastructure Facility
IFC	International Finance Corporation
IPCC	Intergovernmental Panel on Climate Change
MDBs	Multilateral development banks
MFD	Maximizing Finance for Development
MPWT	Ministry of Public Works and Transport
MRD	Ministry of Rural Development
MIGA	Multilateral Investment Guarantee Agency
MSPs	Multi-stakeholder partnerships
NAP	National Adaptation Plan
NDCs	Nationally Determined Contributions
NGOs	Non-governmental organizations
NMHSs	National meteorological and hydrological services
ODA	Official development assistance
OPBRC	Output and performance-based road contracts
PBCs	Performance-based contracts
PPCR	Pilot Program for Climate Resilience
PPIAF	Public-Private Infrastructure Facility
PPP	Public-private partnership
SPCR	Strategic Program for Climate Resilience
UN	United Nations
UNEP	United Nations Environment Programme
WBG	World Bank Group

ACKNOWLEDGEMENTS

This report is a joint publication of the World Bank and International Finance Corporation. It was co-authored by a World Bank Group Task Team led by Arame Tall, with team members from the World Bank Climate Change Group (Sarah Lynagh, Loreta Rufo, Elham Shabahat, Candela Blanco Vecchi) and Finance, Competitiveness and Innovation Group (Cindy Paladines, Samantha Power, Fiona Stewart); the International Finance Corporation (Pepukaye Bardouille, Felipe Montoya Pino, Vladimir Stenek); the Global Infrastructure Facility (Lori Kerr), and the Public-Private Infrastructure Advisory Fund (Philippe Neves).

In addition, the team would like to thank the following partners for their contributions to the development of the report: Stacy Swann and Karen Pineros (Climate Finance Advisors), Jason Garth Spensley (Global Environment Facility), Christopher Head (Climate Investment Funds), Brooks Preston (Macquarie), Jay Koh (Lightsmith Group), Christina Chan (Director, Climate Resilience Practice, World Resource Institute) and Fiona Percy (CARE International).

Lastly, the team is indebted to the following colleagues for their review and guidance: Bernice K. Van Bronkhorst (Director, Climate Change Group), Genevieve Connors (Manager, Climate Change Group), Anderson Caputo Silva (Manager, Finance, Competitiveness and Innovation), Imad Fakhoury (Director, Infrastructure, PPPs and Guarantees), Fatouma Ibrahim Toure (Manager, Infrastructure, PPPs and Guarantees), Jemima T. Sy (Manager, Public-Private Infrastructure Advisory Facility), Anup Jagwani (Manager, Climate Business Department, International Finance Corporation), Diep Nguyen-Van Houtte (Manager, International Finance Corporation), Veronique Morin (Senior Climate Change Specialist, Climate Change Group), Luis Tineo (Lead Operations Officer, Climate Change Group), Ferzina Banaji (Communications lead, Climate Change Group), David Philip Allen (Consultant, Climate Change Group), Marion Davis (independent editor), Kanta Kumari Rigaud (Lead Environmental Specialist, Environment), Laurent Debroux (Program Leader, Turkey Sustainable Development team) and Valery Hickey (Manager, Latin America and Caribbean Environment team); as well as the formal peer reviewers who have provided invaluable comments for the completion of this report: Satheesh Sundararajan (Lead Infrastructure Finance Specialist, Infrastructure, PPPs and Guarantees), Gisele Saralegui (Principal Investment Officer, International Finance Corporation), Catiana Garcia-Kilroy (Lead Financial Sector Specialist, Finance, Competitiveness and Innovation) and Sasa Eichberger (Senior Environmental Specialist, Green and Climate Finance).

© Vincent Tremeau/The World Bank

© Vincent Tremeau/The World Bank

1

INTRODUCTION: WHY THIS REPORT?

Climate change impacts are increasing in intensity and frequency around the world, highlighting the urgency of investing in adaptation and resilience-building. It has also become clear that public resources will not suffice to meet countries' climate adaptation needs, and private sector investment will be critical to close the adaptation funding gap (UNEP, 2018).

At the same time, private firms are recognizing climate change as a key issue to address in their risk management strategies, and they are working to make their supply chains and production processes more resilient (Goldstein et al., 2019; IAIS and SIF, 2018; Mui, 2019; Clapp et al., 2017; BlackRock, 2021; Kweilin, 2020). Private firms are also financing and investing in projects that help others adapt, though far less research has been done in that field. Another new (and growing) category of private investors in climate adaptation are selling goods and services to support adaptation and resilience. Some studies have tried to quantify private adaptation finance, while several others have outlined key barriers to private investment (Stenek et al., 2013; CIF, 2016, 2018; GCA, 2019; Vivid Economics, 2015). However, a better understanding is needed of how to unlock private capital and encourage private financing of national and local adaptation priorities.

This report identifies ways to overcome key barriers to private sector investment in adaptation and resilience, laying out a coordinated and data-driven Blueprint for Action to help governments and their development partners to close the adaptation finance gap.

Commissioned as a Baseline Report for the World Bank Group's new advisory service on "Enabling Private Sector Investment in Adaptation," the report begins with a snapshot of private financing for adaptation today and how it fits into efforts to finance adaptation and resilience-building around the world. It then identifies the main barriers to private investment in adaptation today and lays out a systematic approach to addressing those barriers to close the adaptation finance gap.

The Blueprint identifies five entry points for action to catalyze private investment in adaptation in the developing world, with illustrative case studies for each step. They include examples of how to leverage private seed and catalytic funding; collect and disclose climate and risk data; create partnerships with the private sector to deliver climate information services; develop and scale up innovative financing approaches; and create new incentives and regulatory frameworks that promote private investment in adaptation. Key lessons are drawn to inform the implementation of the Blueprint for Action, with special attention to the role of public policy in their success.

The World Bank Group will pilot the Blueprint approach in five countries in fiscal 2021–2023, supporting governments and development partners as they work with private sector stakeholders to incentivize private financing of projects to meet national and local adaptation needs.

This report's primary audience is the public sector: government agencies, policy makers, bilateral and multilateral development finance institutions, central banks, regulators, public sector funds, and development organizations. The goal is to provide practical tools for shaping policy, market signals, incentives, and metrics that public sector actors can implement to attract and leverage private capital to co-finance adaptation projects. The report should also be of interest to many in the private sector, including impact investors, pension funds, and firms already engaged or interested in financing climate action. Ideally, they will be partners in co-designing context-appropriate approaches to mobilize private finance, validating the findings of public sector-led analyses, and co-implementing solutions.

The urgency of this work cannot be overstated. At the UN Secretary General's Climate Action Summit in September 2019, governments, multilateral development banks (MDBs), and UN agencies highlighted the importance of scaling up adaptation finance. The Global Commission on Adaptation has also launched a Global Year of Action, including a finance track[1] focused on expanding climate-resilient fiscal and financial policy, making climate risks visible in private financial markets, and deepening economic understanding of adaptation. The World Bank Group itself has proposed a "cascade" approach to unlocking private sector participation in climate-smart investments (see Table 3 near the end of Section 2). It has also prioritized the scale-up of private sector adaptation financing in both its Action Plan on Climate Adaptation and Resilience (World Bank, 2019) and its forthcoming Climate Change Action Plan 2021–2025 (see summary in World Bank, 2020).

The COVID-19 crisis has further highlighted the need to build resilience and create opportunities for ambitious action as part of stimulus programs. Many observers have pointed to the pandemic as a preview of the large, complex challenges that climate change will bring, and called for stepped-up efforts to address climate risks, including as part of COVID-19 recovery plans (see, e.g., Pinner et al., 2020; Phillips et al., 2020). As governments continue to develop stimulus packages to create jobs and reinvigorate growth post-COVID, it is critical to recognize this as a long-term economic imperative, focusing on the needs of vulnerable populations and on building resilience to future shocks. This is also an opportunity to engage private investors, as the financial sector has become more aware of different types of risks that need to be addressed and increasingly searches for investment opportunities with measurable impact. By leveraging both public and private sector resources, countries can emerge from the pandemic with greater resilience to all kinds of shocks and crises.

Several initiatives have been launched in recent years to catalyze private sector investment in adaptation, including the Coalition for Climate Resilient Investment,[2] the Global Adaptation and Resilience Investment Working Group,[3] and the Global Environment Facility's Challenge Program for Adaptation Innovation.[4] This report aims to complement and inform their work. Concrete guidance on how public and private stakeholders can join forces to scale up adaptation action is sparse; this report begins to fill that gap. The private sector has shown a willingness to invest in adaptation; what is needed now is to provide an enabling policy environment and create a pipeline of projects that are suitably "de-risked" (through blended finance and working with knowledgeable partners) and offer attractive investment opportunities. However, governments need to create space in their investment plans for private sector participation, using risk information, objective prioritization criteria, and multi-criteria decision-making frameworks. The proposed Blueprint for Action shows how to achieve that goal.

1 See https://gca.org/global-commission-on-adaptation/action-tracks/finance.
2 See http://resilientinvestment.org.
3 See https://garigroup.com.
4 See https://www.thegef.org/news/winners-gef-challenge-program-adaptation-innovation-announced and https://www.thegef.org/council-meeting-documents/progress-report-challenge-program-adaptation-innovation-under-special.

© IStock/piyaset

© iStock/Riccardo Lennart Niels Mayer

2

THE STATE OF PRIVATE INVESTMENT IN CLIMATE ADAPTATION

This report focuses on mobilizing private finance for adaptation and resilience-building—crucial activities at a time when the rising impacts of climate change are becoming increasingly manifest. Even if we can sharply reduce carbon emissions and meet the 2015 Paris Agreement's goals, emissions to date have already locked in significant warming in the atmosphere, which is expected to lead to increases in extreme weather, precipitation changes, sea level rise, ecosystem disruptions, and many more changes to earth's climate equilibrium as we march towards 2030 and 2050.

Adapting human systems and making them more climate resilient—strengthening their capacity to cope with and recover from climate shocks—is crucial to ensuring well-being and prosperity in a changing climate.

Several recent reports have analyzed levels of climate adaptation finance (Stenek et al., 2013; PwC, 2013; UNEP, 2016; CIF, 2016; Oliver, Clark, and Meattle, 2018; UNEP, 2019), taking different approaches to characterize the barriers and potential entry points to unlock private sector participation. This section draws on that work to provide an overview of current investment flows and financing gaps to adaptation; sectorial and regional investment needs; and why it is so important to scale up private investment in adaptation.

First, we start with a few key definitions.

WHAT DO WE MEAN BY ADAPTATION AND RESILIENCE?

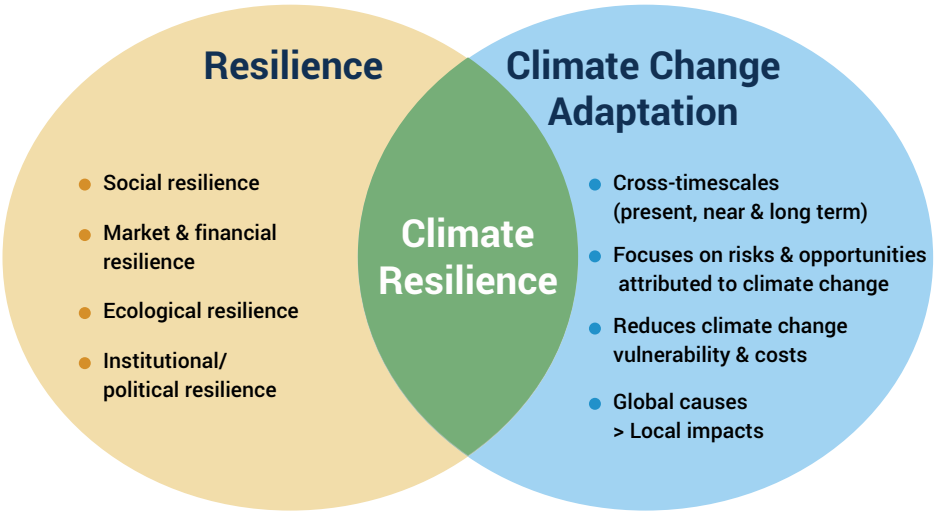
The terms *adaptation* and *resilience* are often used interchangeably, but though they partly overlap, they refer to two distinct concepts.

Climate change adaptation is the process of adjustment of human systems and societies to the impacts or expected impacts of climate change. It includes changes in behaviors, practices, skill sets, and knowledge to address anticipated short-, medium-, and long-term climate change impacts. Adaptation can take many forms: from adjusting planting seasons or switching to drought-resistant varieties, to installing early-warning systems to save people from oncoming storms, to relocating entire communities if the land can no longer support them, or they are too exposed to deadly storms or other climate hazards.

Resilience is the capacity of a human or natural system to withstand the impacts of exogenous shocks, and to cope with and/or recover from them while retaining the essential functions of the original system. Resilient health systems, for instance, can cope with multiple crises, while resilient infrastructure refers to assets such as roads, bridges, cellphone towers, and power lines that can withstand multiple external shocks, as defined by the developer or procurer, typically including climate-related hazards.

Strengthening the capacity of a system to withstand climate-related shocks or stressors (defined as *climate resilience*) is where adaptation and resilience intersect. Climate resilience constitutes an important and growing subset of building system-level resilience to multiple shocks.

FIGURE 1. Climate Resilience, a Growing Subset of Achieving System-Level Resilience.



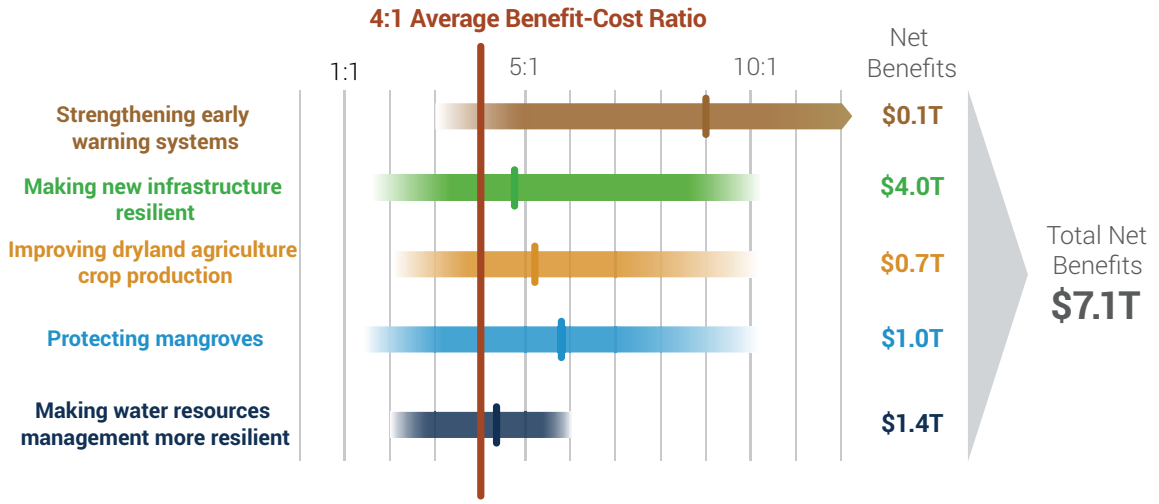
Source: Authors' own work.

A final distinction worth making is between **incremental** and **transformative adaptation**. As climate change impacts begin to manifest, people may respond by making small adjustments. However, vulnerabilities and risks may be so sizeable that they require transformational rather than incremental adaptations (Kates, Travis and Wilbanks, 2012). For example, if rainfall becomes unreliable, farmers might install irrigation systems. Over time, they might also adopt crop varieties (or new crops) that can better withstand large changes in water availability. That is incremental adaptation. However, if the changes to the climate become too pronounced, those farmers may need to find entirely new livelihoods, and perhaps form a cooperative so they can make major investments that they could not afford individually. That would be transformative adaptation.

Around the world, there is increasing interest in fostering transformative adaptation well ahead of the worst climate change impacts, as it can build communities' overall resilience and advance broader development goals. It is clear that in the long term, climate change is likely to require deep transformation in many contexts. Economic systems may also need to be transformed—for example, through systematic climate risk disclosure for all investments and factoring in climate risk into all lending and credit rating methodologies, as well as sectorial and national development plans.

From a societal perspective, investing in adaptation yields multiple benefits. The World Bank's Lifelines report found that every US$1 invested in resilient infrastructure in low- and middle-income countries yields US$4 in net benefits (Hallegatte et al., 2019). As shown in Figure 2, the Global Commission on Adaptation reached similar conclusions, noting that early action on adaptation brings a "triple dividend" of avoided losses, economic benefits, and social and environmental benefits (GCA, 2019).

FIGURE 2. Investing in Climate Adaptation Delivers High Returns



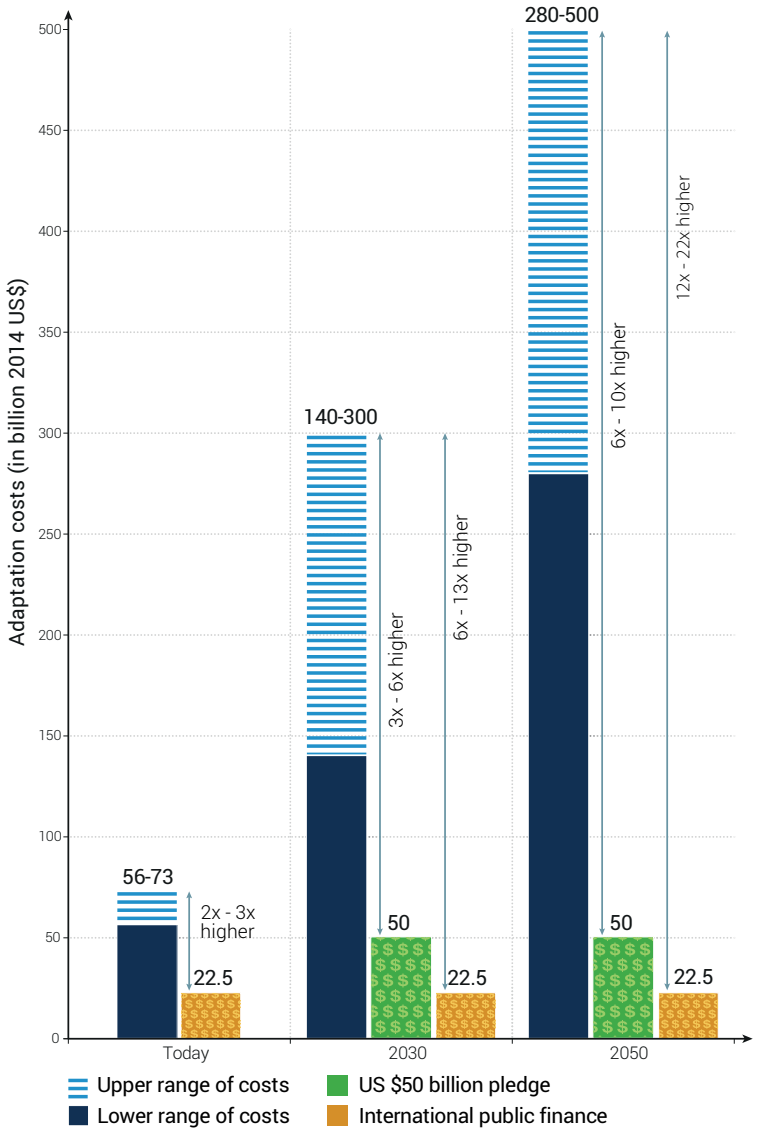
Source: Reproduced with permission from GCA (2019).

Adaptation action to date, however, has fallen far short of what is needed to avoid severe economic and human impacts, especially in developing countries. There are several reasons, including inadequate finance, fundamental gaps in knowledge and capacity, and an absence of tools that help government translate climate commitments into practical solutions and investments.

