



GLOBAL
CENTER ON
ADAPTATION

Adaptation Finance in the Context of Covid-19

**The Role of Development Finance
in Promoting a Resilient Recovery**

January 2021

Authors

Morgan Richmond, June Choi, Paul Rosane, Matthew Solomon, Bella Tonkonogy (CPI)
Dominic Molloy, Felipe Larrain, Jennifer Jacobowitz Rae (GCA)

Acknowledgements

The authors wish to thank the following for their co-operation and valued contributions, including through the project expert group: Jamal Saghir (GCA), Jaehyang So (GCA), Fleur Wouterse (GCA), Ian Noble (GCA), Bertrand Reyssset (AFD), Steve Hammer (World Bank), Craig Davies (EBRD), Edith Adera (AfDB), Swenja Surminski (LSE), James Birch (Gates Foundation), Sonia Dunlop (E3G), Zach Malik (E3G), Iskander Vernoit (E3G), Shimelis Fekadu (AfDB), H. Wright (WWF), Raphaëlle Vallet (Green Investment Group), Paola Alvarez, Neil Cabiles (Department of Finance, the Philippines), John Carstensen (Mott MacDonald), Michael Henderson (AECOM), Lutz Horn-Haacke (KfW), Amal-Lee Amin (CDC Group), Amy Chester (Rebuild by Design), German Velasquez (GCF), Ping Yean Cheah, Xing Zhang, Hubert Jenny (AIIB), Monique Motty (AfDB), Arghya Sinha Roy (ADB), Andrés Pérez (Ministry of Finance, Chile), Luis E. Gonzales Carrasco (Pontificia Universidad Católica de Chile), Linda Agbesi (UNOPS), Nisha Krishnan (WRI) and Carter Brandon (WRI). Thanks also to Barbara Buchner, Caroline Dreyer, and Elysha Davila (CPI) for their guidance, editing, layout, and graphics.

DESCRIPTORS

Sector	Climate Finance	
Region	Global	
Keywords	Climate Finance Flows, Covid-19, Adaptation Finance, Private Finance	
Contact	Dominic Molloy	Dominic.Molloy@gca.org
	Morgan Richmond	Morgan.Richmond@cpiglobal.org

ABOUT THE GLOBAL CENTER ON ADAPTATION

The Global Center on Adaptation (GCA) is an international organization, hosted by the Netherlands, which works as a solutions broker to accelerate action and support for adaptation solutions, from the international to the local, in partnership with the public and private sectors, to ensure we learn from each other and work together for a climate-resilient future.

ABOUT CLIMATE POLICY INITIATIVE

CPI is an analysis and advisory organization with deep expertise in finance and policy. Its mission is to help governments, businesses, and financial institutions drive economic growth while addressing climate change. CPI has six offices around the world, in Brazil, India, Indonesia, Kenya, the United Kingdom, and the United States.

CONTENTS

Foreword	4
Executive Summary	5
A. Introduction	8
I. Overview	8
II. Project Objectives	8
B. The State of Play	9
I. Adaptation Finance Before Covid-19	9
II. Climate Change Risks Threaten to Undermine Recovery	10
1. Health and economic impacts of Covid-19 are compounded by climate vulnerability	10
2. Accelerating climate risks threaten recovery	14
III. Covid-19 Responses Have Affected Adaptation Finance Flows	15
1. Inclusion of resilience in domestic stimulus packages	15
2. DFI action in response to Covid-19	16
3. Private-sector investment in response to Covid-19	17
IV. Adaptation Finance Flows Beyond 2020	18
1. Negative outlook factors	18
2. Positive outlook factors	18
3. Scenarios beyond 2020	20
C. The Way Forward	22
I. Interventions That Support Recovery and Resilience	22
1. Sector-specific interventions	22
2. Cross-sectoral strategic interventions	25
II. Framework for Identifying Effective Interventions	27
III. Identification and Implementation of Financial Instruments	29
IV. Measuring Adaptation Outcomes	35
D. Key Findings and Conclusions	36
E. References	39
F. Annex	47
I. Definition of Climate Adaptation	47
II. Stages of Adaptation Action and Finance	48
III. Barriers to Tracking Adaptation Finance	49
IV. Country Case Studies	50
1. Kenya	50
2. Fiji	51
3. Chile	53
4. Bangladesh	54
5. The Philippines	55
6. Lessons learnt	57
V. Sample Metrics for Prioritizing Effective Recovery and Resilience Interventions	58

UNLOCKING CLIMATE ADAPTATION FINANCING POTENTIAL

Urgent action is needed from governments, development finance institutions, the private sector, and others to ensure finance flows for a climate-resilient future

A world in which global crop yields fall by almost one-third, billions of people are left with insufficient water, and hundreds of millions in coastal cities are forced from their homes is not some dystopian fantasy. It is part of the stark reality facing our planet if we do not collectively accelerate action on climate change.

The good news as we enter a new year is that there is not only an array of tools at our disposal to tackle this existential challenge, but also growing recognition of the urgency to do so.

Yet our ability to counter multiplying and intensifying climate impacts has been set back by the pandemic—including in the critical area of adaptation finance. Despite the ambition of domestic pandemic stimulus packages to date, only a fraction of pledges contain climate-relevant components.

The year 2020 witnessed bold commitments by governments and some in the private sector to ensure we halt the dangerous rise in global temperatures. Yet without the financial firepower to make those commitments a reality we will fall short.

We must now urgently catch up by unlocking the financing critical to spur a much-needed breakthrough on climate adaptation—one that is an

integral part of the response to the interlinked health, economic and climate crises we face. This means bringing about a five- to ten-fold increase in adaptation finance.

The Global Center on Adaptation and Climate Policy Initiative are pleased to present a way forward with the publication of this report, which has two objectives: first, to understand how adaptation finance flows could be affected by the pandemic and beyond; and second, to outline opportunities for stakeholders to identify and implement interventions that support a resilient recovery.

The report highlights opportunities for increasing adaptation investment in the period of Covid-19 recovery, and proposes strategies for development finance institutions (DFIs) and governments to promote climate resilience. It describes financial instruments that can be leveraged for recovery and resilience, and highlights the critical role of overseas development assistance (ODA) in financing climate adaptation, particularly for highly climate-vulnerable developing countries.

We hope the report helps inform the way forward for meeting a challenge that is not only the most important of our lifetimes, but one that will set the course of our planet for future generations. The stakes could not be higher—and we must act now.

Patrick Verkooijen

Chief Executive
Officer
Global Center
on Adaptation

Ban Ki-moon

8th Secretary-General
of the United Nations
Co-Chair, Global Center
on Adaptation

Feike Sijbesma

Honorary Chairman,
Royal DSM
Co-Chair, Global Center
on Adaptation

EXECUTIVE SUMMARY

THE COVID-19 CRISIS IS A WAKE-UP CALL THAT OUR SOCIAL AND FINANCIAL SYSTEMS MUST BE BETTER PREPARED FOR THE CLIMATE CRISIS

Climate shocks are happening now—compounding risks and impacts alongside the fallout from the Covid-19 pandemic, especially for the most vulnerable. Building resilience to climate impacts will be critical to the efficacy of response and recovery efforts, yet climate-adaptation finance flows are at risk of falling sharply in the coming years at a moment when adaptation finance has never been more important.

Action taken now by governments, development finance institutions (DFIs), the private sector, and other stakeholders will be critical to determining the course of the recovery and the pathway toward a more climate-resilient, sustainable future. This report aims to understand how adaptation finance flows could be affected by the crisis in 2020 and beyond, and to outline opportunities for stakeholders to identify and implement interventions that support a resilient recovery.

The State of Play: Adaptation finance flows in 2020 and beyond

- **Before the current crisis, US\$ 30 billion in adaptation finance flowed on average annually in 2017 and 2018, already far below the expected needs of up to US\$ 300 billion annually by 2030^{1,2}.** Almost all adaptation finance tracked was funded by public actors (DFIs alone accounted for 79 percent of total adaptation finance in 2017-18), while less than US\$ 500 million of tracked adaptation finance flowed from private actors.
- **Developing countries especially face an increasingly steep adaptation funding challenge in the context of Covid-19.** While justified, the focus on emergency healthcare investment and economic relief has left fewer public resources available for investment in climate resilience. This pressure on budgets has been compounded by a decline in tax revenues and global trade and tourism. Many developing countries face dual risks to their sovereign credit ratings: 1) growing debt distress, and 2) increasing climate risk, both of which affect their borrowing capacity. Fiscal capacity, debt sustainability, and ability to access international markets for finance will be determining factors in countries' ability to meet imminent climate risks while also recovering from the pandemic.
- **To date, the US\$ 20.5 trillion³ pledged to Covid-19 recovery globally⁴ has largely not focused on addressing climate risks.** Less than one-third of countries' recovery packages have integrated physical climate risk information or resilience components⁵. Of the relatively few countries that did include adaptation components, investments flowed to food security, disaster risk prevention, and infrastructure interventions.
- **DFIs have prioritized rescue packages that support countries' immediate efforts to mitigate health impacts and the economic downturn.** Many DFI financing efforts are focused on providing liquidity with little attention paid to climate resilience. Some institutions expect steady adaptation finance flows this year, but note challenges in the future due to the time lag in financing associated with infrastructure project development, which has largely been put on hold.

- **External private investment in developing countries is set to fall significantly in 2020.**

Foreign direct investment (FDI) in developing countries is expected to fall by 40 percent, representing a major setback to short-term development objectives, including those associated with climate. However, this is against a positive trend in private-sector engagement in adaptation and resilience. Recent years have seen increased climate risk disclosure and investments in climate data analytics and adaptation and resilience-related companies. These factors point toward a potential upward trend in private adaptation finance flows once investment activity returns to pre-Covid-19 levels. Positive news on vaccines and expectations of an extended low-interest environment suggest that markets will be quick to rebound, however investment activity will vary widely across sectors and regions⁶.

- **A single-digit percentage decline in adaptation finance is likely in 2020, with high volatility in subsequent years**

given reductions in overseas development assistance, primarily in bilateral funding (or bilateral flows), shifts in financing from adaptation-relevant infrastructure sectors such as water and energy to social sectors such as health, and reductions in foreign direct investment. Adaptation finance flows in future years will depend heavily on vaccine distribution speed and equitability, as well as the strength of economic recovery, including international trade and tourism, and ability of governments and DFIs to finance infrastructure.

The Way Forward: Achieving a climate-resilient recovery

Governments, DFIs, and the private sector have many tools at their disposal to foster a resilient recovery in the coming years.

- **An array of existing and emerging typologies and taxonomies can help increase stakeholders' understanding of which adaptation interventions can meet near-term and/or long-term recovery objectives across economic, health, social, and climate dimensions.** Sectors to focus on include nature-based solutions, climate-adaptive health, water and sanitation projects, food security and agriculture supply-chain resilience building, and

resilient infrastructure planning and implementation. In addition, implementers can seek cross-sectoral strategic interventions, including strengthening or developing a National Adaptation Plan (NAP), implementing policies to encourage resilient development, investing in local resilience efforts and supporting city and sub-national policy-makers, integrating adaptation into existing jobs and other government programs, and improving climate risk data availability and accessibility.

- **A set of key considerations in the form of a checklist can help DFIs and government policy-makers identify the most effective interventions applicable to their local contexts.**

During the recovery phase, countries can employ context-based considerations to prioritize resources toward investments that target hardest hit sectors while supporting jobs in the short-term, delivering long-term multiplier effects, and contributing to social and environmental objectives, including building resilience to climate risks.

- **A diverse array of financial instruments can be used to increase investment in adaptation.** At least four factors impact the types of financial instruments best suited for implementing adaptation interventions: speed of implementation required; private investment environment; sovereign debt levels; and monitoring and evaluation capacity. Key financial instruments for mobilizing adaptation finance in the context of recovery include:

- a) Covid response facilities and bonds** that mainstream climate risk considerations
- b) Liquidity support** that incorporates climate risk governance requirements
- c) Reduced insurance premium payments** for climate risk insurance schemes in developing countries
- d) Debt relief and debt-for-adaptation swaps** to free fiscal space to address climate risk
- e) Public-private partnerships** to address climate risks



Farmers working the rice fields in Antanifotsy, Madagascar. Picture: iStock

To keep a climate-resilient recovery in reach, several major collaborative efforts will be needed:

- 1) Maintaining—or better, increasing—overseas development assistance levels.** ODA is critical for financing adaptation, especially in the low-income countries most vulnerable to climate change. In June 2020, the OECD estimated that total external finance across both public and private-sector sources for countries eligible for ODA will fall by US\$ 700 billion in 2020. Given accelerating climate risks, it will be more important than ever that donor countries commit to continued funding for developing country adaptation efforts.
- 2) Collaborating on debt relief.** Countries participating in the G20's limited Debt Service Suspension Initiative are also the most climate vulnerable. Further efforts are needed to ensure these countries can make investments in resilience, and to expand debt relief to those vulnerable countries not currently engaged.
- 3) Mainstreaming climate risk into liquidity support.** Given the predominance of emergency liquidity investments into both the public and private sectors, investments need to incorporate climate risk screening and governance improvements such as disclosure.
- 4) Implementing whole-of-government adaptation planning and policy.** Developing or enhancing National Adaptation Plans and improving cross-government coordination, especially with sub-national governments and finance ministries, can help mainstream climate risk in major public investment decisions.
- 5) Vastly improving climate risk data both from public and private sectors.** Improving data availability, accessibility, and disclosure will enable much greater investment in climate adaptation, especially from the private sector.
- 6) Adopting consistent and comparable metrics.** Currently adaptation finance is measured solely on an input basis, with challenges for tracking and also reducing incentives for some projects (such as data) that can have transformative effects. Metrics are needed that measure outcomes and impact.

A. INTRODUCTION

I) OVERVIEW

Finance is critical to building global resilience to worsening climate impacts. International adaptation finance⁷ has seen a slow but steady upward trend in recent years from US\$ 22 billion annually in 2015-16 to US\$ 30 billion annually in 2017-18, per CPI's Global Landscape of Climate Finance⁸. Despite this increase, finance flows still fall short of estimated needs given escalating climate risks: developing countries alone will need between US\$ 140 and US\$ 300 billion per year by 2030⁹.

As the Covid-19 crisis shifts public spending toward immediate relief and reduces fiscal space, climate-adaptation finance flows are at risk of falling sharply in the coming years. At the same time, adaptation finance has also never been more important since climate shocks are happening now—intersecting with and exacerbating the impacts of Covid-19. Building resilience to climate impacts will be critical to response and recovery efforts.

II) PROJECT OBJECTIVES

The aim of this work is to assess how Covid-19 will affect international adaptation finance flows, and to identify effective adaptation action that governments, Development Finance Institutions (DFIs), and the private sector can take to catalyse a climate-resilient recovery. The objectives of this analysis are to:

- **Highlight concrete risks and opportunities** for adaptation finance in the context of Covid-19.
- **Promote real-time peer learning** among DFIs, practitioners, and policy-makers to facilitate best practice approaches and highlight the opportunities presented by adaptation finance.
- **Facilitate new adaptation finance initiatives, policies, and programs** from DFIs and governments through the Covid-19 recovery.

Section B. The State of Play 1) summarizes the state of adaptation finance prior to the Covid-19 crisis, including the existing adaptation finance gap, 2) assesses the ways in which climate change threatens Covid-19 economic recovery, 3) outlines responses to date at the intersection of Covid-19 response and climate-change adaptation focusing on national fiscal stimulus efforts, DFI action, and private-sector investment, and then 4) frames key further needs in adaptation finance posed by the pandemic.

Section C. The Way Forward highlights opportunities for increasing adaptation investment in Covid-19 recovery efforts and proposes strategies for DFIs and other financial actors to promote climate resilience in the face of compound shocks from both the pandemic and accelerating climate impacts. This section introduces key interventions that meet adaptation and Covid-19 economic and health-crisis needs, proposes a framework for prioritizing adaptation interventions, discusses available financial instruments to help deliver those interventions, and recommends building data and measurement capabilities to help mobilize effective adaptation finance across interventions.

Section D. Key Findings and Conclusions draws conclusions from the existing body of evidence and provides considerations for stakeholders, including governments, development finance institutions, and private-sector investors.

B. THE STATE OF PLAY

This section summarizes the state of adaptation finance before 2020 and as affected by the Covid-19 crisis. The section is organized into the following sub-sections:

- 1) **Discussion of adaptation finance before Covid-19** highlighting the existing adaptation financing gap.
- 2) **Summary of how the Covid-19 crisis has exacerbated existing challenges** to mobilizing adaptation finance while making countries more vulnerable to climate-related shocks and stressors.
- 3) **Description of effects of the Covid-19 crisis on government, DFI, and private-sector response and direction of adaptation finance flows in 2020 and the next few years.**
- 4) **Analysis of adaptation finance flows beyond 2020** assessed across high-upside and low-upside scenarios for economic recovery.