CURRENT INVESTMENT AND GAPS IN CLIMATE ADAPTATION

Overall, adaptation finance flows increased by 35 percent between 2015–2016 and 2017–2018 (CPI, 2019), but they still fall short of what is needed to avoid severe economic and human impacts, especially in developing countries. By 2030, the cost of adaptation is expected to reach US$140–300 billion per year, and by 2050, US$280–500 billion (UNEP, 2016). The Nationally Determined Contributions (NDCs) of just 50 developing countries identified more than US$50 billion per year in adaptation needs for 2020–2030. Moreover, an estimated US$57–95 trillion worth of infrastructure is expected to be built by 2030, and it too needs to be made resilient to climate change impacts (UNEP, 2018). Yet as of 2018, international public finance for adaptation was only US$30 billion, about two-thirds of which went to developing countries (CPI, 2019).

FIGURE 3. The Adaptation Finance Gap



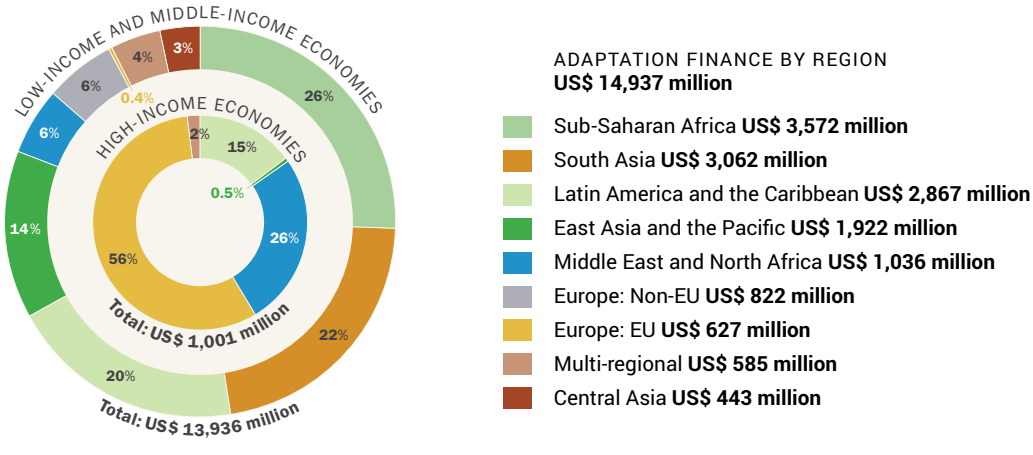
Source: Reproduced with permission from UNEP (2018)

Currently, multilateral development banks (MDBs) are the most prominent sources of public climate adaptation financing. According to the latest Joint Report on Multilateral Development Banks' Climate Finance (AfDB, ADB, AIIB et al., 2019), the MDBs collectively committed US$61.5 billion in climate finance in 2019—US$46.6 billion, or 76 percent, for mitigation and US$14.9 billion, or 24 percent, for adaptation.[5] Mitigation finance committed to low-income and middle-income economies totaled US$27.5 billion, or 66 percent, while adaptation finance totaled US$13.9 billion, or 34 percent. The net total climate co-finance committed during 2019 alongside MDB resources was US$102.7 billion. Together, MDB climate finance and co-finance totaled US$164.2 billion.

5 The MDBs estimate adaptation finance using a joint MDB methodology that takes a context- and location-specific approach and captures the amounts associated with activities directly linked to vulnerability to climate change. MDBs make the best possible efforts to differentiate between their usual development finance and finance provided with an explicit intent to reduce vulnerability to climate change. Thus, the methodology for tracking adaptation finance attempts to capture the incremental cost of adaptation activities.

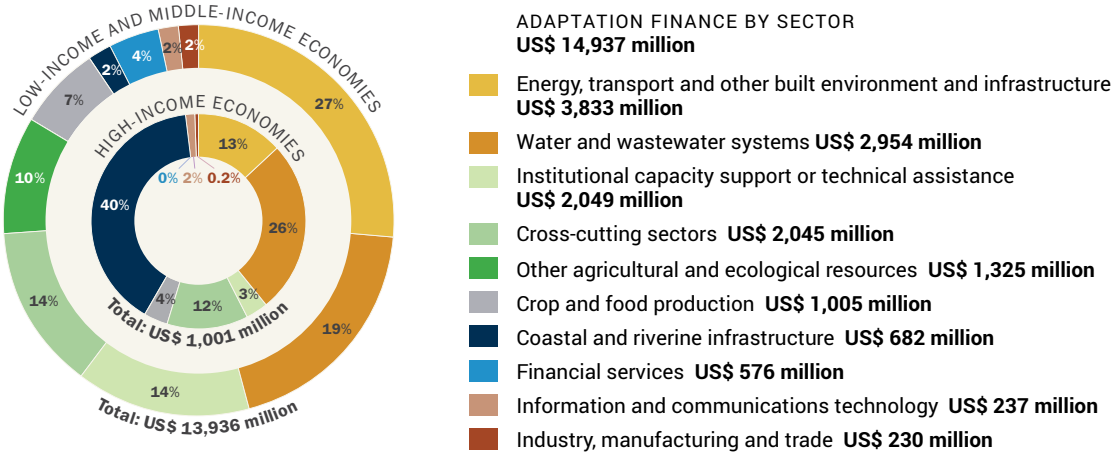
According to the same report, the largest adaptation finance flows went to energy, transport and other built environment infrastructure, and to the water and wastewater systems sector. This is true across country income categories, as shown in Figure 4.

FIGURE 4. MDB Adaptation Finance by Region (2019)



Source: Reproduced with permission from the 2019 Joint Report on Multilateral Development Banks' Climate Finance (AfDB, ADB, AIIB et al. 2019)

FIGURE 5. MDB adaptation finance by sector (2019)



Source: Reproduced with permission from the 2019 Joint Report on Multilateral Development Banks' Climate Finance (AfDB, ADB, AIIB et al. 2019).

Given the increasing needs to invest in climate change adaptation, the MDBs have set more ambitious climate actions targets for 2025, aiming to achieve a collective commitment of climate finance of at least US$65 billion, with US$50 billion for low-income and middle-income countries; an increase in adaptation finance to US$18 billion; and co-financing of US$110 billion, including private direct mobilization of US$40 billion. However, forecasts from MDBs, donors, and NGOs alike point at the need to mobilize and track alternative sources of finance—specifically, the private sector.

Compared with MDBs, other public sources of adaptation finance are relatively small and cannot bridge the growing investment gap. These sources include bilateral donor governments and their agencies, which contributed US$2.4 billion, on average, in 2015–2016 for adaptation finance. Multilateral and bilateral climate funds (including the Green Climate Fund and the Adaptation Fund) contributed another US$0.4 billion. Finally, national development finance institutions (DFIs) contributed nearly US$8 billion per year in 2015–2016. These numbers do not factor in domestic investments, which are largely unaccounted for.

HOW MUCH IS PRIVATE SECTOR FINANCE CONTRIBUTING TO ADAPTATION?

Private sector investment to supplement limited public resources is widely recognized as essential to closing the adaptation finance gap. Though governments and MDBs have recently committed to ramp up investment in adaptation, it is clear that public spending alone cannot come close to meeting the demand (Climate Investment Funds, 2016; Puig et al., 2016). As the Global Commission on Adaptation put it in its Flagship Report, "the public sector needs to shift its focus to include both generating finance and creating incentives to scale up private sector engagement in adaptation investments" (GCA, 2019).

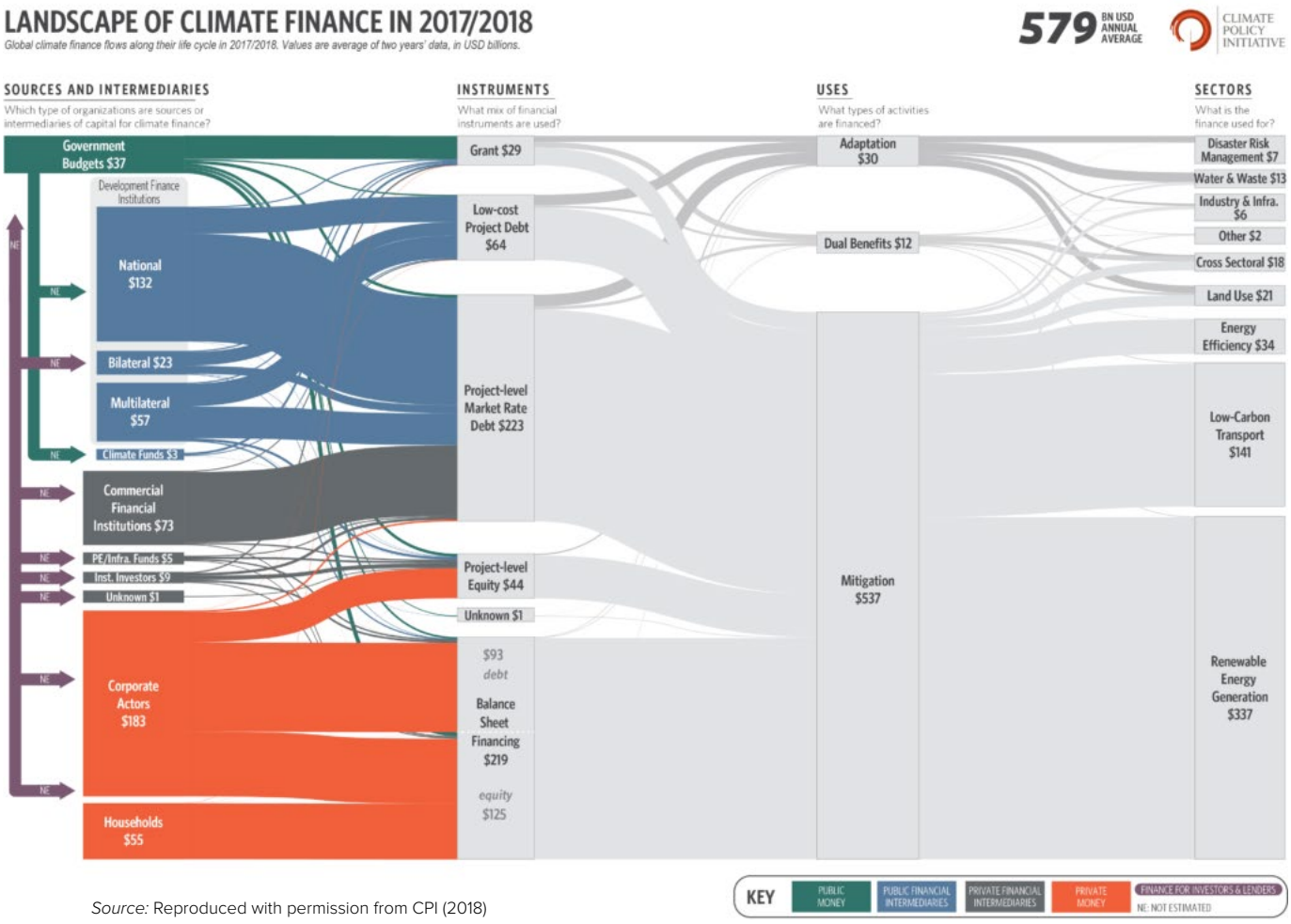
It is difficult to quantify the current levels of private investment in adaptation. Often adaptation investments are part of a larger investment, requiring detailed project information to single out (CPI, 2019). Climate resilience activities are also often integrated into development interventions or business activities, and therefore rarely standalone (CIF, 2016). Other issues include a lack of incentives for tracking, restrictions based on confidentiality, and conceptual and accounting issues (UNFCCC, 2016). Limited transparency remains an issue, as the private sector will only voluntarily report to a certain degree of detail. Adaptation investments may also be labeled as something other than "adaptation"—such as efficiency measures or "risk management."

A major challenge in measuring investments in adaptation and resilience is that, in contrast with mitigation, adaptation can take many forms and is not a well-defined set of activities. A&R efforts cuts across sectors, ranging from traditional infrastructure projects (schools, roads, bridges, etc.) that need to be made resilient to climate change, to standalone adaptation projects, such as protecting the coast from erosion due to sea level rise. Companies might not itemize or label many adaptation-related activities as such–for example, siting a project in a different location to avoid projected climate risks, producing and selling drought-resistant seeds, or building a dam with a larger retention basin to account for higher precipitation variability.

By the best existing estimates, private sector investment in adaptation has remained minimal, despite a 35 percent increase in overall adaptation spending between 2015–2016 and 2017–2018. The Climate Policy Initiative has tracked climate finance for almost a decade, aggregating identifiable projects from various data sources and categorizing them by funding source, financial instrument, and use by sector. As shown in Figure 6, global adaptation investment, public and private, increased from US$22 billion per year in 2015–2016, to US$30 billion in 2017–2018, amounting to less than one-fifth of total climate finance in that period (CPI, 2019). ***Of the total US$30 billion spent on adaptation in 2017–2018, only roughly US$500 million (1.6 percent) came from private adaptation spending.*** Water and wastewater management projects attracted 70 percent of that private investment; the second-largest category was energy and other infrastructure, at 17 percent. Most private adaptation finance flows went to higher-income countries, with Canada and the United Arab Emirates accounting for a significant share of investments. Despite adaptation finance tracking, accounting, and measurement challenges, these figures point to alarmingly low levels of private sector adaptation financing for A&R in emerging markets.

One of the notable examples that denote the opportunities for increased private sector participation in adaptation finance is the growing use of labeled financial instruments for climate-related projects and activities, including green bonds and loans and sustainability-linked bonds and loans. Corporations—not just countries—are committing themselves to achieving "net zero emissions" and also focusing on building resilience and adaptation (Macquarie 2020, BlackRock 2021). This is also further reinforced by a growing push toward regulatory efforts to analyze and focus on climate risk and resilience. The financial regulatory environment is evolving towards voluntary or mandatory disclosure of climate related risks, led mostly by the European Union, but spreading globally. Central banks and supervisors, particularly the members of the Network for Greening the Financial System (NGFS), are playing a critical role in driving consideration of climate-related risks. As a result, financial institutions are building expertise in managing climate risks by adopting forward-looking methodologies and tools.

FIGURE 6. Global Climate Flows along their Life Cycle in 2017 and 2018. Values are average of two years' data, in billion US$.



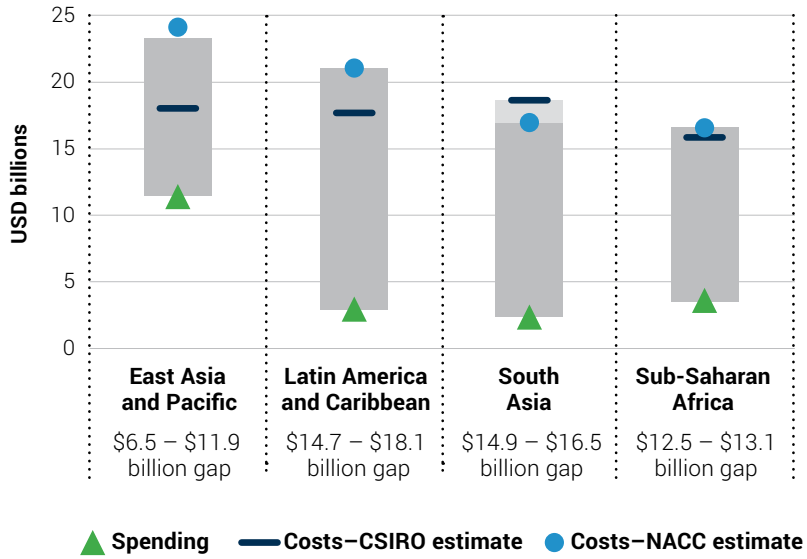
Source: Reproduced with permission from CPI (2018)

Lastly, private financial flows to adaptation projects in developing countries may already be significant but will continue to be hard to measure. Though fraught with challenges, recent research points to innovations and new opportunities to improve the measurement, tracking, and reporting of adaptation investments to ensure that finance is used efficiently and targeted where it is most needed (UNEP, 2016; CIF, 2016; Oliver, Clark, and Meattle, 2018).

REGIONAL SNAPSHOTS OF CURRENT INVESTMENT GAPS IN CLIMATE ADAPTATION

According to recent research by the Climate Investment Funds, Latin America and the Caribbean and South Asia have the largest absolute adaptation finance gaps, of US$14.7–18.1 billion and US$14.9–16.5 billion per year, respectively (Figure 7). In sub-Saharan Africa, the gap is estimated to be US$12.4–13.1 billion, and in East Asia and the Pacific, US$6.5–11.9 billion. However, when accounting for costs and spending estimates relative to GDP, the adaptation gap is greatest in sub-Saharan Africa, followed by South Asia, as shown in Figure 8. Adaptation costs in Latin America and the Caribbean mostly relate to water supply, flood protection, and agriculture, and the same is true in sub-Saharan Africa. In South Asia, adaptation costs are driven by infrastructure and agriculture (Hallegatte et al., 2020).

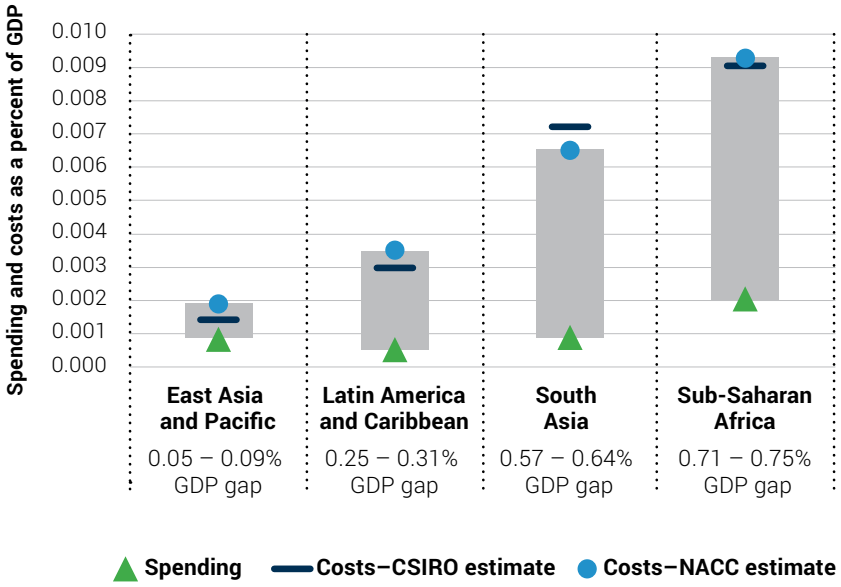
FIGURE 7. Latin America, the Caribbean and South Asia Face the Biggest Absolute Shortfall in Adaptation Finance (USD)



Notes: Spending means the amount of international public adaptation finance in 2014 directed to both public and private sectors, as described in Buchner et al (2015). Costs estimates refer to the average annual cost of adaptation for each year from 2010-2050 for seven sectors and 144 low income and middle income countries described in World Bank (2010). Estimates cover varying climate scenarios: dry global climate projections (costs estimate – CSIRO) and wet global climate projections (costs estimate – NACC).
Source: Vivid Economics

Source: Reproduced with permission from CIF (2016)

FIGURE 8. Adaptation Gap as a Share of GDP



Notes: Spending means the amount of international public adaptation finance in 2014 directed to both public and private sectors, as described in Buchner et al (2015). Costs estimates refer to the average annual cost of adaptation for each year from 2010-2050 for seven sectors and 144 low income and middle income countries described in World Bank (2010). Estimates cover varying climate scenarios: dry global climate projections (costs estimate – CSIRO) and wet global climate projections (costs estimate – NACC).
Source: Vivid Economics

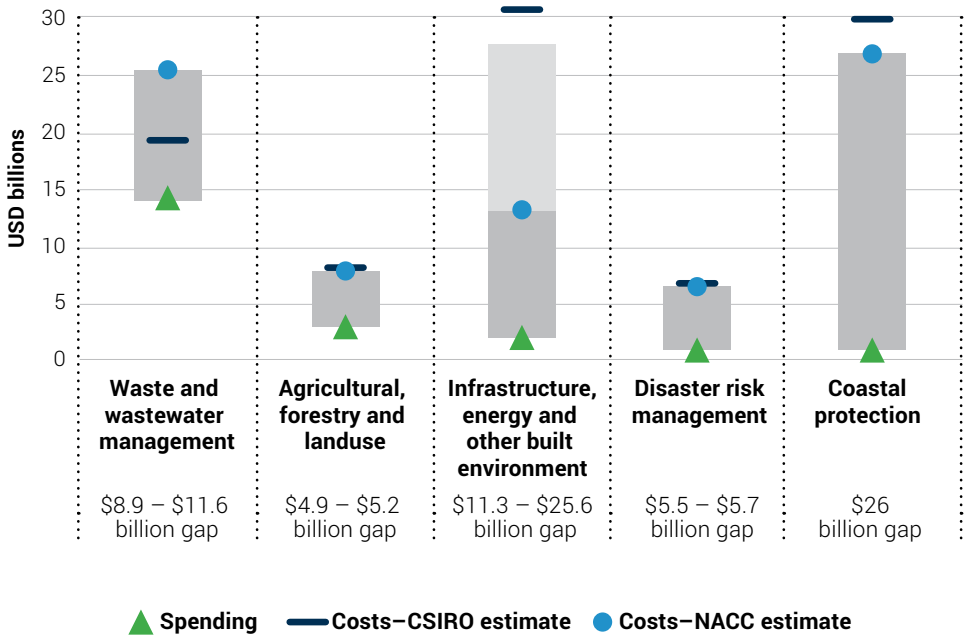
Source: Reproduced with permission from CIF (2016)

SECTORIAL SNAPSHOTS OF CURRENT INVESTMENT GAPS IN CLIMATE ADAPTATION

In terms of sectorial investment, coastal protection has the greatest adaptation finance gap, with an annual shortfall of around US$26 billion until 2050 (CIF, 2016). This is followed by the infrastructure, energy, and other built environment sector, where the estimated annual shortfall is US$11.3–25.6 billion. This large range reflects significant uncertainty in the costs associated with making urban and transport infrastructure more climate-resilient, the main focus of adaptation in this sector. In water and wastewater management, meanwhile, the annual adaptation finance shortfall is US$8.9–11.6 billion.

The list of investment needs varies per sector. In general, costs in coastal areas relate to the risks of sea level rise and storm surges on flooding and erosion. Activities may include building sea walls or relocating low-lying settlements, among others. Water management costs relate to risks of more frequent and/or intense floods, and changes to the water supply-demand balance, including potential water deficits. Adaptation activities include increased water storage and watershed management planning, exploring biodiversity solutions and energy efficiency efforts, for instance. More recent assessments also focus on "low-regret" adaptation options and non-technical options as complements to hard engineering, with early-warning systems and, increasingly, ecosystem-based approaches (UNEP, 2016). Lastly, activities in the agriculture sector mostly focus on climate-smart agriculture (sustainable soil and water management practices).

FIGURE 9. Adaptation Finance Shortfalls by Sector, 2014 (US$)



Notes: Spending means the amount of international public adaptation finance in 2014 directed to both public and private sectors, as described in Buchner et al (2015). Costs estimates refer to the average annual cost of adaptation for each year from 2010-2050 for seven sectors and 144 low income and middle income countries described in World Bank (2010). Estimates cover varying climate scenarios: dry global climate projections (costs estimate – CSIRO) and wet global climate projections (costs estimate – NACC).
Source: Vivid Economics

Source: Reproduced with permission from CIF (2016)

WHAT ROLE DOES THE PRIVATE SECTOR PLAY IN ADAPTATION?

The private sector plays a critical role in advancing climate change adaptation and resilience-building. Banks, pension funds, insurance companies, corporations, impact investors, and other private actors may contribute by: (i) providing finance for adaptation and resilience-building projects; (ii) providing goods and services that facilitate adaptation, including technology and technical innovation, expert consulting to help identify climate risks and build resilience, and services such as early warning systems; and (iii) adapting their own operations and assets to be climate-resilient, ensuring business continuity, sustainability, and profitability (Cochu et al., 2019). This report predominantly focuses on the first private sector role, the provision of capital; however, it should be noted that there are numerous other entry points for private actors in building the resilience of economies, communities, and the natural environment. They are at the forefront of innovation in both mitigation and adaptation.

Finance is a narrow but crucial slice of private sector engagement in adaptation. The analysis presented in this report defines finance as providing upfront private capital in an investment, whether the private entity directly funds the investment, or raises finance for it. That excludes other types of funding, such as grants or public capital (e.g. user fees, public balance sheets, development aid, or philanthropic funding), and as well as activities which may be complementary, but are considered technical assistance, capacity building, or otherwise advisory services, as these are typically not "financed" in the same way as investments.

The private sector and its investments are very diverse, with different perspectives and motivations. The investment return horizons of private investors vis-à-vis investment in adaptation and resilience could be well different. Real sector companies, asset owners and managers, utilities, financial investors of all types, governments, households, and other partners all have roles to play in funding and financing adaptation projects. Figure 10 outlines the major types of private sector investors/financiers who might engage in adaptation projects, along with where they fit in the returns spectrum.

FIGURE 10. Types of Private Sector Investors in Adaptation and Return Expectations

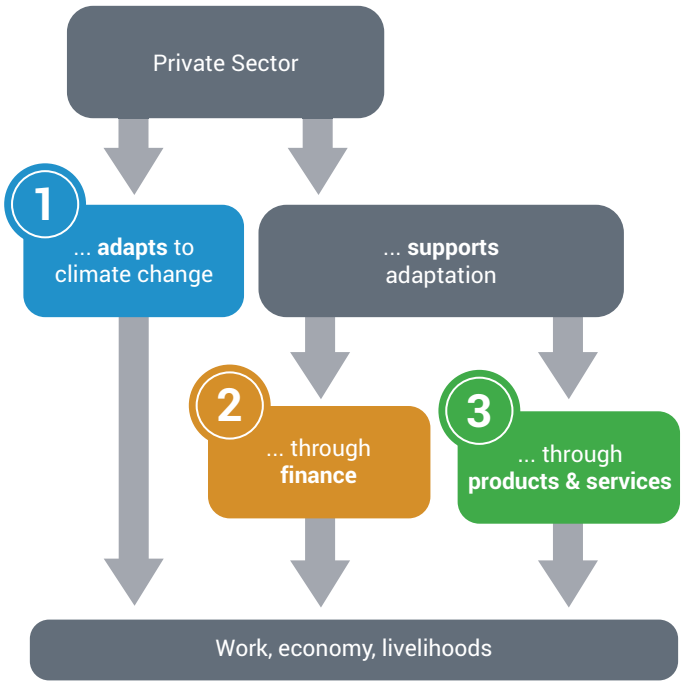
Entity Type		Returns Spectrum
Real sector (corporations, private companies of all sizes)		**Market-rate returns**
Commercial banks		
Institutional investors (e.g. pension funds, insurance companies, sovereign wealth funds, other asset managers)		
Bilateral, multilateral, national development banks (private sector arms)		**Quasi- or blended returns**
Impact Investors	**Impact investors** (seeking impacts & return)	
	Impact investors (not seeking market returns)	**Below market returns by design**
Family offices/Philanthropies/ NGOs		
Bilateral, multilateral, national development banks (public sector arms)		
Governments		

WHY SHOULD THE PRIVATE SECTOR INVEST IN ADAPTATION AND RESILIENCE?

The motivations of private sector investment in adaptation fall into three broad categories: 1) investing in their own supply chain resilience, 2) providing climate adaptation goods and services, and 3) investing in the adaptation of others. Figure 11 below depicts the main motivations for private sector investment in adaptation (Adelphi, 2019).

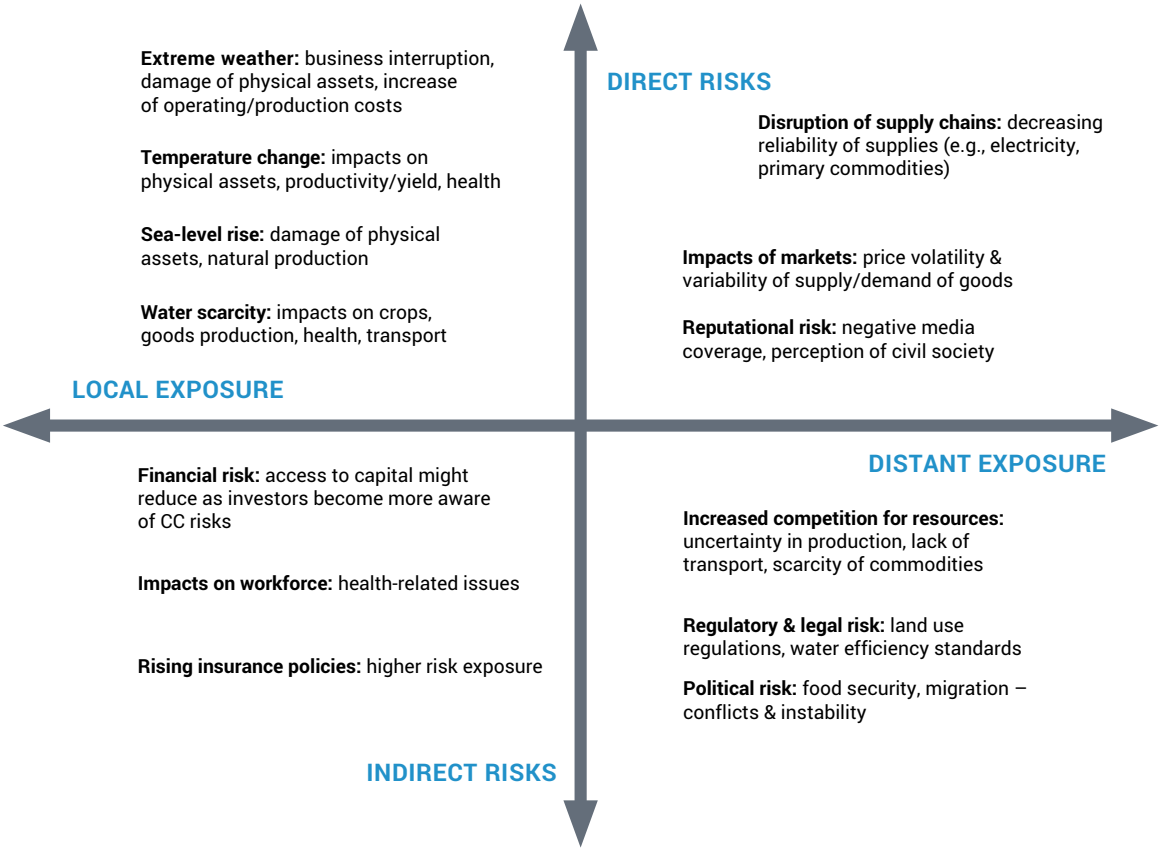
FIGURE 11A. What Motivates Private Sector Investment in Adaptation (Adelphi, 2019)

Three key functions of the private sector in adaptation (adapted from Byiers and Rosengren 202)



Furthermore, climate risks disrupt societal business continuity, with a heavier burden on low- and middle-income countries. From a private sector perspective, current evidence points to several key reasons why it makes financial sense to see investing in adaptation not only as an imperative, but as an opportunity. Investing in climate resilience measures now will help firms avoid rising costs due to climate change (Stenek et al., 2013). Moreover, investments that do not incorporate adaptation and resilience considerations can carry significant risks and result in investment failure, premature physical destruction and degradation, and significant negative impact on financial returns—not to mention the potential loss of critical business insurance coverage. This is becoming increasingly clear to investors. The United Nations Environment Programme (UNEP) has analyzed the range of risks for the private sector, categorizing direct and indirect climate risks to businesses, as shown in Figure 11b (Druce et al., 2016).

FIGURE 11B. Direct and Indirect Climate Risks to Businesses



Source: Authors, adapted from Pauw (2014)

Source: Reproduced with permission from Druce et al. (2016)

Beyond avoided risks, adaptation also provides investment opportunities for the private sector. Some of the key business drivers for entering the climate resilience marketplace include the development of new products and services that fill market gaps; new expanded markets for existing products and services; cost savings across the whole value chain; collaborations through supply chains; and reputation and brand value, among others, as summarized in Table 1.

TABLE 1. Opportunities and Benefits of Private Sector Investment in Adaptation

Opportunity Type	Benefits
Development and distribution of new products and services	• New revenue streams • Gain competitive advantage • Diversify risk portfolio
New, expanded markets for products and services	• New revenue streams • Increased market share • Long-term viability or success of business
Cost savings	• Reduced raw material and operational costs • Protects profitability when margins are tight • Improved insurance purchasing and lower residual losses
Collaboration through supply chain	• Competitive advantage gained through a more secure and resilient supply chain • Security of supply protects revenue streams
Reputation and brand value	• Market leadership • Increased confidence among investors, consumers, and other stakeholders

Source: Adapted and reproduced with permission from PwC (2013)

Green finance trends can help to bolster adaptation finance. Governments are taking steps to green their financial systems. The financial regulatory environment is fast evolving towards voluntary or mandatory disclosure of climate related risks—led by the European Union but spreading globally. Several initiatives are already helping to create a climate finance market. For example, the UN Task Force on Climate-Related Financial Disclosures (TCFD) works to develop voluntary, consistent climate-related financial risk disclosures for use by companies, banks, and investors to inform stakeholders. The Green Bond Principles and Social Bond Principles, as well as the Sustainability Bond Guidelines, have become the leading framework globally for issuance of green, social and sustainability bonds. The Sustainable Banking Network, facilitated by the International Finance Corporation (IFC), brings together financial sector regulatory agencies and banking associations from emerging markets to improve their performance on environmental, social, and governance criteria and their climate risk management, and to increase capital flows for climate action. Lastly, central banks and supervisors, particularly the members of the Network for Greening the Financial System (NGFS), are playing a critical role in driving consideration of climate-related risks. As a result, financial institutions across the board are building expertise in managing climate risks by adopting forward-looking methodologies and tools. The use of labeled financial instruments for climate-related projects and activities, including green bonds and loans and sustainability-linked bonds and loans, is growing.

Against this background, investment opportunities in adaptation and resilience-building span multiple sectors, with a wide range of cost and revenue profiles that can be attractive for private investors. The amount of capital required up front can vary significantly, as can the potential returns and time frames. The table below provides illustrative examples of adaptation actions, organized by sector, with a focus on near- and medium-term opportunities of potential interest to private investors. There are multiple entry points for private players to invest at different points along the value chain. Broadly speaking, the private sector will design or produce climate resilience solutions in response to market demand or a government mandate for them; invest in climate resilience measures where there is a financial incentive to do so, or the risk of not doing so is deemed unacceptable; and/or participate in the delivery of both projects that are resilient and projects that build resilience.

TABLE 2. Examples of Climate Adaptation and Resilience Actions by Sector[6]

Sector	Climate Adaptation Challenges	Examples of Incremental Adaptation and Resilience Investments Needed	Examples of Business Opportunities
Agriculture	Rising temperatures, shifts in seasonal patterns, droughts, and unpredictable precipitation can all affect crop yields and may make some crops and varieties inviable, while extreme weather events, floods and other disasters can destroy crops. Climate change may also increase the incidence of pests and diseases.	• Switch to crop varieties that are resistant to heat, drought and/or floods, diversify crops, install irrigation, adopt water management practices, adopt climate-smart agriculture and regenerative farming techniques and practices, purchase crop insurance	• Create equity funds to invest in agri-producers to strengthen their climate-resilient practices • Develop lending products tailored to smallholder and larger-scale agri-producers to invest in climate-resilient farming practices • Provide index-based crop insurance • Provide technological solutions to farmers
Education	Increasing intensity and frequency of floods, droughts, tropical cyclones, and other storms have the potential to disrupt education as students lose their ability to access school facilities and communities take time to recover from such events (e.g. facilities may be significantly damaged and need to be rebuilt entirely)	• Incorporate climate-resilient design measures in the construction of school facilities (e.g. use of weather-resistant material or solar panels to create efficiency and independence from power shortages)	• Sell services for data recovery and backup systems to prevent data loss in the event of climate-related disasters • Design and build climate resilience education facilities • Provide distance education technologies to minimize disruptions from extreme weather
Energy	Energy infrastructure is vulnerable to climate change impacts, especially extreme events. Disruptions in the energy supply can harm economic development, and acute events can mean the loss of essential services for the broader public.	• Construct weather-proof lines/ underground cables to protect against climate risks; elevate substations or add drainage to reduce risk of flooding and use higher design standards for transformers to withstand climate-related hazards	• Design and provide energy storage equipment and systems to increase capacity to store energy from renewable sources and thereby ensure a consistent supply
Health	Climate change is increasing and shifting the incidence of vector-borne diseases, including malaria and dengue fever, and is leading to higher incidence of heat-related illnesses and water-borne illnesses alike. It is also leading to increased malnutrition and undernutrition, as food security is further threatened. Mental health may also be affected by extreme events, large societal challenges, and threats to livelihoods.	• Incorporate climate-resilient design measures in construction and/or rehabilitation of health facilities and invest in/improve the use of datasets on changes in disease incidences and vectors under climate change scenarios, meteorological/environmental conditions, etc.	• Develop early warning and monitoring systems to predict and track the spread of diseases linked to climate change

6 The examples presented here cover relatively short-term (2020–2030) time horizons that fall within the timeline of current-day project investments. Looking at the medium (2030–2050) to longer term (2050–2100), adaptation and resilience-building are likely to involve more transformational actions, such as relocating the populations of small island states and other low-lying areas, including coastal cities; reskilling entire industries; and accommodating domestic and international climate migrants.

Sector	Climate Adaptation Challenges	Examples of Incremental Adaptation and Resilience Investments Needed	Examples of Business Opportunities
Infrastructure	Infrastructure designed for historical conditions can no longer withstand the stress and intensity of current climate conditions. Creating climate-resilient infrastructure is one of the most critical and pressing adaptation challenges and requires shifting engineering standards and incentives to enable firms to design in a resilient manner and remain competitive.	• Incorporate climate projections in design standards and use climate-resilient materials for roads, bridges, wind turbines, cell phone towers and transmission and distribution systems, protect and restore ecosystems that provide critical services, including water purification, erosion prevention, and coastal protection	• Design and provide climate-resilient practices and materials for new buildings, and retrofitting of old ones
Transport	Transportation systems have largely been designed based on historical climate conditions that no longer match the current climate. Extreme events are hampering, damaging or destroying critical infrastructure. System-based assessments and planning are needed to develop reliable, low-carbon, and resilient ways to transport people and goods.	• Adapt the design and location of roads, railways, bridges and other key infrastructure to reduce exposure to climate-related hazards, avoiding landslide-prone slopes, e.g., elevating infrastructure as needed, using materials and structures that can better withstand extreme events, and improving drainage	• Develop designs, materials and technologies to meet the transportation sector's resilience-building needs • Finance climate resilient transport systems (buses, railways, roads, etc.) and incorporate climate resilient standards within procurement and PPP requirements.
Urban resilience	As cities become more populous and urbanization continues to accelerate, the impacts of climate change and natural disasters increase. Those living in informal settlements are at much higher risk, with little in the way of protective infrastructure or climate-resilient housing; often settlements are also in flood zones, on steep slopes, or in other hazard-prone areas.	• Improve drainage and wastewater systems (including through the application of nature-based solutions); establish early warning and emergency response systems for climate-related disasters; integrate climate resilience in land use planning	• Develop green bonds for city resilience and continued municipal service delivery during climate-related disruptions (floods, storms, droughts, etc.) • Public-private partnerships to make infrastructure investments more resilient
Water	The water sector faces significant impacts as a result of climate change, including increasing frequency and intensity of floods and droughts, increased water scarcity, coastal erosion, sea level rise, and worsening water quality. Adaptation in the water sector is particularly challenging because of the transboundary nature of water resources, which necessitates transboundary coordination and planning.	• Build or upgrade dams, dikes, levees, and irrigation infrastructure to enhance resilience to climate impacts; undertake climate-smart design/ rehabilitation of sewerage and wastewater treatment and incorporate flood-risk considerations while constructing water supply infrastructure; protect and restore ecosystems that provide water purification services; improve long-term planning of water resources based on forecast availability.	• Provide climate-smart, efficient irrigation systems • Provide early warning systems for water shortages and floods due to increased extreme weather and precipitation variability • Develop and invest in desalination facilities to cope with decreases in precipitation for domestic and agricultural use

Sector	Climate Adaptation Challenges	Examples of Incremental Adaptation and Resilience Investments Needed	Examples of Business Opportunities
Cross-Sector Interventions	Of paramount importance to successful adaptation are interventions that cut across sectors to provide key synergies for successful adaptation action. These include nexus approaches as well as transboundary projects.	• Regional coastal resilience investments • Food-energy-water nexus investments and landscape management and resilience projects (e.g. watershed, river basin, ecosystem level interventions) • Nature-based solutions • Establish cross-ministerial coordination committees for climate and disaster risk management that link early warnings with early action	• Equity funds to invest in coastline tourist developments and fight erosion • Develop remote sensing, drone technologies and software for producing and using climate intelligence to plan and invest for climate resilience.