I) ADAPTATION FINANCE BEFORE COVID-19

The World Bank estimates that in 2020 alone, Covid-19 will push an additional 88 million people into extreme poverty, rising to 115 million people under a worst-case scenario. The Bank also estimates that between 68 million and 132 million people will fall into poverty by 2030 because of climate change¹⁰ and that 143 million people could be forced to internally migrate by 2050 due to climate hazards¹¹. In the absence of a well-designed response, by 2050, climate change may depress growth in global agriculture yields by up to 30 percent, increase the number of people without sufficient water for at least one month a year to more than five billion, and force hundreds of millions in coastal cities from their homes at a cost of more than US\$ 1 trillion annually¹². Combined, climate change and Covid-19 pose devastating risks to global living standards.

Adaptation finance tracked for 2017 and 2018 serves as a baseline to understand the state of flows prior to the Covid-19 pandemic¹³. An annual average of US\$ 30 billion in adaptation finance was tracked for 2017 and 2018, mostly provided by public actors (DFIs alone

accounted for 79 percent of the total). The top three sectors receiving finance included water and wastewater management (US\$ 9.8 billion), agriculture and land use (US\$ 6.9 billion), and disaster risk management (US\$ 6.3 billion). This was a 35 percent increase from the US\$ 22 billion annually tracked in 2015-16. More details on sources of finance, sectoral recipients, and regional recipients of tracked finance are in Figure 1.

Tracked private-sector finance to adaptation remained very low in the years leading up to 2020—with less than US\$ 500 million of private-sector adaptation finance tracked in 2017-18 annually. In the private sector, pre-Covid-19 barriers to increasing volumes to adaptation finance included poor policy environments, where conditions were unsupportive to adaptation investment, undervaluing of positive externalities of adaptation finance, lack of long-term credit for projects that address chronic physical climate risks, and a lack of climate data in the private sector through which to develop risk finance instruments.

There were positive developments for private-sector adaptation finance mobilization prior to 2020, including scaling of green bonds overall and issuance of the first climate resilience bond by EBRD in 2019. The global green bond market grew by over 50 percent from 2018 to 2019 to almost US\$ 260 billion, and EBRD issued the first ever dedicated climate resilience bond at US\$ 700 million. The movement for climate risk disclosure in the financial system also saw significant progress in 2019 and into 2020: the UK is considering adopting mandatory disclosure requirements in line with the Task Force on Climate-related Financial Disclosures (TCFD) by 2025, joining New Zealand and France, and Canada has announced that it will make liquidity support for firms conditional on publishing annual climate-related disclosure reports consistent with the TCFD¹⁶.

II) CLIMATE-CHANGE RISKS THREATEN TO UNDERMINE RECOVERY

1) HEALTH AND ECONOMIC IMPACTS OF COVID-19 ARE COMPOUNDED BY CLIMATE VULNERABILITY

The Covid-19 crisis has exacerbated existing challenges to mobilizing adaptation finance while making countries more vulnerable to climate-related shocks and stressors.

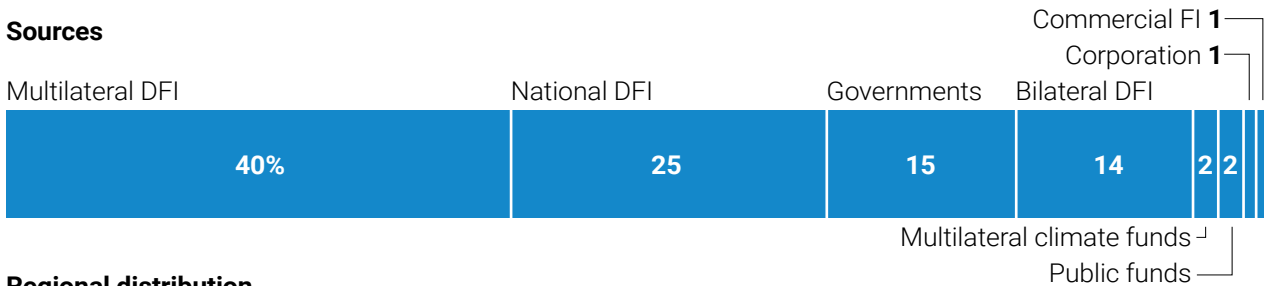
Climate change risks undermining the stability of the global financial system and countries' recovery from the Covid crisis. Understanding how countries' economies

and societies have been affected by the Covid crisis is critical in formulating effective recovery investments that also build climate resilience. In 2020, global growth is expected to contract by 4.4 percent¹⁷, and global extreme poverty is set to rise for the first time in over 20 years¹⁸. Economic impacts have been most acute for those countries and individuals with the highest existing vulnerability¹⁹. Those in extreme poverty have even less capacity to face climate-related risks than other populations²⁰. The Covid-19 crisis has also driven enormous uncertainty in the job market: short-term unemployment has skyrocketed²¹ and structural shifts, for example, toward automation, may accelerate²².

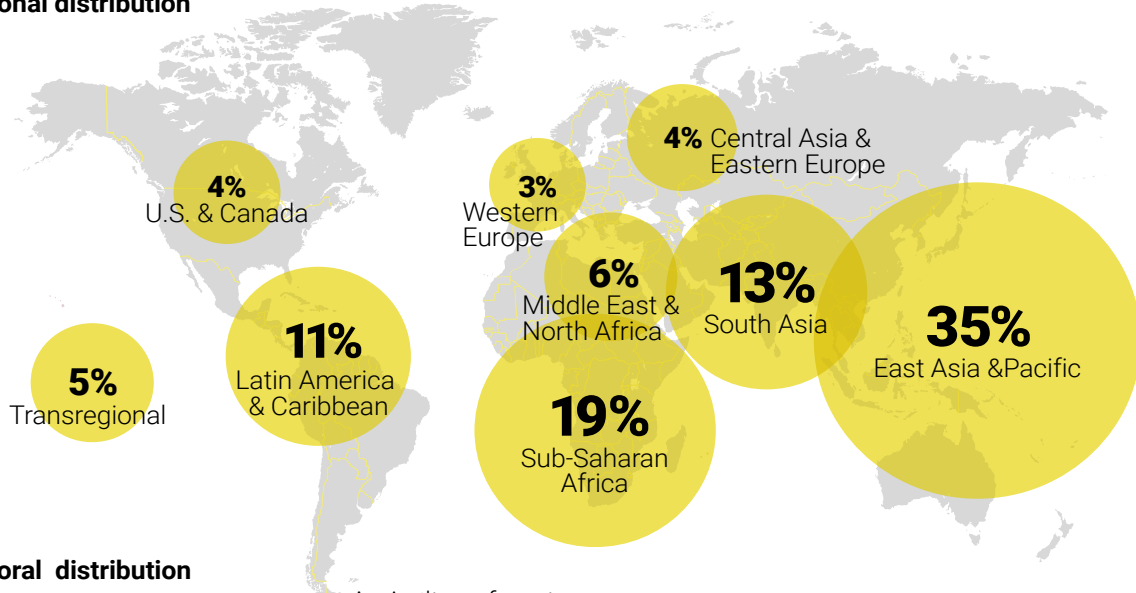
Figure 1. Adaptation finance by source, region, and sector