STIMULATING PRIVATE SECTOR INTEREST IN ADAPTATION

Private sector engagement in adaptation is growing, but more needs to be done to scale up direct financing of adaptation. Already, private entities are playing more significant roles in adaptation, as they make many decisions and investments that are critical to climate action (for instance, the location and design of new infrastructure) and often develop and deliver many adaptation services, such as water management infrastructure and drought-resistant technologies (Miller, 2014). Private financiers are increasingly aware of the physical risks and opportunities arising from a changing climate, and there is a growing focus on measures they can implement to maintain profitability (Acharya et al., 2019).

Private firms, central banks, and financial sector stakeholders have also progressively started to integrate climate risks into operational protocols, strategic plans, and risk management frameworks (IAIS and SIF, 2018). Promising examples from central banks in Canada and the Netherlands, for instance, show progress in catalyzing private investment in adaptation. With profits, shareholders, regulators, and market forces as the key drivers, some companies are beginning to account for climate change as they would any other risk to their bottom line and business continuity, acknowledging that supply chain disruptions and increased operational costs are becoming likelier as climate change impacts continue to manifest (Goldstein, 2019).

EDC Philippines, a renewable energy firm, is an example of how investing in climate resilience measures has enabled the company to ensure continued service to its customers while protecting future revenues, minimizing costs and reducing losses.

Case Study #1: EDC Philippines: Investing in climate adaptation measures with the support of the first-peso dominated green bond issued by IFC

The Energy Development Corporation (EDC) is the largest energy company in the Philippines. The country is highly vulnerable to climate change, as it sits in the world's most cyclone-prone region, with about 20 cyclones each year, and is highly susceptible to floods, droughts, and landslides.

When Tropical Storm Urduja brought one meter of rain to the region in just three days in December 2017, it caused significant damage to the generation facilities of EDC Philippines, reducing capacity by 50 percent at the Malitbog Geothermal Power Plant (EDC, 2020; MIRA, 2020a).

EDC Philippines, with the support of a Macquarie Infrastructure and Real Assets-led consortium as a major shareholder, realized that existing infrastructure was not resilient enough to evolving climate-related disasters, including record typhoon wind speeds and increasing amounts of rainfall per event. The company took the following steps:

- **Embed climate risk into decision-making:** EDC's management team updated its modeling and risk analysis to include intensifying climate-related natural events and concluded that EDC would require additional resilience measures and infrastructure investments (EDC, 2020).
- **Invest in critical points of infrastructure:** EDC spent 313.8 million PHP (about US$6.2 million) in 2018 on climate adaptation measures, seeking to improve the company's resilience, minimize risk exposure, and ensure a continuous energy supply to consumers and the local community (MIRA, 2020). EDC made targeted investments in the most critical points of the infrastructure that would result in the greatest reduction of value at risk, based on cutting-edge, high-resolution LIDAR mapping and deluge modeling.

The 2017 disaster thus provided the impetus to EDC Philippines management to invest in resilience-building, which enabled the company to ensure continued service to its customers while protecting future revenues, minimizing costs, and reducing losses.

Enabling environment and financial innovation

Along with direct investments from EDC Philippines and its shareholders, the IFC also supported the issuance of the first internationally rated triple-A Philippine peso-denominated green bond issued by a multilateral development institution to support adaptation and resilience-related measures at EDC Philippines' plant. It had a value of about US$90 million with a 15-year maturity. IFC issued the bond in direct response to the 2017 events and intends for the issuance to help spur domestic capital markets to play a larger role in mobilizing savings for climate finance (IFC, 2018).

EDC Philippines had a supportive enabling environment and did not seem to face any regulatory barriers. It worked with the IFC and a host of local actors to ensure adequate resilience measures were undertaken. In addition, EDC Philippines collaborated with municipal agencies and the local community to better understand climate risk factors and best practices to ensure sustainable adaptive measures.

EDC's Disaster Prevention and Recovery Unit, a team made up of top rescue, medic first aid, and water rescue personnel, conducted training around all of EDC's host communities in order to boost community resiliency. The unit also created a first-ever network of first responders across the country to exchange best practices and experiences, to the benefit of the host communities. Coordination with municipal and local stakeholders reinforced the long-term impact of resilience measures, which would be beneficial to both the company and nearby communities (EDC, 2020).

LEARNING FROM THE WORLD BANK GROUP'S MAXIMIZING-FINANCE-FOR-DEVELOPMENT APPROACH

Public incentives are key to enable private investment in climate resilience at scale. The public sector overall, and public financial institutions and regulatory bodies specifically, are well placed to facilitate updated and reliable localized information on climate risks, facilitate pricing climate risk, and reward adaptation action. They can also improve regulatory frameworks to incentivize the private sector to invest and to leverage the support from multilateral development banks, donors, and the development community, and thus enhance the enabling environment for private investment (CIF 2016).

Scaling up private sector solutions is critical to reducing poverty, increasing shared prosperity, and achieving the Sustainable Development Goals (SDGs). The 2015 Development Committee paper *From Billions to Trillions: Transforming Development Finance* highlighted the need to shift focus from billions of dollars in official development assistance (ODA) to trillions of dollars in investments of all kinds to achieve the SDGs. The paper argued to use concessional funds strategically to crowd in other sources of finance, noting that while the largest supply of development resources remains domestic public spending, the greatest potential for expansion lies with private finance and the engagement of private business in the development process. In July 2017, the G20 finance ministers approved a set of principles that give the World Bank Group and other multilateral development banks a framework for increasing private investment to support countries' development objectives.

To harness the power of the private sector and enhance market creation, the Bank introduced the Maximizing Finance for Development (MFD) agenda and the Cascade approach. These frameworks call on World Bank Group institutions to help countries pursue private sector solutions where sustainable, while preserving scarce public resources for where they are needed the most. MFD complements the IFC's Creating Markets strategy[7] by strengthening regulatory or policy frameworks, promoting competition, and achieving demonstration effects, as well as launching a cross-WBG program to develop local capital markets. Applying MFD will also provide opportunities to deploy the IFC-MIGA Private Sector Window[8] created under the latest replenishment of the International Development Association (IDA18) to help mobilize private investment and contribute to creating markets in the most challenging economic environments.

Implementation of MFD through the Cascade approach continues to gain momentum through investment-enabling World Bank upstream policy operations and IFC market creation projects, aided by a more strategic and systematic approach (including IFC Country Strategies and Systematic Private Sector Diagnostics), the deployment of innovative investment platforms and products, and new processes and tools.

7 https://www.ifc.org/wps/wcm/connect/NEWS_EXT_CONTENT/IFC_External_Corporate_Site/News+and+Events/News/CM-Stories
8 See https://ida.worldbank.org/financing/ida18-private-sector-window

TABLE 3. Maximizing Finance for Development, the Cascade and Creating Markets

Maximizing Finance for Development	Objective	Maximize sources of finance available to meet development challenges without pushing the public sector into unsustainable levels of debt and contingent liabilities
Cascade	Approach	Leverage private sector solutions first in order to optimize the use of scarce public resources by following the "Cascade algorithm": • Is there a private sector solution that is sustainable and limits public debt and contingent liabilities? → If yes, then promote such solutions. • If no, ask whether it is because of policy or regulatory gaps, or risks; → in which case apply WBG support for policy and regulatory reform or risk mitigation instrument. • If you conclude the project requires public funding, pursue that option.
Creating Markets	Enablers	Upstream IFC engagement, in collaboration with the Bank and other partners, as a key mechanism to support the development of new markets or systemic improvements in how markets function, paving the way for private sector solutions.

THE NEED FOR A STRUCTURED AND COORDINATED APPROACH

A coordinated approach is needed to help accelerate and mobilize optimal levels of investment to boost the resilience of the world's most climate-vulnerable communities and economies. As experience from the MFD approach demonstrates, coordination is central to success. Coordination is particularly needed in developing, financing, and executing priority adaptation investments, driven by the goals of a country and a national investment plan to build their climate resilience. The public sector—government agencies, policy makers, bilateral and multilateral DFIs, public sector funds and development organizations—plays a critical role in setting the planning and intervention framework needed to enable the private sector to invest in adaptation and resilience. This framework would equip governments to conceptualize their approach to facilitating investment, recognizing the diverse resources, jurisdictions, and intervention points of each user, while still enabling replicability. The Blueprint for Action presented in this report is designed to fill that gap and thus help to achieve the policy mainstreaming necessary to mobilize private investment at scale to meet the world's growing adaptation needs. Before presenting the Blueprint, however, the next section reviews the main barriers to private investment that have arisen to date.

© Rumi Consultancy/The World Bank

3

BARRIERS TO PRIVATE INVESTMENT IN ADAPTATION IN DEVELOPING COUNTRIES

While there are clear economic and financial reasons to invest in adaptation and resilience-building, persistent barriers continue to constrain the ability of most developing countries to attract the volume of private funds required to advance their adaptation agendas.

Past research has identified several such barriers (GCA, 2019; UNEP FI, 2018), which can be clustered into three categories: 1) lack of country-level climate risk and vulnerability data and information services that can be used to guide investment decision-making; 2) limited clarity on the government's capital investment gaps to achieve adaptation goals, and/or on where private investment is needed; and 3) low perceived or actual returns on investment, and inability for the private sector to capture the full environmental and social benefits generated by adaptation investments. There are other types of barriers that may need to be addressed as well, such as restrictive regulatory frameworks, but our focus is on those that are more specific to investments in adaptation and resilience.

Governments can play a key role in addressing all three types of barriers, including by:

1. *Making localized climate risk and vulnerability data available* and embedding climate risks in capital investment planning undertaken by governments and their development partners;

2. *Setting up effective institutional arrangements for multi-sector adaptation planning*—a better articulation of adaptation and resilience goals at the national level, establishing the policies/regulations/standards, and articulating clear plans, including who will do what, where, when, and how—to enable private sector participation; and

3. *Strengthening financial incentives (or reducing risks/costs) for private participation* through public finance instruments such as blended finance, credit enhancement, and other targeted risk reduction or revenue-boosting measures.

The reality, however, is that governments, mostly in emerging markets, often struggle to create a suitable legal, policy, and regulatory enabling environment. Countries may also lack the necessary level of awareness, capacity, and skills (both technical and in terms of management), and they tend to have less developed domestic financial markets.

Governments can address market failures and create an enabling environment for greater private sector investment in adaptation. Their action is crucial to ensuring that both economic and financial sector policies are consistent with adaptation and resilience goals and do not disincentivize adaptive and resilient behaviors and investments. Governments must also help ensure that private adaptation finance develops into a more mature, efficient, and mainstream market that can support the transition to a resilient, low-carbon economy. In addition to these market and policy failures, information asymmetries are also a significant barrier. Without the appropriate risk data, neither private nor public actors can assess the extent of financing need for adaptation investments. Governments have a role to play in building the appropriate climate information services infrastructure to identify physical climate risks and adaptation benefits in order to better mobilize private investment in adaptation activities.

In the sections that follow, we delve deeper into the three types of barriers and ways to overcome them.

LOCALIZED CLIMATE RISK AND VULNERABILITY DATA AND INFORMATION SERVICES

Adaptation projects require high levels of tailoring based on the risks associated with a specific geography, sector, and the exposure of assets or a population. What may be a highly effective intervention in one place may create new vulnerabilities and **maladaptation**[9] in another. Investment sizes can vary significantly depending on whether they are in the agriculture and nature-based solutions, or in traditional infrastructure, from slope stabilization to river or sea defenses. There are also significant uncertainties about future climate change impacts, socioeconomic factors, population and migration trends, as well as policy and behavioral shifts. Adaptation planning often requires flexible, low- or no-regret investments, and focus on broader development goals, so projects yield benefits whether or not the expected climate hazard manifests. A lack of understanding of how to handle these uncertainties, limited decision-making tools, and difficulties in ascertaining return on investment can all make it challenging for private actors to finance adaptation projects. Quality data and information are critical to addressing those issues.

Ideally, robust information systems should be available, detailing climate risks and opportunities and providing tailored services on the costs and benefits of adaptation actions. There need to be channels to facilitate access to information, as well as decision support tools to understand and apply the data. Those structures in place can raise awareness, support knowledge-sharing about emerging and best practices across sectors and geographies, address misperceptions and uncertainties about climate risks, and align the priorities of investors with adaptation planning needs. The lack of comprehensive risk data and tools hinders policy makers' and private investors' management of climate risks and limits their ability to make informed investment decisions. "Adaptation strategies have 'significant blind spots,' not only in the assessments of the potential for climate-related impacts but also in the proposed approaches to managing such risks" (Miller and Swann, 2019: 37). Investors face the general absence of quantitative and decision-relevant tools to incorporate climate risk into investment selection and portfolio management.

Investors need climate information to be organized and presented in an understandable way. This enables them to identify and quantify climate risks and assess the opportunities to integrate into their investment decisions. Climate risk management practices can also be enhanced if private financiers can

9 Broadly defined, maladaptation occurs when climate change adaptation actions backfire and have the opposite of the intended effect – increasing vulnerability rather than decreasing it. In a 2011 paper, Eriksen et al. identify three ways in which adaptation projects have affected vulnerability in often harmful and unintended ways: 1) When adaptation reinforces existing vulnerability – adaptation interventions for instance can reinforce existing inequalities in the distribution of decision-making authority; 2) When adaptation redistributes vulnerability – aid projects can have negative impacts elsewhere and this is also true for adaptation projects; 3) Finally one way adaptation can go wrong is when projects create new sources of vulnerability. In focusing on short-term change, some adaptation efforts inadvertently introduce longer-term risks.

identify and select adaptation actions in specific places or sectors and learn about the costs and benefits of adaptation actions. Investors make decisions on short- and mid-term horizons, but climate change is typically viewed as a long-term challenge, even though its impacts are already causing significant damage and disruption to countries, communities, and businesses. The perception of many investors is it is a concern for future generations, and that is a significant factor in the failure of investors and project developers to fully consider and respond to climate risk (Miller and Swann, 2019: 13).

COORDINATED INSTITUTIONAL ARRANGEMENTS, POLICIES, AND PLANNING FOR ADAPTATION

Institutional arrangements are the foundation on which countries can build privately funded adaptation projects and initiatives. These are the policies and capacities that governments have to support their country's overall development objectives. That includes government agencies and the ways in which they coordinate and interact to develop robust development plans, as well the policies and regulations that support those plans, which ideally encompass public (both a country's own balance sheets, as well as development and climate finance) and private financing strategies. A lack of robust, needs-driven adaptation planning, through Nationally Determined Contributions (NDCs), National Adaptation Plans (NAPs), or other strategies, creates a significant barrier to private investment in adaptation. In the absence of concrete policies, budgets, and investment programs for adaptation, private financiers will not be interested in these types of investments (World Bank, 2019: 8). Without effective adaptation planning at the national level, adaptation investments can become haphazard and may not necessarily address the critical needs of the country. However, this barrier to investment is surmountable through updated, rigorous adaptation planning efforts.

BOX 1. National Adaptation Planning as Key Roadmap for Private Sector Investment

The National Adaptation Plan (NAP) process has been used to plan adaptation and set priorities in Least Developed Countries and other developing countries since 2010, when it was established under the United Nations Framework Convention on Climate Change (UNFCCC).

While some countries have successfully navigated the NAP process, many have yet to undertake or complete it. Others have completed the process, but without the rigor required to produce a meaningful, actionable plan for addressing adaptation needs. A scientifically and technically sound NAP, based on solid analytics, is essential for attracting and enabling private sector investment in adaptation.

A "gold standard" NAP must include the following elements (Woodruff & Regan, 2019; Government of Kenya, 2016):

i. Based on a technically sound national climate vulnerability assessment or other analytics, using the latest climate change science and projections;
ii. Clearly articulates current impacts and future vulnerabilities and outlines goals and potential adaptation strategies;
iii. Developed through a participatory process, with a broad range of key stakeholders across sectors, multiple agencies, and at all levels of government (local to national);
iv. Includes a robust system for monitoring implementation;
v. Systematically integrates climate change into planning and budgeting processes.

A well-developed NAP can serve as the key upstream entry point for engaging the private sector. Prioritized adaptation strategies and sectors lay the groundwork for producing a national adaptation investment plan and ensure that funding, both public and private, is directed towards those areas with the most adaptation impact.

A lack of institutional capacity for climate adaptation projects and investments is a critical barrier. Public entities in many developing countries have low financial management, fiduciary, and technical capacity for climate-related planning and project implementation. These issues are exacerbated by a lack of strong institutional arrangements and interagency coordination, which creates adverse conditions for private sector engagement in adaptation and related initiatives. Governments need to ensure that coordination between ministries, sector entities, and local government agencies are in place to ensure that investment plans with adaptation purposes are translated into feasible projects, programs, and initiatives that meet identified national and local adaptation goals.

Good policy frameworks are crucial for the creation and implementation of robust development plans and country financing strategies. Policies include formal legal frameworks, market-based, and regulatory instruments. They are critically important for attracting private sector investment, as private actors often take signals from policy makers and formal rules. Low policy effectiveness is a major hindrance to the participation of the private sector in adaptation and resilience. Standards, metrics, and targets that mutually reinforce conditions of transparency in adaptation investment environments are also critical. Their absence may inhibit the ability of private actors to successfully invest in resilience. Financial system governance bodies can use their regulatory and policy levers to mobilize capital toward climate-related investments. On one hand, they can orient regulation efforts to support social goals and public goods; on the other, they help to ensure market efficiency and integrity by enforcing the "rules of the game" (Miller and Swann, 2019: 13).

Climate change adaptation presents a classic problem of market failure.[10] While some private investments in adaptation make good business sense—for instance, making a company's supply chains more resilient, or selling products such as seed for drought-resistant crops at a profit—often adaptation involves public goods. For example, protecting coastal mangroves may be vitally important for communities exposed to frequent and severe storms and for which mangroves serve as a buffer, but such investments rarely produce revenue that can be captured by private firms, or the revenue is too low to justify the investment. A firm might find that protecting the mangroves would help preserve its own critical coastal assets and hence preserve business continuity. However, such benefits are seldom sufficient to drive the level of investment needed—and the broader societal and environmental benefits would not be captured by the firm. Even adaptation measures that offer market opportunities may require public sector interventions first; for example, if people are living in a dangerous flood zone, builders may be interested in developing new housing for them, but first the government would have to deem the flood zone to be unbuildable and indicate where there is room for private sector participation. There could be a public-private partnership, for instance, to build new housing, with subsidies where needed (e.g. potentially allocating land for new homes and/or possibly providing financial support for lower-income families to be able to afford new homes on safer and drier lands). The right policies and standards can help to properly internalize the positive externalities of investing in adaptation. Similarly, clear guidance from the government on the role of the private sector in strategic adaptation initiatives is critical.

To further complicate matters, **investors currently have limited analytical capacity to price climate risks and to integrate the "value" of adaptation outcomes and averted climate impacts into project assessments or return calculations.** Prospective investments are expected to cover the full costs of the project, including the cost of capital, and achieve a reasonable return, taking into account the risks associated with the project and available market-based pricing, which inform investment decisions. In

10 Market failures are conditions in which the distribution of goods and services are not optimally distributed in the marketplace. Climate change has induced risks that are not uniformly distributed (geographically, intertemporally), there is a disconnect between the beneficiaries of action and the parties that bear the cost—which has led to a scarcity of finance available to address critical adaptation investments.

the absence of reliable and widely accepted metrics to help investors understand how to monetize adaptation benefits, or else policies and regulation that require companies to meet resilience standards or adaptation goals, private investment in adaptation is likely to continue to be limited.

Many countries—developed and developing alike—have few or no existing regulations or formal standards and metrics in place to help ensure investments are meeting their adaptation needs. These metrics, standards, and definitions are critical for signaling to developers (and investors, whether public or private) the level of resilience required for specific projects, and across sectors. Regulations and standards reduce economic inefficiencies caused by poor policies and enforce regulation to promote, accelerate, and catalyze private sector investment faster than otherwise would result from regular market forces. Inadequate monitoring and compliance mechanisms for existing policies, standards, and metrics discourage the private sector from proactively investing in adaptation and related activities. In some cases, they may create a perception that such standards need not really be adhered to. Governments need to ensure that mechanisms are in place to ensure that developers comply with policies and regulations.

The lack of common metrics for defining and measuring outcomes from adaptation projects adds to the challenge. The quantifiable global benefit from mitigation actions—tons of emissions avoided, in CO2e—was central to the creation of carbon markets, but there is no easy parallel for adaptation. Climate resilience can take many different forms: a sturdier bridge able to withstand more frequent flooding, for instance, but also a modified crop that can cope with more weeks of drought, a school that can reopen more quickly after a storm washes out a community, or a village that, thanks to diversified livelihoods, does not go hungry after a climate-induced bad harvest. As a result, there is no universal set of metrics yet for adaptation benefits, though some metrics are currently being piloted by the African Development Bank[11] and the World Bank.

STRENGTHENING FINANCIAL INCENTIVES

While governments are beginning to grapple with the magnitude of their adaptation needs, there is often a lack of financial incentives to attract private actors to participate in adaptation projects. Government guarantees, tax benefits, and risk-sharing mechanisms are some of the financial incentives that can remediate a market failure and incentivize adaptation investments by the private sector. Disincentives to discourage investments in projects that are not resilient are another important tool.

Adaptation projects rarely have easily monetizable cash flows. As noted above, adaptation investments often support public goods whose true value is not reflected in economic transactions. And even where projects do generate a cash flow, the returns are often low—not enough to provide a competitive risk-return profile. “Blended finance”—mixing concessional and commercial returns—can help increase the attractiveness of investments for the private sector in the short term. In some markets, projects financed this way can also serve as demonstrations, paving the way for greater proportions of private capital to support specific business models down the road. Blended finance can also help reduce both real and perceived risks in an investment, which send positive signals to the market and help pave the way for private capital to come in later.

Adaptation projects can be complex to structure, particularly where public and private investment must come together to make a project viable. In some cases, creating an efficient blended structure and allocating risk and return to various investors is more complex for adaptation than for mitigation initiatives.

11 See Adaptation Benefits Mechanism https://www.afdb.org/en/topics-and-sectors/initiatives-partnerships/adaptation-benefit-mechanism-abm

In the case of adaptation activities, due to the risky and untested character of investments, concessional finance will be even more critical, requiring different approaches to "blending." In other instances, the high upfront costs associated with a project that does not have an immediately attractive return can further hamper private sector participation in upstream activities. Project development and/or structuring support may be needed to reduce costs that private investors have to bear, and attract their involvement in a venture.

Put together, this plethora of obstacles have stymied the ability of private investors to consider adaptation and resilience investment at large scale. Table 4 summarizes the key barriers reviewed in this chapter, and outlines preliminary approaches to overcome each of them.

TABLE 4. Barriers to Scaling Up Private Sector Financing for Adaptation

Barrier type	Sub-Category	Barrier	Description	Proposed Approaches to Address Barrier	Who is Best Placed to Address this Barrier?
Data and information	Decision-making and climate data and information	Insufficient availability and adoption of climate risk data and tools	Lack of comprehensive risk data and tools to make informed investment decisions	Investment in data, analytics and technical knowledge to foster the development of quantitative and decision-relevant climate tools for investment selection and portfolio management	• Development partners
	Climate change planning horizons	Mismatch of timescales between climate change adaptation planning and investor planning	Short-term time horizons of investors (linked to investment/loan timeline) as the basis for making investment decisions is often mismatched with long-term/uncertain occurrence of climate events	Climate information services tailored for private investor decision-makers, knowledge sharing of emerging and best practices from across sectors, regions, and geographies which can help address planning uncertainties	• Development partners • Ultimately, shareholders
Institutional arrangements	Needs-driven adaptation planning	Lack of robust adaptation planning through NDCs, NAPs or planning strategies	Weak integration of national commitments for adaptation in NDCs, NAPs or adaptation strategies to guarantee that the climate-related needs are addressed	Capacity building and technical assistance to national ministries and subnational governments to enable them to develop robust adaptation plans inclusive of data and interventions which prioritize the needs of the most vulnerable	• Line ministries, ministries of finance • Development partners

Barrier type	Sub-Category	Barrier	Description	Proposed Approaches to Address Barrier	Who is Best Placed to Address this Barrier?
Institutional arrangements *(continued)*	Institutional capacity	Lack of institutional capacity for climate adaptation projects	Lack of government coordination, fiduciary/ technical capacity, and financial management to encourage private sector participation	Capacity building to ensure the right technical and financial expertise is available (either through training, technical assistance, or both) to governments and policy makers that ensures policies and institutions incorporate the objectives of catalyzing private financing for a country's adaptation plans; Institutionalization of specialized units (i.e., PPP units) with experience in developing and executing project adaptation initiatives across different regions	–
	Locally driven adaptation planning	Low stakeholder engagement	Low engagement of diverse stakeholders in adaptation-related discussions at planning stages	Support for multi-stakeholder coordination, including with private sector (developers and finance) as part of a country/subnational planning process	–
	Policies and regulations	Absence of policies, regulations, standards, and metrics	Weak or inexistent legal/ regulatory frameworks and formal metrics/ standards for the private sector to act for adaptation needs	Capacity building to develop the regulations, standards, and metrics that underpin climate-resilient investment in the context of local/regional climate-related impacts expected	• Policy makers • Ministries • Regulatory bodies
	Policy effectiveness	Low policy effectiveness	Inadequate transparent monitoring and compliance mechanisms from government institutions	Capacity building and technical assistance to ensure existing policies are monitored and where necessary enforced	• Policy makers • Ministries
	Investment planning for adaptation	Lack of clear adaptation investment plans and/or guidance	Insufficient information on where private participation will be critical for investments to be successful (who, what, where, when, how)	Capital investment plans that indicate public investment priorities, and carve out private investment opportunities	• Policy makers • Ministries

Barrier type	Sub-Category	Barrier	Description	Proposed Approaches to Address Barrier	Who is Best Placed to Address this Barrier?
Financial incentives	Incentives and behaviors	Absence of financial incentives	Lack of financial incentives to encourage the private sector to participate in adaptation projects. Financial incentives include instruments/products and programs that help to catalyze ex-ante investment and/or transfer/manage climate risk	Capacity building and technical assistance with the finance ministry that helps to develop sound public financing incentives that allow to crowd-in private investment; coordination with multiple stakeholders, including FDI investors who might support climate-resilient infrastructure investment, as well as actors within the country's own financial markets	• Policy makers • Ministries • Regulatory bodies
		Perverse Incentives	The provision of certain financial incentives can lead to maladaptation or simply discourage development that is resilient to climate change. Financial disincentives can take the form of subsidies and tax breaks, such as subsidized flood insurance, which may reduce the perception of need for resilience building in a flood-prone area.	Ensure that national climate strategies enable the integration of climate considerations and adaptation across multiple agencies and in regulatory and public spending policies. Ensure proper risk and cost modelling that integrates climate change in pricing structures, procurement policies, insurance standards, building codes, etc.	• Policy makers • Regulatory bodies

4

CREATING AN ENABLING ENVIRONMENT FOR PRIVATE SECTOR INVESTMENT IN ADAPTATION: A PROPOSED BLUEPRINT FOR ACTION

Given the barriers outlined in Section 3 and the experiences gained by implementing the Maximizing Finance for Development (MFD) agenda and other approaches to unlock financing beyond ODA, three areas of work emerge as critical. We see them as the foundations for a coordinated approach to identify opportunities for, and strengthen private sector participation in, the adaptation and resilience agenda:

1. Making localized climate risk and vulnerability data available, and embedding climate risks in capital investment planning undertaken by governments and their development partners;

2. Setting up coordinated institutional arrangements for adaptation—a better definition of adaptation and resilience at the national level, establishing the policies/regulations/standards, and articulating clear plans including who will do what, where, when and how—to enable private sector participation; and

3. Strengthening financial incentives (or reducing risks and costs) for private participation, through blended finance, credit enhancement instruments, and other targeted risk reduction or revenue boosting measures. These measures could potentially be coupled with project preparation and structuring support to further reduce costs.

We propose in this section a defined Blueprint for Action, to serve as an engagement and coordination framework for public sector stakeholders to enable private sector participation in adaptation finance at scale. The Blueprint comprises a chain of five interventions and actions, from the highest levels of government down to the project level. The steps are meant to be implemented one by one, depending on country and sector-level needs, recognizing that not all countries and cases will need to implement all five, and that opportunities where market-ready projects are identified and taken to the private sector should of course still be seized. As such, the idea is to fill in the gaps after considering the interventions and planning done to date.

FIGURE 12A. Blueprint for Action—Five Steps to Enable Private Sector Engagement in Climate Adaptation

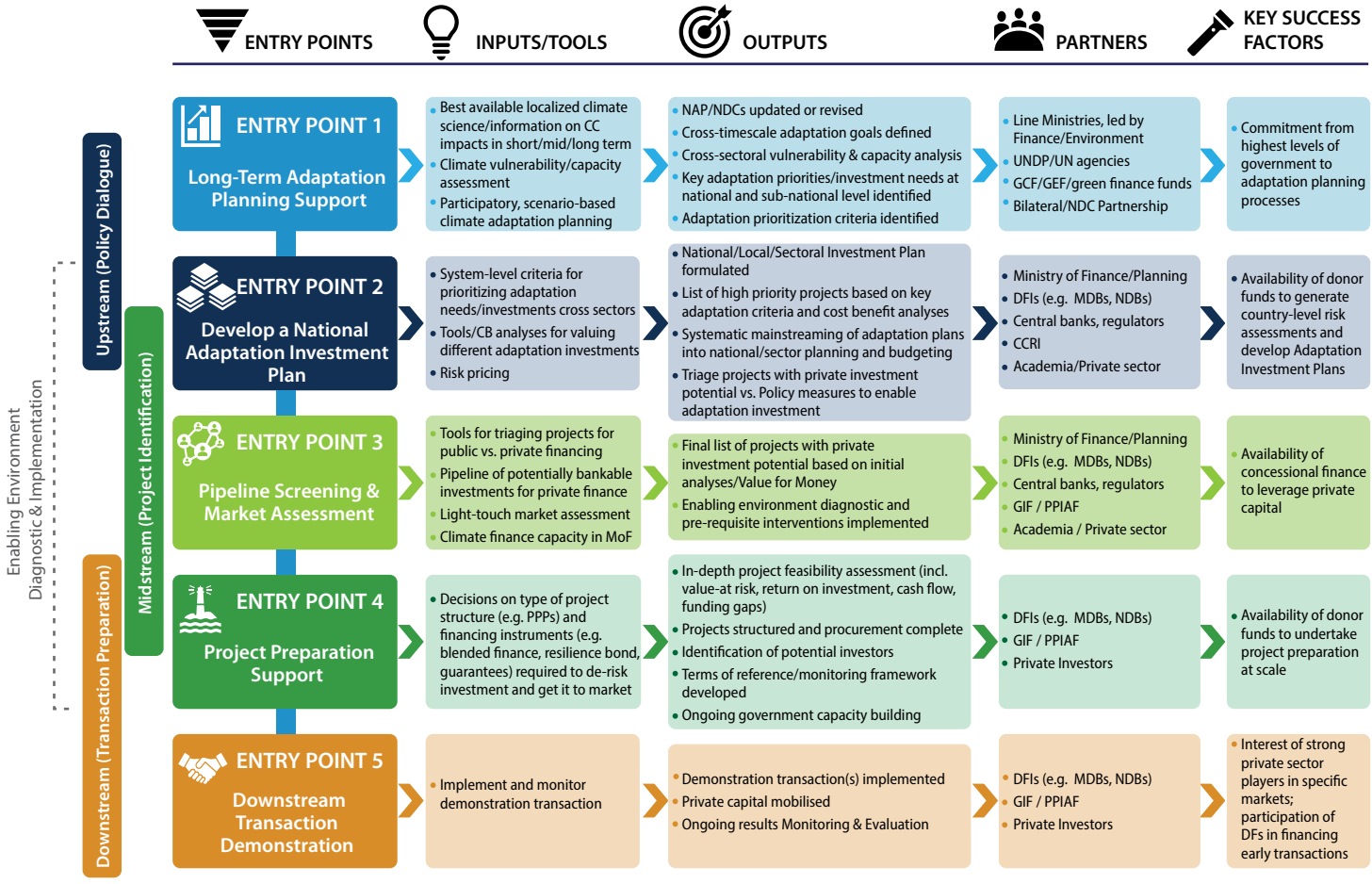
The Blueprint is based on the premise that successful adaptation investment springs from a solid national adaptation plan or strategy. That sends signals about demand to the private sector, and provides the foundation for a national adaptation *investment* plan. The appropriate policies, standards, plans, and incentives must also be in place to enable private sector investment in adaptation. The Blueprint recommends actions to support midstream pipeline screening and market assessment, project preparation, and project closure and continued monitoring. The Blueprint for Action is organized around three "intervention areas"—upstream, midstream, and downstream—with a cross-cutting, foundational component focused on fostering the appropriate enabling environment.

The Blueprint for Action recommends the following five steps:

1. Long-term adaptation planning support (public sector-led)
2. Develop a national adaptation investment plan (public sector-led)
3. Pipeline screening and market assessment (public sector, with private participation)
4. Project preparation support (public sector, with private engagement)
5. Downstream transaction demonstration (private sector-led)

The sixth, a cross-cutting foundational component focuses on creating an enabling environment. This is an iterative process, and cuts across all steps. The following sections delve deeper into each step.

FIGURES 12B. Blueprint for Action—Proposed Approach and Outputs



ENTRY POINT 1: LONG-TERM ADAPTATION PLANNING SUPPORT

The first step to building an enabling environment for private investors is to develop a long-term adaptation plan, taking a whole-of-government approach. National adaptation goals—and their associated tangible investments across each climate-vulnerable sector for adaptation, across scales of action from local to regional—should be articulated clearly within the context of a country's adaptation strategy. This can be done through the NAP or NDC planning processes. This first step is vital for signaling demand to a range of public and private stakeholders, including developers and financiers, through clear statement of the country's identified investment and policy support needs on its path to achieving climate resilience.

In this step, it is important to note the available support from the development community, both in the form of funding for the long-term adaptation planning process, and building capacity within governments beyond the plan itself. For example, the GEF's Least Developed Countries Fund (LDCF) and the Special Climate Change Fund (SCCF) provide support to NAP processes in response to COP guidance.[12] GEF's support for NAPs in the GEF-7 period focuses on the identification and implementation of NAP priorities, as well as additional analysis that may be needed to better align GEF proposals with priorities identified in NAPs. The total

12 UNFCCC Decision 12/CP.18, paragraph 1.

funding from the LDCF towards the LDCs' NAP processes amounts to US$75.2 million as of June 30, 2020.[13] The support for adaptation processes provided by the Green Climate Fund (GCF) is detailed in Case Study 3 in the next section.

Recommendations for the public sector in implementing Step 1:

1. Clearly identify adaptation and resilience needs and investments
    a. Enable access to the best available localized climate science/weather data, and promote tailored climate information services;
    b. Embed capacity and invest in the modernization of National Meteorological and Hydrological Services.
2. Mandate use of climate information services and climate risk screening in all investment design and decision-making (incentivizing long-term climate-resilient development planning and investment design).

Although individual projects can incorporate specific climate adaptation standards at the tender stage, private sector participation can be systematically scaled if A&R goals and related investment needs are clearly identified at the national and subnational levels. A&R needs and goals need to be clearly identified, looking at the near, medium, and long term. They must be based on sound science and climate analysis, and follow principles of good practice in participatory planning, keeping the most vulnerable communities at the center of the planning process. Indeed, adaptation priorities should be heavily sourced from the local level to ensure that the needs of those who are directly impacted are properly accounted for, and the process is not entirely top-down. Based on a sound climate vulnerability and risk assessment, line ministries should develop sectoral, local, and nationally aggregated National Adaptation Plans. These should clearly articulate planned actions to achieve climate resilience and address climate risks and vulnerabilities in the short, medium, and longer term, as part of the country's overall development plan.

A key input to government's process of longer-term adaptation planning is a strong anchoring in local needs and adaptation knowledge. The adverse impacts of climate change are manifested largely at the local level, where people's lives and livelihoods are affected (Mfitumukiza et al., 2020). Community-based adaptation brings together a wide range of stakeholders to address climate risks through collective planning; crafting of cost-effective and socially acceptable solutions that are closely aligned with development priorities; and strengthening of partnerships between communities and governments, businesses, and various other stakeholders at different levels. The aim of local action and community-based interventions is to ensure all voices are heard, including the most vulnerable, and build self-reliant, resilient and entrepreneurial communities that could use their knowledge of climate risk and leverage their partnerships to influence decision-making. While many policies and institutions acknowledge the need for local action and community-based adaptation, in practice, these initiatives are not generally carried out in a way that can achieve scale. They need to be supported and enabled by the right policies, institutions, finances and capacity. Local action and community-based adaptation are process-oriented and require time, especially to develop strong relationships across stakeholder groups and sectors.

Countries will need to invest in building capacity to issue localized and tailored climate information services. The public and private sectors must enable access to the best available localized climate/weather data, science, and information and promote the development of tailored climate information

13 This amount comprises projects that are explicitly dedicated, as the sole project objective or through dedicated components, to enhancing a country's NAP process.

services. Climate and weather data information services are critical for decision-making and planning, from the national level down to the project level, and national governments, including ministries of finance and national meteorological and hydrological services, must ensure that this data is readily available and accessible. The more widespread, tailored and readily useable climate and weather information services can be, the more likely their use will be by decision-makers and investors. For example, private investors with ready access to a localized climate projection/weather forecast for 2030-50 in a target project location, will be likelier to make use of this climate information in their science-informed decisions. Such tailored climate and weather information services, and the data and climate science research and forecasting infrastructure needed to underpin it, is critical upstream – in enabling a national government to develop scientifically-driven NAP goals or long-term climate action strategy. It is important to highlight that the challenge is not limited to data paucity, it is also an issue of salience, access and tailoring of available climate, weather and water information to decision-making needs, of both private and public decision makers who are making budget and investment decisions based on uncertain information about future climate.

National meteorological and hydrological services will need appropriate capacity, modern equipment and partnerships to tailor climate services to inform decision-making. As the primary producers, analysts, and disseminators of weather and climate data and information, NMHSs must be sufficiently modernized and equipped with technical capacity to co-produce and deliver tailored climate services for decision-makers. Weather and climate data and information services must be accurate, salient, actionable, and accessible in order to begin the process of adaptation planning and adaptation investment planning and is required for all climate risk assessments at the project level (Tall et al. 2014). Therefore, national Ministries of Finance must prioritize meteorological and hydrological services and dedicate enough funding and budget to bolster observation networks, infrastructure, and staff training and capacity-building. Without the production and availability of climate and weather data, climate-informed decision-making is halted entirely.

The development of a scientifically and technically sound National Adaptation Plan based on solid analytics is essential as the first step in the process for attracting and enabling private sector investment in adaptation. In the next chapter, Case Study #2 examines how the Commonwealth of Dominica articulated its vision for climate resilience through its Dominica 2030 Climate Resilience Plan.

By mandating the use of climate information services and climate risk screening in investment design and decision-making, governments can incentivize climate-resilient development. Mandating the consideration of climate risks in investment planning will enable governments to more seamlessly invest in climate-resilient investments itself, as well as incentivize the private sector to integrate climate change into investments, without compromising competitiveness. Formal policies issued by national and local governments can further strengthen decision-making that is climate-informed. Providing readily accessible data and the policies that support this type of decision-making will be critical in shifting current practice in investment design towards climate-resilient, adaptive investments.