ADAPTATION FINANCE Percentage, 2017-18

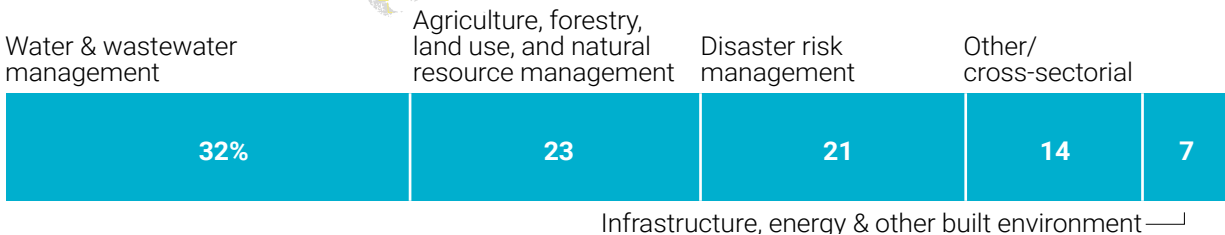
Sources



Regional distribution

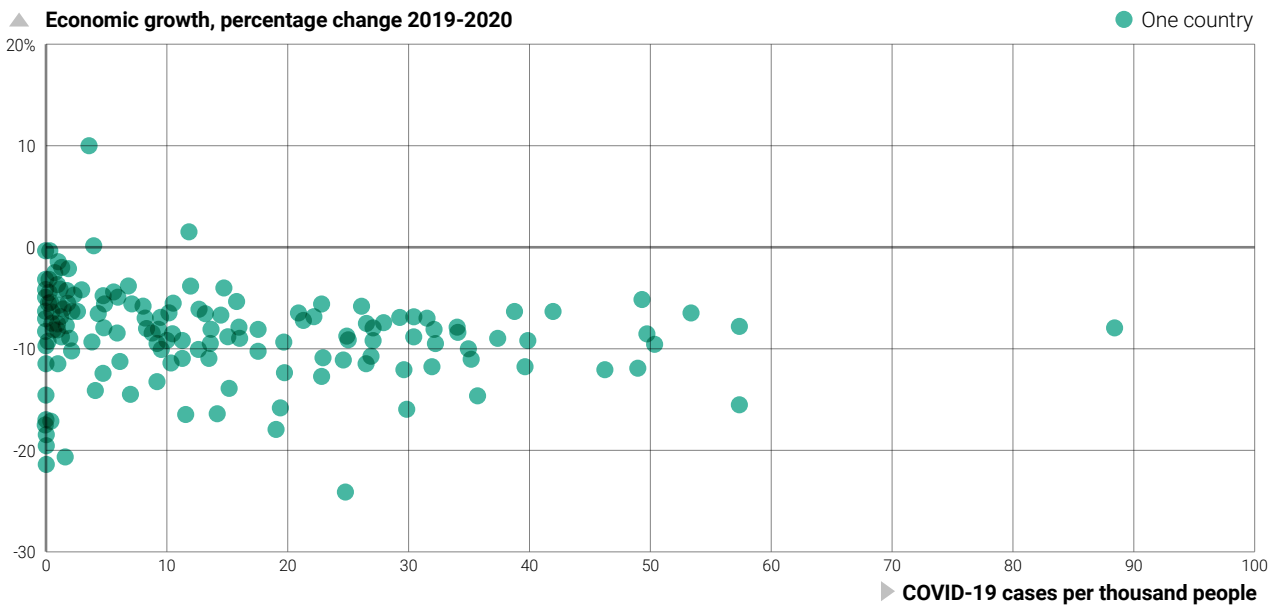


Sectoral distribution



Source: Climate Policy Initiative, Global Landscape of Climate Finance 2019

Figure 2. Country-level Covid-19 cases and economic impact are not correlated (dots represent countries)



Sources: Johns Hopkins Coronavirus Resource Center & International Monetary Fund

The crisis has affected countries regardless of Covid-19 health impacts. Even countries without severe Covid-19 outbreaks have experienced substantial economic contractions relative to 2019 GDP growth (Figure 2)²³. These contractions are caused by a variety of factors depending on the country and region, including reductions in travel and tourism, less international trade, and increased social distancing and sheltering-in-place. For example, Fiji has had very few recorded Covid-19 cases so far, but is projecting a 20 percentage-point decrease in GDP due in part to a significant drop in tourism. Without outside intervention, Fiji is likely not to have the fiscal space to respond to escalating climate-change impacts²⁴.

At a regional level, the Covid-19 crisis has had varying impacts in terms of both health and economic shocks. The Middle East and North Africa, for example, stands out as a region projected to be hardest hit on average in terms of projected change in economic growth (12 percentage point projected decrease between 2019 and 2020) and has experienced among the most significant health impacts in terms of Covid-19 cases per capita. Sub-Saharan Africa, by contrast, is facing a relatively smaller projected change in economic growth (6 percentage point projected decrease between 2019 and 2020) and has been among the least impacted in terms of Covid-19 cases per capita.

Even within regions and sub-regions, there is variability in economic outcomes, health impacts, and climate vulnerability. For example, Laos, Cambodia, Vietnam, and Thailand have all successfully contained the pandemic as of January 2021, but Laos and Vietnam are both projected to have a decrease in GDP of 5 percentage points this year, while Cambodia and Thailand are facing a projected 10 percentage point decline in GDP²⁵.



Box 1. Lack of Correlation Between Health and Economic Impacts in Bangladesh

The health impacts of Covid-19 in Bangladesh have been moderate as compared to the situation in other countries. As of December 2020, the country had reported a total of just under 500,000 cases, a case-fatality rate of 1.5 percent, and five deaths per 100,000 people. The deaths from Covid-19 per capita figure ranks Bangladesh 110 out of 170 countries assessed by Johns Hopkins Coronavirus Resource Center.

Bangladesh's economy is agriculture, manufacturing, and trade based. The country's economy has been growing by almost 7 percent annually for the last decade, led in part by the national government's rigorous five-year planning process (Government of Bangladesh, 2015). Industry growth, including mining and small and large-scale manufacturing, has been a leading sector. The IMF now projects a 2 percent growth rate for 2020—a decline of 6 percentage points from 2019—although growth is projected to pick up back to 6 percent in 2021.

The IMF reports that Bangladesh's economy has been most affected through three means: 1) a drop in domestic activity after a Covid-19 shutdown was announced on March 26, 2) an 83 percent fall in exports year-on-year in April (ready-made garment exports represent more than 80 percent of Bangladesh's exports), and 3) a fall in remittances from Bangladeshis living largely in the Middle East, who have been affected by both the pandemic and the drop in oil prices.

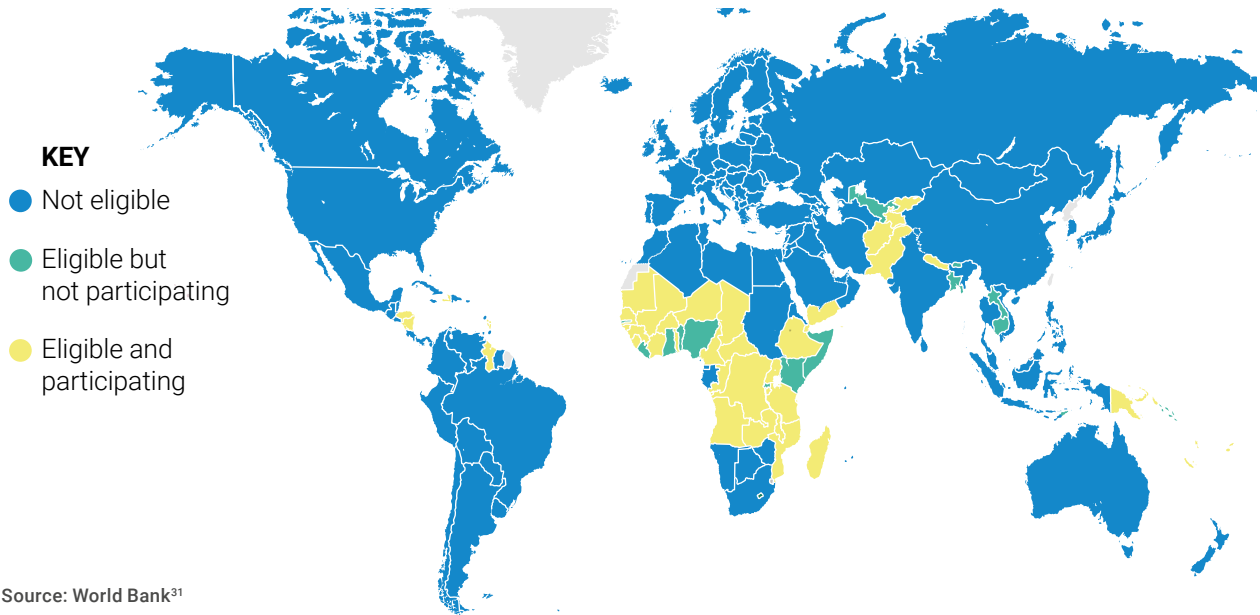
Developing countries face an increasingly large funding gap and dual risks to their sovereign credit rating due to limited fiscal space and increasing awareness of climate impacts, affecting their borrowing capacity. There is substantial risk that the growing funding gap and potential credit downgrades will starkly limit developing countries' capacity to finance climate-resilience investments

Developing countries face a particularly steep fiscal challenge amid increased emergency spending, declining tax revenues, oncoming debt payments, and a decline in global trade. While the IMF has approved more than one-third of its outstanding US\$ 280 billion in lending commitments since March 2020²⁶ and the World Bank has made available around US\$ 160 billion for countries through 2021, this is not nearly enough to close the funding gap²⁷. According to IMF estimates, the ratio of debt service costs to government tax revenue will exceed 30 percent in 33 percent of low-income countries and 73 percent of emerging market countries in 2021²⁸.