ENTRY POINT 2: DEVELOP A NATIONAL ADAPTATION INVESTMENT PLAN

A National Adaptation Investment Plan flows naturally from a well-developed National Adaptation Plan, to outline a national portfolio of investment-ready adaptation investments. The plan will include projects to be financed through both public and private resources. This step aims to identify, prioritize, and cost adaptation investment needs across sectors.

Recommendations for the public sector in implementing Step 2:

1. Develop a coordinated multi/cross-sector adaptation investment plan;
2. Accurately price physical climate risks;
3. Embed climate finance capacity in ministries of finance.

Pooling needs across all climate-sensitive sectors of the economy, governments—ideally under the helm of the ministry of finance—need to prioritize and cost their adaptation investment needs. Developing a portfolio of investment-ready projects that span priority interventions across sectors, the national plan should reflect all investment priorities in the short, medium and long term. **Key inputs include system-level criteria for prioritizing adaptation needs/investments across sectors, tools and cost-benefit analyses for valuing different adaptation investments, and risk pricing.**

The public sector must work to accurately price physical climate risks and incorporate the benefits of adaptation and resilience projects in investment decision-making through new methodologies and policies. Research and academic partners play a key role, providing new tools and skill sets to integrate climate risk management into decision-making. To date, the benefits of adaptation and resilience and the risks from climate change have not been systematically integrated into investment pricing models. As a result, there is underinvestment in adaptation and resilience, and continued investment in projects that do not account for climate change. The positive economic, environmental, and social benefits of investing in resilience must be brought into common pricing models, so private investors can be competitive while investing in resilience, and governments can make investment decisions that contribute to resilience by clearly demonstrating future cost savings and benefits. The Coalition for Climate Resilient Investment[14] is pioneering a method to accurately price climate risk, using data analytics to support and incentivize the development of climate-resilient infrastructure.

BOX 2. The Coalition for Climate Resilient Investment

The Coalition for Climate Resilient Investment was launched at the UN Secretary-General's Climate Action Summit in September 2019 (CCRI, 2019), bringing together more than 30 organizations across the investment value chain, including companies with more than US$5 trillion in assets under management. It has continued to grow since, with three dozen private-sector members as of January 2021, including firms with more than US$11 trillion in assets under management (CCRI, 2021), as well as MDBs, international organizations, five national governments (plus the State of California), public institutions, and major think tanks.

CCRI's aim is to "transform infrastructure investment by integrating climate risks into decision-making, driving a shift toward a more climate resilient economy for all countries, including the most vulnerable" (CCRI, 2019). Specifically, as outlined on its website, the Coalition aims to support **national decision-making**, by facilitating an understanding of the economic and social value at risk from climate change; **project valuation and investment appraisal**, by enabling investors to better predict longer-term cash flows; and **financial innovation**, by identifying innovative taxonomies for financial instruments to guide the allocation of capital.

CCRI's main focus is to produce three deliverables designed to address key challenges in the investment value chain:

- An investment prioritization tool for national decision-making;
- A pricing model for the interpretation of climate data in cash flow modelling practices; and
- A taxonomy for the development of resilience bonds.

The Coalition also aims to work in close collaboration with other related initiatives, such as the Coalition for Disaster Resilient Infrastructure (CDRI) and the Coalition of Finance Ministers for Climate Action.

14 See http://resilientinvestment.org.

Once adaptation investment priorities and needs are identified, governments need to assess whether those projects are "bankable." This process is used to distinguish between projects that will have to be undertaken with public finance only, and those with potential for private sector investments. For the latter category, a key ingredient for attracting private investors is to have identifiable and stable revenue streams. To become bankable, some projects may need relatively simple structuring. Others, in which direct revenue streams are not obvious, will require some innovative approaches—for example, a dual-use/benefit infrastructure where the resilience benefit doesn't produce revenues, but the other use does, such as sea barriers that double as toll roads. Other projects may require conditional use of blended finance and other innovative financing mechanisms. One important message is that it is likely that projects will require situation-specific solutions, and that the solutions may range from changes in policies, to designing new financing instruments and approaches.

The pipeline screening consists of identifying and prioritizing those projects that have private sector potential. Bringing private sector investment in a project requires a case-by-case analysis to find the right balance between risk transfer (which and how much risk is being transferred to the private sector), cost (affordability for the public authority, the users and the broader community) and bankability conditions. Often, a better enabling environment is needed (through changes in policy or establishment of a dedicated public-private partnership (PPP) unit for infrastructure investments, for instance), in particular to expressly include climate change considerations within policy, procurement, and procedures. The challenge is to embed climate adaptation in key aspects of the enabling environment tasks: pipeline screening should include climate adaptation criteria to select projects, procurement processes should clarify when and how climate considerations are taken into account, and contracts should include clauses that capture relevant climate adaptation obligations, opportunities, and risks and indicate who takes the associated responsibilities.

Recommendations for the public sector in implementing Step 3:

1. Screen projects for potential for private financing;
2. Undertake initial market sounding, assess return on investment, and conduct an enabling environment diagnostic, to understand what it would take to attract private investment;
3. Embed climate adaptation finance capacity in ministries of finance.

Once the National Adaptation Investment Plan is in place, likely sources of financing need to be assigned to each item in the portfolio of "bankable" adaptation projects. The ministry of finance will identify investments that could be funded through private flows, those that will likely need public funding, and those that may benefit from a PPP or some form of blended or concessional finance. In the case of publicly funded projects, public sector financing mechanisms can be explored (e.g. public bonds). Early identification of projects that can benefit from concessional finance or other public sector intervention can help to focus public sector funds in such a way that leverages and capitalizes on private sector financing, perhaps enabling new markets. Lastly, structuring projects to specifically target private investors may incentivize private sector players to identify and maximize sources of funding that do not come from public budgets (e.g. user fees, commercial revenues). Bankability considerations can include DFIs, commercial banks, capital markets, and some form of blended or concessional finance.

Identifying bankable projects requires an initial market sounding, an assessment of returns on investment, and an enabling environment diagnostic. This will shed light on what it would take to attract private investment. Key needs in making this determination include: tools for triaging projects for public versus private financing; a pipeline of potentially bankable investments for private finance; and a light-

touch market assessment. This work involves first identifying, then putting in place the conditions needed to attract to private investment, such as changes to policies, incentives, metrics, and market signals.

To support the development of a national adaptation investment plan, governments will also need to embed climate finance capacity in the ministry of finance, planning, or another relevant ministry. They play the critical role of allocating budget and making essential investment decisions at the national level. Without proper adaptation and resilience expertise embedded within a ministry, it is unrealistic to expect that investment and budgeting decisions will take climate change into account, and this is a necessity to support climate-informed investment decisions at the highest level. Therefore, ministries of finance must specifically embed adaptation and resilience capacity within their units, including the capacity to discern those projects/investment areas that have private sector potential. New initiatives such as the Rocky Mountain Institute Climate Finance Advisers program provide good practice on training and embedding capacity for climate finance structuring and mobilization within key central ministries of Finance and Planning.[15] The World Bank report *Adaptation Principles* also highlights the suite of tools that ministries of finance can implement to support adaptation investment planning (Hallegatte et al., 2020).

ENTRY POINT 4: PROJECT PREPARATION SUPPORT

Once projects with potential for private investment are identified, they need in-depth project preparation support to get to market. The projects will need targeted project preparation support to make them investable, including assessing value at risk and return on investment, mapping project cash flow, identifying funding gaps, identifying potential investors, and supporting project structuring and procurement, to ensure the identified project can get to market.

Prior to more detailed cash flow analyses for each vetted project, there need to be decisions on the optimal project structure (e.g. a PPP), which will drive the necessary next step—project feasibility studies from a technical, engineering, environmental, social, economic, financial, and legal perspective, followed by project structuring. If the modality identified for financing involves novel instruments such as green or resilience bonds, the timeline and actions would, of course, be different.

Recommendations for the public sector in implementing Step 4:

1. Leverage MDBs, project preparation facilities, and bilateral donors to provide technical assistance/ project structuring support, including potential for de-risking and co-financing;
2. Identify potential private sector investors;
3. Identify an initial source of public sector funding to support project preparation.

Key inputs needed at this stage include decisions on the type of project structure and most appropriate financing instrument (e.g. blended finance, resilience bond, guarantees) required to ensure identified project gets to market. New financing instruments and approaches may also need to be mobilized, most notably blended finance approaches.[16]

15 See Rocky Mountain's Institute Climate Finance Access Network: https://rmi.org/our-work/areas-of-innovation/climate-finance/climate-finance-access-network/#:~:text=What%20Is%20CFAN%3F&text=to%20support%20developing%20countries%20in,and%20achieve%20their%20climate%20objectives.

16 Blended finance is an instrument for leveraging catalytic capital from public or philanthropic sources to increase private sector investment in sustainable development.

ENTRY POINT 5: DOWNSTREAM TRANSACTION DEMONSTRATION

The fifth entry point is focused on closing a transaction—supporting coordination of project financing with relevant investors for adaptation projects ready for investment. Once a project is ready for investment, it will receive support to coordinate project financing with relevant investors. It is important to clarify that depending on the structure of the project, it may not necessarily be the World Bank or another MDB playing that coordination role. Instead, a more suitable role for the World Bank or other MDBs in this step may be to support project implementation and supervision, depending on the specific modalities of the project.

Recommendations for the public sector in implementing Step 5:

At this stage, both public officials and private investors need to focus on finalizing the project, close the deal, and proceed to implement and monitor project delivery.

CROSS-CUTTING COMPONENT: ENABLING ENVIRONMENT DIAGNOSTIC AND IMPLEMENTATION

Identifying and implementing key enabling conditions is a critical component of the Blueprint with relevance to multiple entry points. This is a formal diagnostic to assess gaps and needs either at the broad level or for specific projects, sectors, and investment areas, done iteratively throughout Blueprint implementation. As projects are identified and prepared, necessary regulatory and policy changes and additional standards, metrics, and incentives may be identified. Regulators and ministries of finance play a critical role as part of this substep, and can conduct an assessment of the enabling environment for private investment. This includes an examination of current policies, regulations, standards, metrics, and other mechanisms that may enable or prevent private stakeholders from successfully investing in adaptation and resilience. Private actors are key partners in this work, as they can provide the most relevant and actionable information on changes to the enabling environment that may be needed to facilitate their participation.

Recommendations for the public sector in identifying and implementing an enabling environment:

1. Diagnose pre-requisite enabling environment changes for private sector investment in adaptation and resilience;
2. De-risk investments through use of policies, regulations, standards, incentives, and risk transfer;
3. Promote knowledge-sharing on what constitutes effective adaptation and resilience-building;
4. Make the most of strategic, multi-stakeholder partnerships.

The public sector has the ability to de-risk private investments in adaptation and resilience through the use of policies, regulations, standards, incentives, and risk transfer. This is particularly important for small and mid-size enterprises, which may be particularly risk-averse. Risk transfer mechanisms can include weather index insurance and other forms of parametric insurance, resource pooling in the form of a trust, reducing the burden of risk on any individual investor, and pay-for-success schemes to reduce the risk of underperformance. It is important to note that while risk transfer mechanisms can enable participation in adaptation and resilience-building projects, these tools do not reduce the risk in question—they simply transfer this risk onto another party or parties.

The public sector must set regulations that promote resilient behavior. The public sector holds a great deal of power in driving resilient and adaptive investment. Policies, regulations, and standards can drive market shifts and empower private actors to invest in adaptation and resilience without compromising their competitiveness.

Economic incentives can also facilitate investment, including tax exemptions, below-market interest rates, long grace periods, or a combination. Layered capital structures, for instance, can incentivize the participation of private actors by reducing their overall risk of investment. First-loss structures can be assigned to public funds, ensuring that losses up to a certain threshold are not borne by private investors, thus protecting the more risk-averse private capital while still enabling private stakeholders to fund adaptation and resilience.

It is critical that the public sector play a key role in promoting knowledge-sharing on what constitutes effective adaptation and resilience-building. The highly context-specific nature of climate change adaptation does not preclude the need for widespread knowledge-sharing. The sharing of best practices and knowledge between countries, regions, organizations, governments, and private entities is essential in order to ensure that all are working with the latest information and technology and as a critical time-saving measure, preventing needless reinvention and research. Demonstration of resilient investments and best practices can also be a form of knowledge-sharing, as highlighted by the cases presented throughout this report. This further expands the market and may be a source of technological innovation as well, as new investors become aware of resilient investment opportunities.

The use of strategic, multi-stakeholder partnerships is critical to the success of efforts to catalyze private investment in adaptation. These are partnerships between at least one public and one private entity to address a sustainability or development challenge. Multi-stakeholder partnerships (MSPs) differ from PPPs in that MSPs may not include an element of infrastructure delivery, but instead offer benefits in other forms, including knowledge-sharing, awareness-raising, or research and development (Gannon et al., 2020). MSPs can support the mobilization of a broader range of private actors, can lead to the development of more effective services, and can leverage expertise and knowledge to provide valuable adaptation services to a wider range of beneficiaries.

The public sector can play a critical role in project preparation support through the provision of technical assistance, either through DFIs and MDBs, or through scientific and academic partners. Climate adaptation and resilience are often elusive concepts, as there is no predefined set of activities that investors can simply reference, disclose and implement. Adaptation and resilience are, by nature, highly context- and location-specific, so solutions that work well in one instance may be entirely unsuitable in another. Therefore, effective investments require expertise and knowledge of climate change and of local climate projections. It cannot be expected that private investors have all this knowledge in-house. MDBs and DFIs are well equipped with technical and sectoral expertise of this kind, as are scientific and academic institutions. They can provide knowledge and support to private investors through similar models, ensuring that projects are effectively supported from a technical standpoint.

5

OPERATIONALIZING THE BLUEPRINT: COUNTRY CASES OFFERING GOOD PRACTICE

Most immediately, the Blueprint for Action will be used by the World Bank Group to implement country pilots in fiscal 2021–2023. The pilots will focus on different sectors and test different entry points, as part of the implementation of the Bank's new Enabling Private Investment in Adaptation initiative. Individual elements included in the Blueprint have already been put into practice around the world, however—offering lessons about good practice that can inform the implementation of the Blueprint itself. This final section of the report presents case studies relevant to each entry point in the Blueprint. While they may not fully capture the actions needed under each entry point, we include them here to provide a more concrete sense of how the Blueprint could be implemented in different countries and projects.

ENTRY POINT 1: LONG-TERM ADAPTATION PLANNING SUPPORT

As noted earlier, the first step of the Blueprint for Action is the development of a scientifically and technically sound National Adaptation Plan (NAP) based on solid analytics, essential for attracting and enabling private sector investment in adaptation. A well-developed NAP can serve as the key upstream entry point for engaging the private sector, offering a critical "roadmap" for articulating short-, medium-, and long-term adaptation priorities. The NAP lays the groundwork for a national adaptation investment plan, helping ensure that both public and private investments are directed towards those priorities.

Case Study #2: Defining a climate resilience and recovery plan in Dominica

The Commonwealth of Dominica has articulated a bold vision to become the world's first climate-resilient nation. The Dominica Climate Resilience and Recovery Plan (CRRP) 2020–2030 focuses on reducing the impact of recovery time from climatic and other natural shocks, and on boosting the overall socioeconomic development trajectory of the country (Government of the Commonwealth of Dominica, 2020).

In the wake of Hurricane Maria in 2018, which directly affected 80 percent of the population, Dominica released a policy framework to guide its recovery, the National Resilience Development Strategy 2030. It stipulated that the Climate Resilience and Recovery Plan (CRRP) should reflect three pillars of resilience: climate-resilient systems, prudent disaster risk management systems, and effective disaster response and recovery (Government of the Commonwealth of Dominica, 2020).

The CRRP expands these three pillars into six results areas, including strong communities, robust economies, well-planned and durable infrastructure, enhanced collective consciousness, strengthened institutional systems, and protected and sustainably leveraged natural assets. It defines 20 targets that Dominica needs to achieve to become climate-resilient. Of particular note is that resilience metrics have been incorporated into the national budget-setting process, meaning that the Public Sector Investment Plan (PSIP) now considers resilience as a key factor for project approvals and budget allocation.

In September 2018, the GCF approved US$3 million to help Dominica with its adaptation planning process. This GCF support was provided through its adaptation planning support program, described further in Case Study #3.[17] In Dominica, the GCF's support is focused on establishing an ongoing adaptation planning process that will foster an enabling environment, including legislation, institutional arrangements, and technical capacity in the public, private, and NGO sectors. This includes establishing a High-Level Steering Committee Co-Chaired by Prime Minister and the Minister of Health and Environment (technical lead on climate change) to provide overall guidance and support to the process, as well as developing a Secretariat in the Ministry of Health and Environment for the High-Level Steering Committee.[18]

17 See https://www.greenclimate.fund/readiness/naps.
18 See https://www.greenclimate.fund/document/adaptation-planning-support-dominica-through-ministry-health-and-environment-antigua-and.

Case Study #3: Green Climate Fund support for formulation of National Adaptation Plans and other adaptation planning processe

Recognizing the importance of planning to catalyze and focus adaptation action across sectors, as part of the Paris Agreement in 2015, the GCF was asked to expedite support for Least Developed Countries and other developing country Parties for the formulation of NAPs.[19] In response, the GCF Board authorized up to US$3 million per country for the support of national adaptation plans and/or other adaptation planning processes. As of June 2020, 52 countries had accessed a total of US$124.4 million in grant finance for their adaptation planning processes, and several others were gearing up to receive support.[20]

GCF support can be used flexibly to build on the progress and ongoing evolution of adaptation planning processes in each country. The outcomes that can be supported includes (i) strengthening adaptation planning governance and institutional coordination; (ii) producing evidence to design adaptation solutions for maximum impact; (iii) catalyzing private sector engagement in adaptation; and (iv) increasing adaptation finance.[21] Importantly, all countries receiving GCF support for adaptation planning in recent years are including explicit outputs to catalyze private sector engagement, as well as increasing adaptation finance. Examples of outputs supported to strengthen private sector engagement in adaptation include formulating policies to remove perverse incentives and motivate private investment in adaptation, engaging private sector actors in sectoral adaptation planning, and motivating companies to plan for supply chain resilience. Examples of outputs supported to increase adaptation finance include financing adaptation priorities, systems for prioritizing project ideas, and preparation of a pipeline of project concept notes.

Initial GCF investments in adaptation planning have begun to suggest a set of lessons to consider for further efforts to support complementary efforts. One insight is the extent to which all countries have some kind of ongoing adaptation planning process, and some countries are well advanced. It is crucial that any new investment in adaptation planning support builds purposefully on those processes. A further lesson is that financing and investment strategies that purposefully engage a range of actors and sectors are a crucial component of any robust adaptation planning process. Furthermore, the GCF experience highlights the value of articulating explicit good practice criteria and methods for countries to draw from and adjust to their unique contexts.[22]

19 https://www4.unfccc.int/sites/NAPC/Pages/GCF.aspx.
20 See https://www.greenclimate.fund/readiness/naps for more information.
21 For the comprehensive set of adaptation planning outcomes and outputs that can be supported by the GCF, see https://www.greenclimate.fund/readiness/naps.
22 See the GCF's Readiness and Preparatory and Support Guidebook table 2 on pages 34-36, for information on review criteria and good practices.

ENTRY POINT 2: DEVELOPMENT OF A NATIONAL ADAPTATION INVESTMENT PLAN

The development of a National Adaptation Investment Plan enables governments to outline a national portfolio of investment-ready adaptation projects. This step also includes an assessment of regulatory and policy gaps that need to be filled to enable private sector investment, with recommendations for filling them, as well as the identification of adaptation investment priorities.

Case Study #4: The Bangladesh Strategic Program for Climate Resilience (World Bank) and Bangladesh Delta Plan 2100

Bangladesh faces very serious threats from climate change, including sea level rise in coastal areas, increasing severity of tropical cyclones, and extreme rainfall events. Recognizing that climate impacts are undercutting hard-won human development gains, Bangladesh has already taken strides on adaptation planning over the last decade, by implementing the National Adaptation Plan of Action (NAPA), setting-up climate change trust funds, and pioneering community-based adaptation approaches.