Climate change has already materially impacted sovereign risk and governments are facing climate risk premiums on their cost of capital²⁹. These countries will face even more challenges in financing adaptation needs going forward as they allocate constrained resources for Covid-19 recovery. Many climate-vulnerable countries are already facing high levels of debt distress, qualifying them for participation in the G20's Debt Service Suspension Initiative (DSSI)

(Figure 3). In the list of 25 DSSI eligible countries that S&P publishes ratings for, 10 already carry debt burdens that are 60 percent of GDP or higher³⁰. Of the participating countries, 28 are located in Sub-Saharan Africa and 22 are Small Island Developing States. Other eligible countries, such as Kenya, Mongolia, and Nigeria, have chosen not to participate due to concerns that their participation may affect their credit rating and ability to borrow from external commercial lenders.

Figure 3. Map of DSSI eligible countries and their participation status

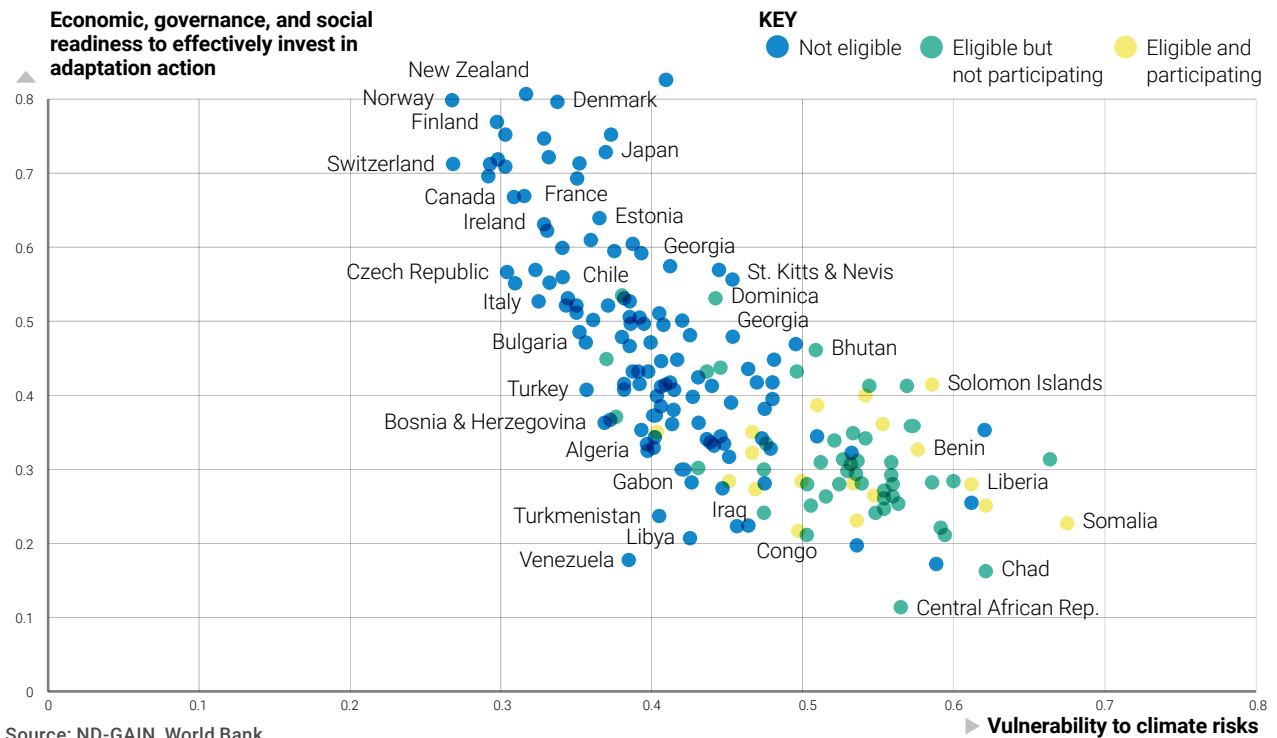


Source: World Bank³¹

The high correlation between DSSI eligible countries and those that are most climate vulnerable and least prepared to meet climate risks, based on the ND-GAIN Index methodology³², suggests that DSSI holds potential to relieve financial burdens for the countries that most need debt service suspension (Figure 4).

However, the DSSI has not been successful thus far in freeing up sufficient funds for countries to meet Covid-19 impacts or immediate adaptation needs. A total of US\$ 9.4 billion in debt service payments has been suspended across 45 countries, averaging just 0.65 percent of 2019 GDP³³.

Figure 4. DSSI eligible countries have high climate vulnerability and low capacity to leverage investments into adaptation action



Source: ND-GAIN, World Bank

2) ACCELERATING CLIMATE RISKS THREATEN RECOVERY

This year has illustrated with painful clarity how the climate crisis will accelerate other risks and that climate-related shocks and stressors will accelerate even as populations face additional economic, social, and health challenges. Climate-related shocks impacted all regions in 2020. Three examples of the intersection between the Covid-19 and climate crises in 2020 include:

Climate-related locust swarms in the African Sahel in the summer of 2020 affected a region already impacted by widespread desertification and increasingly uncertain rainfall. Locusts caused severe crop destruction across Ethiopia, Somalia, Kenya, and Yemen. This impact compounds existing food insecurity and economic pressure from the Covid-19 crisis. The World Bank estimates that the cost of supporting farmers and producers affected by this crisis could reach US\$ 8.5 billion by the end of 2020³⁴.

Category 4 Hurricane Eta and Category 5 Hurricane Iota hit Central America within weeks of each other in November 2020, damaging a region already struggling to cope with the health impacts of Covid-19. Inter-American Development Bank (IDB) estimates that Hurricane Eta alone caused up to US\$ 5.5 billion in damages and affected 3 million people across seven Central American countries³⁵. IDB has committed US\$ 1.7 billion in aid to populations affected across the region, but a considerable gap remains between available finance and assessed costs of recovery and activities necessary to build regional resilience to storms in coming years.

Flooding along the Yangtze River displaced millions in China in June through August 2020, putting at risk pandemic containment efforts and causing tens of billions of U.S. dollars in economic losses³⁶. Investment in nature-based and gray infrastructure solutions are critically needed in many regions affected by riverine flooding that has been accelerated by climate change.

Climate adaptation serves not just to address physical climate risks in their own right, but to protect broader economic and financial systems that have been weakened by the Covid-19 crisis.

As has happened in the Covid-19 crisis, climate risks could also undermine the stability of economic and financial systems³⁷. For example, the Sustainability Accounting Standards Board (SASB) has assessed that physical and transition risks combined could impact 93 percent of the equity market capitalization in the U.S., and therefore represent a systemic risk to the stability of the financial system³⁸. Physical risks that affect financial stability include destruction to infrastructure and diversion of resources due to climate-related shocks and impacts of climate change on health and living conditions, labor productivity, and viability of supply chains³⁹. Recognizing this threat, central banks are becoming increasingly active under the umbrella of the Network for Greening the Financial System, providing guidance to financial supervisors in managing physical risks to protect financial stability.

Adaptation finance levels were already insufficient to meet estimated needs pre-Covid-19 and worsening climate impacts over the coming years pose a significant threat to countries' Covid recoveries.

Finally, Covid-19 has highlighted the globally interconnected nature of systemic risks and the importance of a coordinated global response in managing these. A growing body of research indicates that climate change has exacerbated conditions for the development of vector-borne and zoonotic diseases, acting as a multiplier for pandemic risks^{40 41 42 43}.



III) COVID-19 RESPONSES HAVE AFFECTED ADAPTATION FINANCE FLOWS

This section provides a qualitative snapshot of how government, DFI, and private-sector response to the Covid-19 crisis could affect volume, sectoral, and geographic direction of adaptation finance flows in 2020 and the next few years. More precise estimates of 2020 flows will only be available when financing organizations have had sufficient time to track and report adaptation finance, typically at least six months after year end⁴⁴.