To transition from urgent to long-term, sustained adaptation investment planning, Bangladesh prepared a "Roadmap for Developing a National Adaptation Plan for Bangladesh," issued by the Ministry of Environment and Forests in 2015. It identifies steps, priority sectors, thematic areas, and the results required, and it emphasizes the iterative nature of adaptation planning. In March 2017, it was revisited in a national stocktaking and consultation organized by the government and reaffirmed through more detailed discussions. The roadmap is also compatible with the adaptation priorities in Bangladesh's NDC.

In February 2018, the GCF approved US$3 million to strengthen Bangladesh's ongoing adaptation and adaptation investment planning process. This support was provided through the GCF's adaptation planning support program, discussed in Case Study #3. Given the trajectory of the adaptation planning process in Bangladesh, this GCF support is explicitly focused on strengthening the ongoing planning by formulating a long-term adaptation investment strategy and enhancing national capacity to integrate adaptation in planning, budgeting, and financial tracking processes.[23]

Bangladesh is also engaged in the Pilot Program for Climate Resilience (PPCR), which aims to help countries shift to a climate-resilient development path, consistent with poverty reduction and sustainable development goals. The PPCR complements and goes beyond currently available adaptation financing in providing finance for programmatic approaches to upstream climate resilience in development planning, core development policies, and strategies.

As a component of the country's PPCR program, the Bangladesh Strategic Program for Climate Resilience (SPCR) was developed as a broad-based strategy for achieving climate resilience at the national level in the medium and long term. It used the Bangladesh Climate Change Strategy and Action Plan (BCCSAP) and the NAPA as bases for identifying specific types of investments and capacity-building activities to build resilience in the country. A total of US$110 million from PPCR was allocated to implement projects identified under the SPCR, along with US$585 million in co-financing from MDBs, the government, and other development partners. Some of the projects included involve private sector engagement to demonstrate a compelling business case for broader private investment in adaptation and resilience.

23 https://www.greenclimate.fund/document/adaptation-planning-support-bangladesh-through-undp.

The Bangladesh SPCR is an investment plan in and of itself. It presents the country's climate change and development challenges, laying out a strategic approach and concrete, financeable projects to address these challenges. Its preparation was a country-led and country-owned process bringing together various government ministries, MDBs, bilateral donors, the private sector, and civil society to conduct a strategic dialogue and identify priority investments to manage climate risk and adapt to climate change.

The Government of Bangladesh has also initiated the Bangladesh Delta Plan 2100 (Delta Plan or BDP2100), which aims to create a long-term vision for delta management, prepare for different scenarios and responses, identify and organize government institutions to address challenges, prioritize investable sectors for action to reduce climate risk and environmental losses in the delta region, and create and facilitate a long-term investment program bolstered by private-sector participation and development partners. The BDP2100 builds on the country's experience in implementing PPCR.

ENTRY POINT 3: PIPELINE SCREENING AND MARKET ASSESSMENT

Once adaptation investment priorities and needs are identified, it is time to assess whether those projects and investments are bankable, and what actions may be needed to make them attractive to private investors.

Case Study #5: Opportunities for PPPs to scale up private participation in the financing of road assets in Cambodia

The World Bank is supporting the road sector in Cambodia with the implementation of performance-based contracts to increase private sector participation in road construction and maintenance and improve the efficiency and sustainability of investments. The current IDA-supported operations include US$170 million in Road Asset Management II and Additional Financing, which covers rehabilitation of major national roads, focusing on climate resilience and road safety measures in design and development of road infrastructure, and improving the road asset management system.

In parallel, the World Bank-administered Public-Private Infrastructure Advisory Fund (PPIAF) is working closely with the local Ministry of Public Works and Transport (MPWT) and the Ministry of Rural Development (MRD) to support upstream activities linked with the new IDA-financed operation. PPIAF's support is designed to better inform the project design on Output and Performance-Based Road Contracts (OPBRC) for downstream implementation and to better engage private sector in the long-term from lower lifecycle cost and increased quality, efficiency, and sustainability of the investment. Additionally, with the support of the Global Facility for Disaster Reduction and Recovery (GFDRR), the MRD and MPWT will develop climate-resilient engineering solutions and specifications to reduce the impact of frequent floods on roads and structures and transfer part of the risks to the private sector, covering both road improvement and maintenance.

ENTRY POINT 4: PROJECT PREPARATION SUPPORT

This step in the Blueprint involves putting in place prerequisites to private investment attractiveness, such as necessary changes to policies, incentives, metrics and market signals. Also, prior to more detailed cash flow analyses for each vetted project, there needs to be a decision on the type of project structure (e.g., PPPs), which will drive the necessary next step—a project feasibility study, followed by project structuring. On infrastructure PPPs, the typical proceeding step is procurement through an open and transparent tender process.

Case Study #6: Project Preparation Support for Infrastructure Pipeline Projects in Ukraine

The World Bank-led Global Infrastructure Facility (GIF) and PPIAF offer models for the project preparation support needed in this step of the Blueprint. Recent work in Ukraine shows how GIF and PPIAF work together to provide a full suite of project preparation services, beginning with work further upstream.[24] While this example highlights an infrastructure-focused case, these same interventions will prove critical in enabling *climate-resilient* infrastructure.

GIF and PPIAF collaborated to enable and support the development of PPPs in Ukraine's transport sector through targeted upstream work by PPIAF to develop Ukraine's PPP capacity and through mid- and downstream work by GIF to develop a pipeline of projects and test pilot transactions. PPIAF supported the development of a sustainable logistics strategy, outlining the necessary policy, regulatory, and institutional reforms to improve sector logistics, and it helped Ukraine to set up its new PPP agency.

Through PPIAF's support, the Government of Ukraine identified concrete opportunities for public and private policy reform to increase competition in the transport sector. GIF offered its full suite of instruments to the Ukrainian transport sector, providing US$2.9 million in funding to support sectorial reform. Support included conducting a project readiness assessment, several project definition activities, development of prefeasibility studies, and informing government investment decisions on scope, contracting modality, and key structuring issues.

As a result of this collaboration and intervention in the Ukrainian transport sector through the joint work of PPIAF and GIF, US$410 million in private sector mobilization is expected in the ports and airports subsectors. Three airports were serving 1.7 million passengers as of 2018, and two ports, generating close to US$20 million in revenues, were expected to reach commercial close in 2019.

24 For a video case study on this work, produced by PPIAF in 2019, see https://youtu.be/GGjxFGBPsGc.

Case Study #7: CLIMADAPT: The EBRD Tajikistan Climate Resilience Financing Facility

The CLIMADAPT project in Tajikistan highlights the role that financial intermediaries can play in private sector investment in adaptation and resilience. Initially launched in 2016 with partners including PPCR, the United Kingdom, Tajikistan and the EBRD's Early Transition Countries Fund, the project aimed to help Tajik residents adapt to a changing climate by increasing access to technologies, providing technical capacity-building, and promoting the efficient use of water and energy resources (EBRD and CIF, 2018).

The project has provided US$10 million of financing to partner financial institutions across all regions of Tajikistan, with special emphasis on the design of financial products and services to be more accessible and appealing to women (EBRD and CIF, 2019). Loans to women under the project increased from 14 to 19 percent of the portfolio in one year. Partner financial institutions have been effective in promoting the uptake of financing for climate resilience technologies, by focusing on the positive economic and social impacts (EBRD and CIF, 2018). CLIMADAPT also offered climate resilience assessment to support clients in recognizing climate risks and finding solutions (Klingel, 2016).

This project has demonstrated an effective use of concessional finance to the extent that concessional finance is no longer needed, as the client is now supporting new adaptation and resilience business lines with its own resources (CIF 2019b). EBRD has since replicated the CLIMADAPT model in other markets.

© Gennadiy Ratushenko/The World Bank

ENTRY POINT 5: DOWNSTREAM TRANSACTION DEMONSTRATION

For the purposes of demonstrating a transaction, Step 5 of the Blueprint for Action, we highlight three examples below of adaptation and resilience investments that have made it to market.

Case Study #8: The Responsible Commodities Facility in Brazil

With underwriting support from HSBC, the Responsible Commodities Facility (RCF) was launched in July 2019 at the London Stock Exchange. The facility, with a US$300 million bond raise, aims to provide low-interest credit lines, crop financing, and restoration loans to up to 1,000 medium-sized soy farmers in the Brazilian Cerrado region who can commit to climate-friendly and resilient practices, such as using degraded lands and avoiding deforestation (Climate Finance Lab, 2018; Earth Security Group, 2019).

The RCF provides a secure and credible international exchange for participating soy farmers to connect with buyers specifically interested in sustainable sourcing. RCF has issued investment grade-rated green bonds with different risk profiles, including US$210 million in commercial debt aimed at institutional investors (Climate Finance Lab, 2020).

The high risk associated with investing in micro-, small, and medium-sized enterprises, agribusinesses, and adaptation itself prevents relevant initiatives from raising the large-scale, long-term capital from institutional investors that is critical to success. The layered capital structure, in addition to some patient capital from public sources, allows the facility to both raise funding through capital markets, and de-risk the target segment (SMEs/MSMEs) sufficiently to begin to flow capital to these entities.

The role of an established and credible underwriter allowed green bond financial instruments to appeal to wider audiences and, in turn, raise greater capital to be wielded in various initiatives that were formerly unappealing to investors or overly risky. The RCF, as the first green bond scheme to target sustainable food production, provides a potential model and template for how green bonds can be utilized for climate resilience. While it is too early to see the financial results of the initiative, the use of green bonds serves as a promising tool to involve a greater number of potential investors in climate resilience and adaptation. The use of this instrument provides a reliable source of funding for farmers by connecting them to global capital markets. In addition, the RCF and HSBC expect the facility to ultimately provide US$1 billion to fund the production of more than 180 million tons of responsible soy and corn, possibly a business model for the market to emulate in untapped resilience sectors.

Case Study #9: The Climate Resilience and Adaptation Finance and Technology-transfer Facility

CRAFT is the first private fund dedicated to climate resilience and adaptation.[25] It is part of the Global Innovation Lab for Climate Finance, which was developed in 2014 with the goal to identify and develop innovative instruments that could drive private finance for climate mitigation and adaptation in developing countries.

CRAFT received initial design and start-up support of US$1 million from the GEF's Special Climate Change Fund. This project has provided learning for the subsequent GEF Challenge Program for Adaptation Innovation, to test and model innovative models for engaging private sector actors in adaptation action.[26]

CRAFT is a growth equity fund managed by the Lightsmith Group, an investment firm that focuses on climate resilience and adaptation. Portfolio companies have developed proven technologies and solutions for climate resilience, with demonstrated market demand and revenue. The fund, together with the accompanying technical assistance facility, will help companies focused on adaptation-relevant products and services—such as weather analytics, catastrophe risk modeling services, and seeds for drought-resilient crops, among others—to expand into new sectors and geographic markets. CRAFT will conduct impact assessments to ensure all portfolio companies have a direct and measurable impact on adaptation. In addition to its direct impact on adaptation metrics, CRAFT aims to help catalyze the market for climate resilience intelligence and solutions, particularly in developing countries. CRAFT currently has an active pipeline of more than US$200 million in investments.

To select portfolio companies, CRAFT identified 20 market segments with high business, government, and consumer spending relevant to physical climate risk. Annual spending in these market segments totaled US$130 billion at the time of analysis and demonstrated fast growth with compound annual growth rates of 20 to 30 percent. CRAFT estimates that spending will more than double in the next four years—from US$130 billion to US$275 billion. For companies in developing countries, CRAFT will depend on cornerstone investors, such as development finance institutions, to help attract and mobilize capital from private investors.[27]

CRAFT uses a layered fund structure, leveraging concessional funds to mobilize private investment. It aims to raise US$250 million. Concessional junior equity, which will take a subordinated return on capital, will make up a US$50 million layer of the fund and commercial senior equity, which will have prioritized return on capital, will make up a US$200 million layer. The junior equity mobilizes four times as much senior equity. CRAFT also calls for a US$20 million technical assistance facility to support low-income countries and Small Island Developing States. The fund then co-invests with two to five times as much private capital in 10 to 20 portfolio companies in developed and developing countries, with CRAFT taking 15 to 45 percent ownership. This leads to a total private investment mobilization factor of 8 to 20 times for the concessional equity. The waterfall structure enables 20 to 25 percent gross returns for commercial investors, in line with expectations for growth equity. The fund will incorporate a 6 percent preferred return threshold for commercial investors. Beyond this, returns will be distributed at an 80/20 ratio to limited partners and the sponsor.

At its first close on December 24, 2019, CRAFT had achieved US$88 million in signed commitments, US$82 million of which were immediately investible. At the time, CRAFT was also in active conversations with over 20 investors. Most of the current and potential investors are private sector commercial return-seeking investors.

25 See https://lightsmithgp.com/craft/.
26 See the December 2020 progress report of the GEF Challenge Program for Adaptation Innovation: https://www.thegef.org/council-meeting-documents/progress-report-least-developed-countries-fund-and-special-climate-13.
27 See project documents at https://www.thegef.org/project/structuring-and-launching-craft-first-private-sector-climate-resilience-adaptation-fund.

Case Study #10: NWK Agri-Services Weather Index Insurance

NWK Agri-Services is an agricultural company that operates in Lusaka and the Central, Southern, and Eastern provinces of Zambia. It operates a cotton out-grower program with about 100,000 small-scale farmers participating each year. About two-thirds of workers in Zambia are employed through agricultural small and medium-sized enterprises, which lack access to financial resources for adaptation investments or disaster response and recovery (InsuResilience, 2017). NWK Agri-Services is attempting to address this gap and has been offering weather index insurance to Zambian cotton farmers since 2013.

The insurance model does not require any subsidies and is based on voluntary participation. The company pre-finances the insurance premium and other agricultural inputs for smallholder farmers in exchange for an agreement to buy the farmers' cotton at the end of the season. The proceeds from the cotton sales and potential insurance payouts then offset the outstanding loan with NWK, and the farmer receives the remaining surplus. NWK's insurance product was an early mover in establishing risk transfer insurance products that support smallholder farmers in Zambia.

While the total amount of insurance NWK has underwritten is not publicly available, the company has used this model and insured more than 52,000 farmers, providing 23,000 of them with payouts of over US$200,000 after a large-scale drought in the 2015–2016 season alone through the benefits of business relationship formalization and risk-pooling aggregation (InsuResilience, 2017). NWK's voluntary insurance products are building resilience and trust in Zambian agricultural communities, creating a positive feedback loop that will further build resilience as farmers continue to increase their crop yields and sales. Due to the insurance coverage and the increased climate resilience of their agricultural activities, Zambian farmers are also estimated to have increased the gross amount of cotton they plant. While risk transfer mechanisms such as index insurance do not reduce climate risk as a whole, they do enable populations to become more resilient and to more successfully adapt to shifting climate norms and to bounce back from shocks. This case demonstrates one successful case of a private company investing in resilience and may serve as a model for other risk-pooling ventures.

Case Study #11: The Creating Markets for Irrigation Technologies project in Niger

This project demonstrates how a relatively small investment of US$1.5 million through PPCR, deployed alongside targeted technical assistance and capacity-building, has helped develop the drip irrigation market in Niger. Under the project, IFC brought on a micro-irrigation technology company to install solar-powered drip- irrigation systems on parcels of land across Niger, while training farmers to use the systems and engage local dealers, suppliers and engineers to sell, distribute, and maintain solar pumps and irrigation systems. The project sought to advance drip irrigation as a way to manage the effects of heat waves, water scarcity and longer dry seasons (CIF, 2020).

The IFC worked with both private and public stakeholders, competitively selected Netafim (a private firm), identified sites, recruited and trained Community Field Assistants, installed demonstration farms, and trained beneficiaries (CIF, 2020). The IFC also worked to ensure that there was a sustainable ecosystem of companies to provide drip irrigation services to farmers to allow for further scaling up. As of December 2019, Netafim had received requests to install 1,500 hectares of additional irrigation equipment and a pipeline of commercial requests.

CROSS-CUTTING ENTRY POINT: ENABLING ENVIRONMENT CHANGES

As governments increasingly implement policies and regulations that support resilience, companies are increasingly compelled to uphold these standards. Those that have already taken necessary steps will be ahead of the curve. Creating the proper enabling environment to encourage private sector investment in adaptation and resilience is an ongoing, iterative process throughout implementation of the Blueprint steps, and therefore not confined to one particular entry point.

Case Study #12: Weather-proofing the electricity network with underground cabling

In the winter of 2018 and 2019, Storm Aapeli brought near-hurricane force winds to Finland, causing significant damage and power outages due to more than 30,000 downed trees on power distribution lines (Elenia, 2019). As Finland's overhead power line network nears the end of its life cycle, it has become more vulnerable to extreme weather, including events that are more intense as a result of climate change.

Elenia, an electricity distribution company covering 100 municipalities across Finland, has developed the Elenia Weatherproof Underground Cable Network. The company recognized the vulnerability of its power distribution network and placed all of its new-build power lines underground to insulate them from extreme weather events, thereby increasing the resilience of Finland's electricity supply and sector. In tandem with Elenia's initial resilience investment, Finland issued the Electricity Market Act, which stipulates that by 2028, power outages may not last more than six hours in certain zoned areas and more than 36 hours in others (Waselius et al., 2019).

The company:

Invested in resilience: Elenia has spent over €1 billion in electricity network investments between 2009 and 2019, with resilience to potential risks in mind. The financing mechanism used was an upfront capital investment, which was financed through monetizing future cost savings.

Self-assessed operations: Elenia undertook an assessment to identify major weather-related disruptions and sought to ensure that the company's goals to upgrade its network by burying the distribution lines were consistent with its other corporate goals to improve infrastructure.

Complied with Finland's regulatory directives: Elenia was primarily motivated to build resilience into its network to reduce losses and costs, but also to comply with the Electricity Market Act.

While the Elenia Weatherproof Underground Cable Network's upfront investment cost is higher than that of the firm's traditional overhead distribution network, it becomes less expensive when factoring in maintenance costs and lost revenue resulting from power outages over the lifetime of the asset in the face of increasing climate risks. This becomes particularly evident when considering the primary costs of maintaining the distribution overhead network, including rebuilding lines after damages from storms, and clearing trees, which is frequently essential and no longer required as a result of the underground network (Elenia, 2019).

Elenia's goal is to increase the proportion of its underground cabling to 50 percent of its total distribution network by 2021 and 75 percent by 2028. As an additional benefit, the management of climate risks and the reduction of above-ground distribution networks is expected to substantially increase the amount of forest and field areas suitable for forestry, agriculture, and other economically productive activities due to the lower amount of land used for overhead power lines (Elenia, 2019). Aside from providing environmental benefits, underground cabling is also proving to be beneficial for firms and Finland's economy as well, providing contracting opportunities for companies and micro-enterprises.

© Vincent Tremeau/The World Bank

CONCLUSION

Adapting to climate change and building resilience, especially in the most vulnerable countries and communities, is an urgent priority. Yet unless we manage to mobilize private sector investment in these activities on a large scale, finance flows will simply not suffice to meet fast-growing adaptation finance needs. The Blueprint for Action presented in this report aims to address that challenge by showing how public and private actors can work together to overcome the key barriers to private investment in A&R.

The case studies in Section 5 show how individual elements of the Blueprint are already being applied around the world, with promising results. The Blueprint for Action adds value by combining best practices into a systematic approach that governments, MDBs, and other development partners can use to catalyze private mobilization and engage the private sector to invest in priority and urgently needed adaptation and resilience-building projects, with five steps that can be implemented sequentially or individually:

Step 1: Support long-term adaptation planning based on a whole-of-government approach

1. Clearly identify adaptation and resilience needs and investments;
2. Mandate use of climate information services and climate risk screening in all investment design and decision-making (incentivizing long-term climate-resilient development planning and investment design);

Step 2: Develop a national adaptation investment plan

3. Develop a coordinated multi/cross-sector adaptation investment plan;
4. Accurately price physical climate risks;
5. Embed climate finance capacity in ministries of finance;

Step 3: Conduct a market assessment and screen the pipeline for "bankable" projects

6. Screen projects for potential for private financing;
7. Undertake initial market sounding, assess returns on investment, and conduct enabling environment diagnostic, to understand what it would take to attract private investment;
8. Embed climate adaptation finance capacity in ministries of finance;

Step 4: Provide project preparation support

9. Leverage on the support from MDBs and donors to provide technical assistance/project structuring support;
10. Identify potential private sector investors;
11. Identify initial source of public sector funding to support project preparation;

Step 5: Support individual projects to close the transaction

12. At this stage, both public officials and private investors need to keep focus on finalizing the project, close the deal and proceed to implement and monitor project delivery;

Cross-cutting actions – Create an enabling environment:

13. Diagnose required enabling environment changes for private sector investment in adaptation and resilience;
14. De-risk investments through use of policies, regulations, standards, incentives, and risk transfer;
15. Promote knowledge-sharing on what constitutes effective adaptation and resilience-building;
16. Make the most of strategic, multi-stakeholder partnerships.

The Blueprint for Action will be used most immediately by the World Bank Group to implement country pilots in fiscal years 2021–2023, as part of the Bank's new Enabling Private Investment in Adaptation initiative. During this time, the pilots will focus on different sectors and test different entry points. In the end, the Blueprint will be refined, amended, and finalized, incorporating lessons from the country pilots as well as co-design with pilot countries and key global partners in adaptation finance. The Blueprint can also be adapted to different country contexts while still maintaining replicability.

The ultimate goal is to produce a ground-tested Blueprint for Action that global, regional, and national stakeholders can use to mobilize large-scale private investment in adaptation and resilience. After incorporating lessons from the pilot, the Blueprint will be finalized around 2023, offering a coordinated approach to identifying, preparing, financing, and implementing privately financed A&R projects. All this work should be driven by countries' own priorities. The public sector will receive tested, practical guidance to inform efforts to mobilize private investment, while private investors will receive practical evidence of the business case for investing in adaptation.

A key issue to consider is whether governments have the financial and technical capacity to implement the Blueprint steps. For this, it is of utmost importance for governments to mobilize expertise and build on technical assistance provided by MDBs, bilateral donors, and the development community in the implementation of each of the proposed steps and in building the capacity needed to ensure that adaptation planning is sustained in the long term. This support can range from upstream steps of developing long-range adaptation planning across sectors, to embedding climate finance advisers within ministries of finance, identifying a pipeline of opportunities and, further downstream, preparing a transaction that considers multiple sources of capital, innovative project structuring, de-risking mechanisms and guarantees, as well as potential co-financing sources.

Helping climate-vulnerable countries to implement instruments and financing strategies, and thus unlock private finance for adaptation, is an urgent necessity for enabling adaptation action at large scale. This report has outlined a Blueprint for Action to incentivize private investment through enabling public actions. As the Blueprint is tested on the ground, we will develop case studies of private sector investment in adaptation, further strengthening the business case for adaptation. Future generations of adaptation practitioners and investors can build on that growing body of knowledge to scale up adaptation finance. The ultimate goal is to ensure that finance flows to priority actions, at both the national and local levels, that will achieve effective climate resilience and address the pressing adaptation needs of affected communities.

© Vincent Tremeau/The World Bank

REFERENCES

Acharya, Sunil, Virginie Fayolle, Caroline Fouvet, Naman Gupta, Vandana Nath, Luca Petrarulo, and Vidya Soundarajan. 2019. "Engaging the Private Sector in Financing Adaptation to Climate Change: Learning from Practice." Action on Climate Today Learning Paper. Acclimatize and Oxford Policy Management. Available at: http://www.acclimatise.uk.com/wp-content/uploads/2019/02/ACT-Private-Sector-paper_final_web-res.pdf.

Adelphi. Cochu, Annica; Tobias Hausotter and Mikael Henzler. 2019. The Roles of the Private Sector in Climate Change Adaptation – an Introduction. Berlin: Adelphi.

African Development Bank (AfDB), Asian Development Bank (ADB), Asian Infrastructure Investment Bank (AIIB), European Bank for Reconstruction and Development (EBRD), European Investment Bank (EIB), Inter-American Development Bank Group (IDBG), Islamic Development Bank (IsDB), and World Bank Group (WBG). 2020. *2019 Joint Report on the Multilateral Development Banks' Climate Finance*. http://www.ebrd.com/2019-joint-report-on-mdbs-climate-finance.

BlackRock. 2021. "Net Zero: A Fiduciary Approach." Letter to Clients from CEO Larry Fink, 26 January. https://www.blackrock.com/corporate/investor-relations/blackrock-client-letter.

Clapp, Christa, Harald Francke Lund, Borgar Aamaas, and Elisabeth Lannoo. 2017. Shades of Climate Risk. Categorizing climate risk for investors. CICERO Report 2017:01. Oslo: CICERO Center for International Climate Research. https://cicero.oslo.no/en/climateriskreport.

Coalition for Climate Resilient Investment (CCRI). 2019. "CCRI Launched with Assets Totaling USD 5 Trillion." News & Briefings. 23 September. https://resilientinvestment.org/1995/ccri-launched-with-assets-totaling-usd-5-trillion/.

Coalition for Climate Resilient Investment (CCRI). 2021. "Australia Announcement to Join CCRI Signals Major Commitment to Improve Climate Resilience and Build Safer Communities." News & Briefings. 28 January. https://resilientinvestment.org/australia-to-join-cccri/.

Climate Finance Lab. 2018. "Responsible Commodities Facility: Instrument Analysis." Available at: https://www.climatefinancelab.org/wp-content/uploads/2018/02/Responsible-Commodities-Facility_Instrument-Analysis.pdf.

Climate Finance Lab. 2020. "Responsible Commodities Facility." Available at: https://www.climatefinancelab.org/project/responsible-commodities-facility/.

Climate Investment Funds (CIF). 2020. "Seeding a Climate-Resilient Future: Creating Markets for Irrigation Technologies in Niger." CIF-GDI Delivery Challenge case study. https://www.climateinvestmentfunds.org/sites/cif_enc/files/knowledge-documents/niger_cif_case_study_full_case_study_0.pdf.

Climate Investment Funds (CIF). 2016. "Private Sector Investment in Climate Adaptation in Developing Countries: Landscape, Lessons Learned and Future Opportunities." https://www.climateinvestmentfunds.org/sites/default/files/7544-wb_cif_ppcr_report-v5.pdf.

Climate Investment Funds (CIF) and European Bank for Reconstruction and Development (EBRD). 2019. "How Private Sector Investment Can Support Gender-responsive, Climate-resilient Development in Tajikistan. Guidance note. https://www.climateinvestmentfunds.org/sites/cif_enc/files/knowledge-documents/gender_guidance_note_web_september2019final.pdf.

Climate Investment Funds (CIF) and European Bank for Reconstruction and Development (EBRD). 2018. "Gender-sensitive Climate Resilience Investments in Tajikistan." CLIMADAPT case study prepared for Gender Day at COP24. https://www.climateinvestmentfunds.org/sites/cif_enc/files/knowledge-documents/1091_gender_daycop24_case_study_final.pdf.

Climate Policy Initiative (CPI) 2019. "Global Landscape of Climate Finance 2019." London. Available at: https://climatepolicyinitiative.org/publication/global-climate-finance-2019/.

Druce, Laura, Ulf Moslener, Christine Gruening, Pieter Pauw, and Richenda Connell. 2016. "Demystifying Adaptation Finance for the Private Sector." Joint study by the United Nations Environment Programme Finance Initiative and the German Federal Ministry for Economic Cooperation and Development (BMZ), implemented by the German Development Corporation (GIZ) and conducted by the Frankfurt School UNEP Collaborating Centre for Climate & Sustainable Energy Finance, The German Development Centre (DIE) and Acclimatise. http://www.unepfi.org/publications/climate-change-publications/demystifying-adaptation-finance-for-private-sector/.

Earth Security Group. 2019. "Financing Sustainable Rice for a Secure Future." Available at: https://earthsecuritygroup.com/wp-content/uploads/2019/11/ESG-Financing-Sustainable-Rice.pdf.

Elenia. 2019. "Elenia and Sustainability 2018." https://www.elenia.fi/sites/www.elenia.fi/files/ELENIA_AND_SUSTAINABILITY_2018_1.pdf.

Energy Development Corporation (EDC). 2020. "2018 Performance Report." https://energy.com.ph/wp-content/uploads/2020/02/EDC-PR-2018_050719_FINAL.pdf.

Eriksen, Siri, E. Lisa F. Schipper, Morgan Scoville-Simonds, Katharine Vincent, Hans Nicolai Adam, Nick Brooks, Brian Harding, et al. 2021. "Adaptation Interventions and Their Effect on Vulnerability in Developing Countries: Help, Hindrance or Irrelevance?" *World Development* 141 (May): 105383. https://doi.org/10.1016/j.worlddev.2020.105383.

Gannon, K.E., F. Crick, J. Atela, and D. Conway. 2020. "Enabling Private Sector Adaptation to Climate Change Among Small Businesses in Developing Countries: What Role for Multi-Stakeholder Partnerships? Experiences from Kenya." Centre for Climate Change Economics and Policy Working Paper No. 370, Grantham Research Institute on Climate Change and the Environment Working Paper No. 340. https://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2020/06/working-paper-340-Gannon-et-al-2.pdf.

Global Commission on Adaptation (GCA). 2019. "Adapt Now: A Global Call for Leadership on Climate Resilience." Rotterdam and Washington, DC: Global Commission on Adaptation. https://gca.org/reports/adapt-now-a-global-call-for-leadership-on-climate-resilience/.

Global Commission on the Economy and Climate, 2016. "The Sustainable Infrastructure Imperative: Financing for Better Growth and Development." The 2016 New Climate Economy Report. Washington, DC, and London. http://newclimateeconomy.report/2014/wp-content/uploads/sites/4/2014/08/NCE_2016Report.pdf.

Goldstein, Allie, Will R. Turner, Jillian Gladstone, and David G. Hole. 2019. "The Private Sector's Climate Change Risk and Adaptation Blind Spots." *Nature Climate Change* 9 (1): 18–25. https://doi.org/10.1038/s41558-018-0340-5.

Government of the Commonwealth of Dominica, 2020. "Dominica Climate Resilience and Recovery Plan 2020-2030." https://reliefweb.int/sites/reliefweb.int/files/resources/CRRP-Final-042020.pdf.

Government of Kenya, 2016. "Kenya National Adaptation Plan 2015–2030: Enhanced Climate Resilience towards the Attainment of Vision 2030 and Beyond. Nairobi. https://www4.unfccc.int/sites/NAPC/Documents%20NAP/Kenya_NAP_Final.pdf.

Hallegatte, Stephane, Jun Rentschler, and Julie Rozenberg. 2019. *Lifelines: The Resilient Infrastructure Opportunity*. Sustainable Infrastructure Series. Washington, DC: The World Bank. https://doi.org/10.1596/978-1-4648-1430-3.

Hallegatte, Stephane, Jun Rentschler, and Julie Rozenberg. 2020. *Adaptation Principles: A Guide for Designing Strategies for Climate Change Adaptation and Resilience*. Washington, DC: The World Bank. https://openknowledge.worldbank.org/handle/10986/34780.

International Association of Insurance Supervisors (IAIS) and Sustainable Insurance Forum (SIF). 2018. "Issues Paper on Climate Change Risks to the Insurance Sector." Basel, Switzerland. https://www.iaisweb.org/page/supervisory-material/issues-papers/file/76026/sif-iais-issues-paper-on-climate-changes-risk.

International Finance Corporation (IFC). 2018. "IFC Issues First Peso-Denominated Green Bonds to Support Capital Markets and Climate-Smart Investments in the Philippines." Press release, June 25. Manila, Philippines. https://pressroom.ifc.org/all/pages/PressDetail.aspx?ID=16783.

Kates, Robert W., William R. Travis, and Thomas J. Wilbanks. 2012. 'Transformational Adaptation When Incremental Adaptations to Climate Change Are Insufficient'. *Proceedings of the National Academy of Sciences* 109 (19): 7156–61. https://doi.org/10.1073/pnas.1115521109.

Klingel, Franka. 2016. 'CLIMADAPT Supports Tajikistan's Efforts to Tackle Climate Change'. European Bank for Reconstruction and Development – News. 4 February. http://www.ebrd.com/news/2016/climadapt-supports-tajikistans-efforts-to-tackle-climate-change.html.

Kweilin, E. 2020. "Climate Risk: What Businesses Should Do About It." Forbes, February 25. https:// www.forbes.com/sites/kweilinellingrud/2020/02/25/climate-risk-what-businesses-should-do-about-it/.

Macquarie Infrastructure and Real Assets (MIRA). 2019. "Underground Resilience for Finland's Electricity Network." Case study. https://www.mirafunds.com/au/en/our-insights/case-studies/elenia.html.

Macquarie Infrastructure and Real Assets (MIRA). 2020. "Renewable Energy and Resilience in the Philippines." Case study. https://www.mirafunds.com/au/en/our-insights/case-studies/energy-development-corporation.html.

Macquarie. 2020. "Addressing Climate Change and Accelerating the Low Carbon Transition." Press release, 9 December. https://www.macquarie.com/au/en/about/news/2020/addressing-climate-change-and-accelerating-the-low-carbon-transition.html.

Mfitumukiza, D., A. S. Roy, B. Simane, A. Hammill, M. F. Rahman, S. Huq. 2020. "Scaling Local and Community-based Adaptation." Global Commission on Adaptation Background Paper. Rotterdam and Washington, DC. http://www.gca.org/global-commission-on-adaptation/report/papers.

Miller, Alan. 2014. "Why We Must Engage the Private Sector in Climate Change Adaptation Efforts." World Bank blog, January 9. http://blogs.worldbank.org/climatechange/why-we-must-engage-private-sector-climate-change-adaptation-efforts.

Miller, Alan, and Stacy Swann. 2019. "Driving Finance Today for the Climate Resilient Society of Tomorrow." Prepared by Climate Finance Advisors for the United Nations Environment Programme Finance Initiative and the Global Commission on Adaptation. https://www.unepfi.org/wordpress/wp-content/uploads/2019/07/GCA-Adaptation-Finance.pdf.

Mui, C. 2019. "PG&E is just the first of many climate change bankruptcies." *Forbes*, January, 24. https://www.forbes.com/sites/chunkamui/2019/01/24/pge-is-just-the-first-of-many-climate-change-bankruptcies/#74a263407e5f.

Oliver, Padraig, Alex Clark, and Chavi Meattle. 2018. "Global Climate Finance: An Updated View 2018." Climate Policy Initiative. https://www.climatepolicyinitiative.org/wp-content/uploads/2018/11/Global-Climate-Finance-_-An-Updated-View-2018.pdf.

Pinner, Dickon, Matt Rogers, and Hamid Samandari. 2020. "Addressing Climate Change Post-Coronavirus." *McKinsey Quarterly*, April 7, 2020. https://www.mckinsey.com/business-functions/sustainability/our-insights/addressing-climate-change-in-a-post-pandemic-world#.

Phillips, Carly A., Astrid Caldas, Rachel Cleetus, Kristina A. Dahl, Juan Declet-Barreto, Rachel Licker, L. Delta Merner, et al. 2020. "Compound Climate Risks in the COVID-19 Pandemic." *Nature Climate Change* 10 (7): 586–88. https://doi.org/10.1038/s41558-020-0804-2.

Rozenberg, Julie, and Marianne Fay. 2019. "Beyond the Gap: How Countries Can Afford the Infrastructure They Need while Protecting the Planet." Sustainable Infrastructure Series. Washington, DC: World Bank. https://openknowledge.worldbank.org/handle/10986/31291.

Stenek, Vladimir, Jean-Christophe Amado, and David Greenall. 2013. *Enabling Environment for Private Sector Adaptation: An Index Assessment Framework*. Washington, DC: World Bank Group. http://documents.worldbank.org/curated/en/734691487221282291/Enabling-environment-for-private-sector-adaptation-an-index-assessment-framework.

Tall, Arame, J. Hansen, A. Jay, B. Campbell, J. Kinyangi, P.K. Aggarwal, and R. Zougmoré. 2014. Scaling Up Climate Services for Farmers: Mission Possible – Learning from Good Practice in Africa and South Asia. CCAFS Peer-Reviewed Report No. 13. CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). Copenhagen, Denmark. https://cgspace.cgiar.org/bitstream/handle/10568/42445/CCAFS%20Report%2013%20web .pdf.

Thomas, Beth. 2019 "Top Underwriter of Green Bonds HSBC Eyes $1 Trillion Market." Bloomberg. https://www.bloomberg.com/news/articles/2019-10-15/top-underwriter-of-green-bonds-hsbc-eyes-1-trillion-market.

United Nations Environment Programme (UNEP). 2016. "The Adaptation Finance Gap Report 2016." Nairobi, Kenya. https://unepdtu.org/wp-content/uploads/2018/10/unep-gap-report-2016-web-6-6-2016.pdf.

United Nations Environment Programme (UNEP). 2018. "The Adaptation Gap Report 2018." Nairobi. https://www.unenvironment.org/resources/adaptation-gap-report.

United Nations Environment Programme (UNEP). 2019 "World's first green bonds scheme to finance responsible soy production in Brazil launched." Press release, July 4. Nairobi, Kenya. https://www.unenvironment.org/news-and-stories/press-release/worlds-first-green-bonds-scheme-finance-responsible-soy-production.

Vivid Economics. 2015. "Building an Evidence Base on Private Sector Engagement in Financing Climate Change Adaptation." Report prepared for the European Bank for Reconstruction and Development (EBRD). http://www.ebrd.com/documents/climate-finance/get-mdb.pdf.

Waselius, C., and K. Ekqvist. 2019. "Electricity Regulation in Finland: Overview." Thomson Reuters Practical Law. https://uk.practicallaw.thomsonreuters.com/7-629-2923?transitionType=Default&contextData=(sc.Default)&bhcp=1.

Woodruff, S.C., and P. Regan. 2019. Quality of national adaptation plans and opportunities for improvement. *Mitigation and Adaptation Strategies for Global Change*, 24, 53-71. https://doi.org/10.1007/s11027-018-9794-z.

World Bank. 2010. "Economics of Adaptation to Climate Change: Synthesis Report." http://hdl.handle.net/10986/12750.

World Bank. 2019. "The World Bank Group Action Plan on Climate Change Adaptation and Resilience." Washington, DC: The World Bank. http://documents1.worldbank.org/curated/en/519821547481031999/The-World-Bank-Groups-Action-Plan-on-Climate-Change-Adaptation-and-Resilience-Managing-Risks-for-a-More-Resilient-Future.pdf.

World Bank. 2020. "World Bank Group Announces Ambitious 35% Finance Target to Support Countries' Climate Action." Press release, 9 December. https://www.worldbank.org/en/news/press-release/2020/12/09/world-bank-group-announces-ambitious-35-finance-target-to-support-countries-climate-action.

Cover photo credits:

Top row, from left to right:
© Shutterstock/Nattapon Ponbumrungwong
© Chhor Sokunthea/The World Bank
© Ray Witlin/The World Bank
© Vincent Tremeau/The World Bank

Second row, from left to right:
© Maria Fleischmann/The World Bank
© Danilo Pinzon/The World Bank
© Ahmad Reza Mohabbati/The World Bank
© Simone D. McCourtie/The World Bank
© Ray Witlin/The World Bank

Third row, from left to right:
© iStock/Piyaset
© iStock/Riccardo Lennart Niels Mayer
© John Hogg/The World Bank

Bottom row:
© Vincent Tremeau/The World Bank

The World Bank comprises the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA). The organization's mission is to end extreme poverty and promote shared prosperity in a sustainable way.

The Global Facility for Disaster Reduction and Recovery (GFDRR) is a global partnership that helps developing countries better understand and reduce their vulnerabilities to natural hazards and adapt to climate change. Working with over 400 local, national, regional, and international partners, GFDRR provides grant financing, technical assistance, training and knowledge sharing activities to mainstream disaster and climate risk management in policies and strategies. Managed by the World Bank, GFDRR is supported by 34 countries and 9 international organizations.