1) INCLUSION OF RESILIENCE IN DOMESTIC STIMULUS PACKAGES

Despite the ambition of domestic stimulus packages to date, only a fraction of pledged recovery packages contain climate-relevant components⁴⁵.

Low-carbon-intensive investments are one-fifth of carbon-intensive investments⁴⁶. Overall, sectors with a clear mitigation focus represent the majority of these green measures, while adaptation focus is rare. Alongside the stimulus to date, many countries may announce substantial additional fiscal stimulus (including the United States, China, and European Union).

However, a small number of countries are incorporating climate risk considerations into stimulus and response action to date, detailed in Table 1.

Table 1. Domestic stimulus with climate-adaptation components

COUNTRY	ADAPTATION ACTION
 South Korea	Restoration of terrestrial, marine, and urban ecosystems, led by comprehensive diagnoses of Korean cities' climate risks and vulnerabilities. Another component of the recovery budget is allocated to the improvement and refurbishment of water management systems and sewage treatment plants.
 France	Committed close to €1 billion to a range of adaptation sectors, including the water supply network, infrastructure, and sewage treatment, and climate resilience of the electrical grid. About one-third of the budget is allocated to restoration work and infrastructure retrofits in areas with high risk potential (coastlines, seismic areas) or high environmental impacts (dams, roads, railways) ⁴⁷ .
 Germany	Committed €150 million to adaptation measures by supporting the general operations of the existing German Adaptation Strategy for Climate Change (DAS) funding program and helping social institutions (hospitals, nursing homes, daycare centers) adapt to the worsening consequences of climate change, such as heatwaves. Also supported two international initiatives with crosscutting adaptation and Covid-19 recovery benefits: the City Climate Finance Gap Fund, which aims to boost the recovery of cities while improving their climate resilience; and the Coronavirus Response Package, which includes emergency measures for nature reserves and biodiversity hotspots, and interventions to fight wildlife trafficking to prevent future pandemics.

Box 2. Resilience in Stimulus Packages

In an upcoming study, the World Resources Institute (WRI, forthcoming) reviewed 66 countries, including all G20 and V20 countries' 2020 fiscal stimulus packages for whether and how they included climate resilience. These were assessed against a list of indicators, including climate risk considerations, local decision-making, water resources management, and nature-based solutions.

- Overall, less than one-third (18) of the countries' responses that were examined were found to integrate physical climate risk awareness and resilience components. Thirteen of these 18 countries are part of the Vulnerable Twenty (V20) Group—a dedicated co-operation initiative of economies systemically vulnerable to climate change.
- The majority of climate-resilient investments flowed to food security, disaster risk prevention, and infrastructure interventions.
- Multiple countries—including India, China, and a number of EU members—factor in the low-carbon transition in their Covid-19 response without explicitly acknowledging physical climate risk, or they do so only through specific projects.
- In addition to domestic stimulus, 77 percent of the countries WRI screened received IMF or World Bank aid.

2) DFI ACTION IN RESPONSE TO COVID-19

Although many DFIs plan to utilize most of their capital base in the next two years, in some cases doubling pre-Covid-19 commitments⁴⁸, near-term emergencies have inevitably drawn attention away from climate finance. Nonetheless, some DFIs have also included climate-change adaptation in their Covid-19 response and improved vulnerable countries' and populations' ability to cope with future disasters.

Like domestic governments, DFIs have prioritized rescue packages that support countries' immediate responses to the Covid-19 crisis in an effort to mitigate health impacts and the economic downturn. In this context, liquidity support interventions and medical aid in hard-hit regions have been a dominant approach. In the early stages of the pandemic, DFIs played a significant role in providing medical support in developing economies. Most of these health-related rescue packages consisted of medical assistance in hard-hit countries and improving readiness in regions that expected a delayed outbreak^{49 50}.

To meet country needs in dealing with the Covid-19 crisis, many DFIs have had to reorient the kind of financing they provide. This includes temporarily moving away from traditional project finance (including adaptation projects and project preparation) and toward liquidity finance (corporate financing and government budget support). In particular, SMEs have been targeted for DFI recovery action. SMEs represent more than 50 percent of global employment⁵¹ and a substantial portion of countries' GDPs (29 percent in developed countries and 49 percent in developing countries)⁵². KfW states that 97 percent of its recovery aid applications to date benefitted SMEs⁵³, while AfDB initiated multiple interventions to assist both formal and informal SMEs⁵⁴.

However, failure to incorporate climate risks into credit risk assessments and liquidity-enhancing measures can lead to the build-up of risks in financial institutions, undermining financial stability⁵⁵. Therefore, some DFIs are exploring how to use liquidity financing to encourage clients to pursue improved climate governance and incorporate climate risk assessment into decision-making.

Through emergency packages, DFIs have also focused on improving developing countries' ability to cope with

food insecurity alongside the health crisis. Covid-19 has caused substantial supply-chain and agricultural workforce disruptions, which have weakened food security, already in peril in many regions given increasing climate-related hazards, including droughts and crop flooding. Some DFIs have had to reallocate some funds to the agricultural sector⁵⁰. For example, the World Bank provided US\$ 8 million in August 2020 to strengthen agriculture and food security in Belize, which has experienced interruptions to its agricultural supply chains in 2020, through the Belize Climate Resilient Infrastructure Project⁵⁷.

Cascading impacts of Covid-19 and climate change have also led to DFI interventions aiming to provide both health and climate benefits. For many DFIs⁵⁸, water safety and quality have been the primary focus of adaptation finance for multiple years. In the midst of a pandemic, these investments are all the more crucial, with increased demand for climate-resilient water and sanitation projects. In some countries, the combination of Covid-19 and heatwaves resulted in peaks in water demand during summer months, underlining the critical value of financing projects with dual benefits. As part of its Covid-19 response program, JICA, for example, has procured water treatment equipment and chemicals for Kenya⁵⁹, Tajikistan⁶⁰, Sudan⁶¹, and Palestine⁶².

Finally, some DFIs are also implementing longer-term interventions to identify vulnerabilities and better reflect climate risk in decisions. As already highlighted, Covid-19 has raised public awareness of the crucial role of resilience and crisis-preparedness across a range of socio-economic and physical climate risks. For example, some multilateral (WB, ADB, AFD) and bilateral (JICA) DFIs are helping highly vulnerable countries (the Philippines⁶³, Indonesia⁶⁵, Madagascar⁶⁶, among many others) to prepare for future climate-related and health disasters through policy-based programs. In these countries, disaster management policy frameworks are being created, and financial instruments that can be triggered in the event of such disasters have been launched.

The pandemic has also highlighted the importance of—and challenges in—implementing risk financing mechanisms. The World Bank has paid out more than US\$ 900 million under its Catastrophe-Deferred Drawdown Options (CAT-DDO) triggered by the Covid-19 pandemic. These funds were disbursed swiftly in April—with Panama, the

Maldives, Romania, and Colombia all receiving contingent loans in that month⁶⁷. The World Bank's 2017 pandemic catastrophe bond experienced more significant challenges in 2020—largely related to the length of time that elapsed between when needs arose and the payout of the bonds⁶⁸. Future implementations of natural catastrophe bonds must include sufficient use of data collection, climate analytics, and information systems in order to reduce uncertainty in disaster risk models and ensure the most vulnerable can be reached in the event of a crisis.

The Africa Disaster Risk Financing Programme, a partnership with AfDB, paid out US\$ 2.1 million to cover anticipated livelihood losses from drought-related crop failures in Madagascar, noting the importance of risk transfer mechanisms in the presence of multiple crises⁶⁹.

3. PRIVATE-SECTOR INVESTMENT IN RESPONSE TO COVID-19

While mobilizing private capital is an important part of closing the adaptation financing gap, many challenges remain in systematically engaging the private sector in adaptation projects and effectively tracking private adaptation flows. There has been increasing interest in recent years among private-sector actors in climate risk disclosure, investing in climate data analytics, and identifying adaptation and resilience-related business opportunities. These factors point toward a potential uptick in private adaptation finance flows once investment activity returns to pre-Covid-19 levels. Positive news on vaccines and expectations of an extended low-interest environment suggest that markets will be quick to rebound, however investment activity will vary widely across sectors and regions⁷⁰.

The early months of the pandemic were marked by massive liquidity support for firms. Most of that support was not conditional on adopting any climate resilience measures⁷¹. Although capital outflows stabilized relatively soon after hitting record lows in March 2020⁷², the OECD has estimated that external private finance inflows to developing countries may drop by US\$ 700 billion in 2020 compared to 2019⁷³, and the World Investment Report projects that overall foreign direct investment (FDI) may decrease by up to 40 percent in 2020⁷⁴. This shifting landscape may allow local institutional investors to take up more prominent positions in domestic equity markets⁷⁵, which could potentially boost interest and demand for local resilience solutions.

Meanwhile, private-sector actors, including BlackRock, the Institutional Investors' Group on Climate Change (IIGCC) and insurance companies like Willis Towers Watson and Zurich Insurance Group, have stepped up climate action commitments during the pandemic, including through increased uptake of TCFD recommendations⁷⁶ and participation in initiatives to increase investments in resilience⁷⁷. There are increasing business opportunities and demand for resilience tools, products, and solutions in emerging and developing markets which can benefit from private actors' growing commitment in this area⁷⁸.

IV) ADAPTATION FINANCE FLOWS BEYOND 2020

We estimate that there will be a single-digit percentage decline in public global adaptation finance flows in 2020, and potentially a larger (though with high uncertainty) decline in the following years. This estimate is based on a mix of positive and negative outlook factors, outlined below, which indicate that overall public finance flows have been negatively impacted by Covid-19, driven by decreased domestic revenues, increased spending on health and social services, and mounting debt servicing costs. Informed most directly by data on bilateral aid disbursements in sectors relevant to adaptation, where finance on average has fallen by a single-digit percentage, we assess that the negative outlook factors outweigh the positives, leading to a projected decline in adaptation finance in 2020.

The outlook for adaptation finance will depend most significantly on the capacity of international finance providers to uphold their climate finance commitments in 2021-25, including their capacity to resume new project deal sourcing and implementation on any projects that may have been postponed due to the pandemic.

1. NEGATIVE OUTLOOK FACTORS

Overall development finance will be negatively impacted by Covid-19: Overall overseas development assistance decreased in 2020 (based on January-October data), driven by reductions in commitments from bilateral donors even as international financial institution commitments have increased⁷⁹. In particular, the share of overall bilateral aid disbursements has declined in adaptation-relevant sectors, including energy (-2.8 percent) and water and sanitation (-1.2 percent)⁸⁰. Tax revenues have plummeted due to reduced economic

activity, while governments have dramatically increased spending on relief and stabilizing the economy, further reducing available resources for investing in adaptation⁸¹. At least one major donor country has announced a reduction in its ODA commitment⁸², and it is not yet clear whether the increases in IFI commitments in 2020 will result in reductions in future years.

Increasing debt servicing costs: Increasing debt burdens and potential sovereign credit downgrades may further reduce countries' capacity to access international debt, which represented around 39 percent of total adaptation finance flows annually (US\$ 11.7 billion) in 2017-18⁸³. As shown in Figure 4, the countries with the highest debt burdens are largely among the most climate-vulnerable.

Delays in project preparation and approvals: Some DFIs have placed on hold new project preparation to prioritize disbursements toward addressing immediate Covid-19 impacts. Covid-19 has also reduced capacity to conduct on-site due diligence, which has delayed project timelines. DFIs are the largest providers of adaptation finance (US\$ 24 billion, or approximately 80 percent of tracked finance in 2017-18), so a delay in DFI project preparation is likely to have a considerable impact on new commitments to adaptation beyond 2020. The projects that have continued in 2020 are likely to be those that have been approved in previous years, so a delay in project preparation is likely to lead to follow-on impacts on adaptation finance in the years to come.

Slow vaccine roll-out in climate-vulnerable countries: Vaccine distribution is likely to reach countries with higher climate vulnerability last, with low-income countries expected to be vaccinating high-priority groups into early 2022 and continuing into 2024⁸⁴. To date, no country in Sub-Saharan Africa has confirmed purchase of vaccines⁸⁵. This will likely result in slower project approvals and implementation in these countries, as well as deepening economic crises.

2. POSITIVE OUTLOOK FACTORS

The majority of tracked adaptation finance is international and had been increasing prior to 2020: Preliminary reports from MDBs and IDFC members indicate that adaptation flows continued to increase in 2019, to US\$ 14 billion and US\$ 19 billion respectively, during a time when the growth rate of overall climate

finance has declined⁸⁶. Many of these providers, including ADB, AfDB, AIIB, EIB, IsDB, IADB, and WBG, have set ambitious post-2020 climate finance targets. These include a commitment to double climate financing over the period 2020-25 from AfDB, and the commitment to increase adaptation finance to US\$ 50 billion over 2021-25 from WBG. IDFC members have also committed to mobilize more than US\$ 1 trillion in climate finance by 2025⁸⁷. Interviews with DFIs conducted for this project have indicated that some are still expecting to reach their climate finance targets for 2020.

Some funding toward addressing Covid-19 impact may benefit adaptation outcomes if interventions are well designed to be climate-resilient and address the needs of climate-vulnerable populations. Sectors receiving the most support during the pandemic include basic social

services in water, health, sanitation services, food security, employment, and SME support—all areas that have high potential to address adaptation needs. Thus far, this is a mixed positive outlook factor as most DFIs have not been implementing measures to ensure Covid-19 disbursements simultaneously contribute to adaptation benefits.

Increasing efforts to improve transparency and climate risk disclosure, and to strengthen accounting frameworks for adaptation finance, may contribute to more visibility on opportunities for adaptation investments, especially for the private sector. For instance, one DFI has begun to link Covid-19 liquidity support with improving corporate climate governance, and private-sector actors are increasingly viewing climate risk management as a condition for accessing financial markets.







3. SCENARIOS BEYOND 2020

Moving beyond 2020, there is high uncertainty about the distribution of vaccines, stimulus packages, and consequent strength of recovery and fiscal space available for climate-resilient investment, notably for infrastructure which drives the majority of adaptation finance flows. The IMF currently projects 2021 economic growth of 5.2 percent (after a 4.4 percent fall in 2020), although variance is very high at the regional and country level⁸⁸. For example, emerging and developing Asian economies are projected to grow by 8 percent in 2021 (after a 1.7 percent decrease in 2020), while Latin American and Caribbean countries are only expected to grow by 3.6 percent in 2021 (after an 8.1 percent decrease in 2020)⁸⁹. To address this uncertainty for adaptation finance planning purposes,

we propose considering a high-upside scenario and low-upside scenario for economic recovery. There are, of course, future scenarios across a more diverse spectrum than a binary 'high-upside' or 'low-upside' economy recovery, but the goal of this analysis is to elucidate interventions that those two scenarios might merit.

Table 2 outlines the factors that may play a role in each scenario. Recent Covid outbreaks and a lack of international initiative on debt restructuring, beyond the temporary reprieve offered by the G20 DSSI, make the low-upside scenario a distinct possibility. On the other hand, the roll-out of a successful vaccine and strong international response has potential to lead to a stronger recovery worldwide and a subsequent increase in adaptation and resilience funding.




Table 2. Key factors informing scenarios for economic recovery

CATEGORY	LOW-UPSIDE SCENARIO	HIGH-UPSIDE SCENARIO
 Vaccine distribution (across countries)	Developed countries get the vast majority of vaccine doses, leaving developing countries in Covid-caused economic crisis for longer	Vaccine doses are distributed equitably globally and the global recovery is led by growth in developing countries
 Vaccine distribution (within countries)	Distribution is stratified by socio-economic status, leading to unequal and diminished growth in all countries	Distribution is equitable, leading to economic resilience and growth for all economic segments
 Economic recovery	Recovery is slow and unequal, especially for countries reliant on international trade and tourism	Recovery is fairly rapid globally, with trade and tourism returning to pre-Covid levels in the next year
 Debt loads	Relatively slow economic recovery, ongoing relief expenses, and limited international assistance lead to high debt burdens, with some defaults	International actors provide debt relief at the scale needed for the hardest-hit countries to meet adaptation needs and access international financing

The impacts of these scenarios on availability of adaptation finance by actor are described in Table 3. While some of these actors operate globally, it is likely that the recovery will vary by region and country.

Note that some adaptation finance measures will not be identified in a calculation of total adaptation and resilience investments. For example, the avoidance of maladaptation or debt relief that frees up local capital to invest in adaptation would not be captured. For the purposes of this analysis, those types of investments are considered as increasing adaptation finance.

Table 3. Impacts of the economic recovery scenarios on financial-actor investment in adaptation

FINANCE CHANNEL	ADAPTATION FINANCE IMPACTS OF A LOW-UPSIDE SCENARIO	ADAPTATION FINANCE IMPACTS OF A HIGH-UPSIDE SCENARIO
 <p>ODA flows</p>	<ul style="list-style-type: none"> • High 2020 expenditures constrain future expenditures; shareholder governments are not able to provide capital increases; austerity measures reduce ODA. • Lack of project preparation in 2020/21 leads to declines in infrastructure spending in 2022-25. • Adaptation finance volume decreases in line with overall spending and infrastructure-specific spending. • Investments with lower multipliers, but higher transformative potential (such as climate data and capacity) are delayed. 	<ul style="list-style-type: none"> • Expenditures able to continue at expected levels. • Project delays are minimized. • Resilience incorporated in recovery investments. • Adaptation flows are steady in 2021 relative to 2017/18, and grow in future years, aided by long-term investments in data and capacity. • COP26 drives increasing commitments for climate resilience.
 <p>Domestic public flows</p>	<ul style="list-style-type: none"> • High sovereign debt for LICs and other EMs constrains investment. • Stimulus measures that pass in developed countries are maladaptive or non-adaptive. • Single-digit decreases in adaptation flows in 2021 relative to 2017/18, likely decreasing further as austerity measures put in place. 	<ul style="list-style-type: none"> • Domestic stimulus is screened for climate risk. • International debt relief provides fiscal space for short and long-term resilient investment. • Adaptation finance steady or increasing in 2021 relative to 2017/18 flows and grows from there.
 <p>Private adaptation finance investment in developing countries</p>	<ul style="list-style-type: none"> • Continued flight from developing countries. • Few opportunities for business-ready investments, especially in infrastructure. 	<ul style="list-style-type: none"> • Developed country investors with high cash balances seek returns in developing markets. • Investment opportunities realized in food security, distributed energy and cold-chain storage, nature-based solutions, and other resilient sectors.

Depending on the scenario and location, actors will need to adjust their priorities, financing instruments employed, and financing strategies. Section C discusses these implications further.

C. THE WAY FORWARD

This section highlights opportunities for increasing adaptation investment in the period of Covid-19 recovery and proposes strategies for DFIs and governments to promote climate resilience. Recovery decisions that are made now will be critical for long-term transformation.

The section is organized into the following sub-sections:

- I) **Introduction to key interventions** that meet adaptation and Covid-19 economic and health-crisis needs.
- II) **Framework for prioritizing key interventions** to achieve a resilient recovery.
- III) **Available financial instruments that can help deliver effective interventions** and analysis of how those instruments have been deployed thus far during the Covid-19 crisis.
- IV) **Recommendations for building data and measurement capabilities** to increase the effectiveness of interventions financed.

I) INTERVENTIONS THAT SUPPORT RECOVERY AND RESILIENCE

To meet dual Covid-19 recovery and climate risk reduction goals, practitioners in the public and private sectors should start by understanding the universe of adaptation activities and how they can align with Covid-19 recovery efforts. Taxonomies of adaptation activities broadly distinguish between asset-focused and systems-focused approaches to adaptation⁹⁰: asset-focused activities (*resilience of*) aim to maintain or enhance the resilience of an asset or activity to ensure its performance is fit-for-purpose over its design lifespan, whereas system-focused activities (*resilience through*) are designed with the primary objective of delivering adaptation benefits and resilience through an asset or activity for a larger system, such as long-term planning.

A number of adaptation intervention types, both sector-specific and cross-sectoral, can make strong contributions to resilient recovery. These intervention types are summarized in Table 4 and their links to recovery are detailed in the following section.

1. SECTOR-SPECIFIC INTERVENTIONS

The following examples detail interventions in sectors with substantial opportunities for contributions to a resilient recovery.

Nature-based solutions: With more than 1.25 billion workers vulnerable to employment impacts from Covid-19, nature-based solutions are a valuable contributor to jobs development, on average creating between seven and 40 jobs per US\$ 1 million invested in nature-based projects⁹¹. Nature-based solutions were a key component of several countries' stimulus efforts following the 2008 financial crisis: for example, South Korea invested more than US\$ 20 billion in river and forest restoration, while the United States invested US\$ 167 million in coastal habitat restoration⁹². In developing countries, where depletion of natural capital and their reduced capacity to provide key ecosystems contribute to low productivity in agriculture, fisheries and forestry, investing in NBS can sustain and enhance the incomes and jobs of workers in these sectors⁹³. However, in the wake of Covid-19, few countries thus far have dedicated stimulus to preserving and enhancing natural capital⁹⁴.

Many solutions in this sector also provide dual mitigation benefits: nature-based adaptation solutions can provide up to one-third of climate mitigation needed through 2030 to meet the goals of the Paris Agreement⁹⁵. Projects with dual benefits will be increasingly critical given growing constraints in adaptation funding availability. Nature-based solutions projects can also reach hard to address portions of the labor market, including SMEs that are active in forest and land restoration efforts.

Table 4. Classification of adaptation interventions

	ASSET OR ACTIVITY-FOCUSED (RESILIENCE OF)	SYSTEM-FOCUSED (RESILIENCE THROUGH)
Sector-specific	Nature-based solutions	
	Enhancing natural barriers around project/asset boundaries	Protecting natural systems that deliver critical ecosystem services and resilience benefits, e.g. mangroves, riverine and coastal habitat restoration
	Health and sanitation	
	Climate-proofing critical health infrastructure to ensure continued service without disruption during chronic and acute climate events	Ensuring access to clean water and drinking water e.g. addressing increased risk of pollution and saltwater intrusion Addressing infectious disease risk e.g. increasing capacity to monitor and track water-borne infectious disease outbreaks and how they spread
	Agriculture	
	Climate-resilient agricultural production e.g. use of drought-resistant seeds, drip-irrigation systems	Building robust supply chains and enhancing food security e.g. support for smallholder and subsistence farmers Resilient agricultural practices e.g. training and implementation of climate-smart production at individual farm level to maintain and enhance productivity and incomes
Cross-sectoral	Resilient infrastructure	
	Protecting assets and activities e.g. upgrading, replacing, or relocating infrastructure to reduce vulnerability to natural and climate hazards. Backup infrastructure e.g. adding spare capacity and backup generation to ensure smooth operations	Capacity to respond e.g. early-warning systems, contingency planning, training first responders, temporary evacuation measures Building in redundancies to address potential cascading impacts across infrastructure systems and avoid cross-sectoral service disruption
	Disaster risk finance	
	Insurance coverage: at the asset/project level	Risk financing instruments e.g. contingent credit lines, parametric insurance, risk pooling mechanisms (e.g. CCRIF), crop insurance
	Risk assessment and planning	
	Assessment of biophysical climate changes (both chronic and acute events) and related financial impacts Incorporating adaptation needs into the quality of project design (diagnostics, inputs, activities)	Assessment of underlying factors that make people and natural systems vulnerable to identified climate-change hazards (both chronic and acute) Incorporating adaptation needs into project results (outputs, outcomes, impacts) Establishing a robust climate governance system e.g. through cross-departmental coordination and involving ministries of finance in adaptation planning; strengthening or developing National Adaptation Plans Invest in local resilience initiatives and increase budget support for city and sub-national policy-makers
Ex-post climate hazard events		
Incorporate climate-resilient standards into all new investments Feedback lessons learnt into future assessment and planning	Recovery services , including health and education, employment etc. to address immediate impacts and improve adaptive capacity Feedback lessons learnt into future assessment and planning	

Source: GCA and CPI authors, drawing on various sources, including IPCC AR5, EU TEG Sustainable Finance Taxonomy, CBI Climate Resilience Principles, Joint MDB-IDFC Framework for Climate Resilience Metrics

Box 3. Emphasis on Nature-Based Solutions in Chile

In April 2020, Chile submitted an enhanced Nationally Determined Contribution. The enhanced NDC scales up Chile's climate ambition and includes several key relevant updates for a resilient recovery: 1) it dictates that every climate commitment Chile makes must safeguard a just transition (i.e. jobs programs for fossil fuels) and integrate UN Sustainable Development Goals, including water security and overcoming poverty, and 2) it includes a target of restoring one million hectares of natural ecosystems to deliver dual benefits for climate-adaptation outcomes, including water security and emissions sequestration outcomes.

Because Chile has emphasized the importance of nature-based solutions in building adaptation—including a commitment to restoring 100,000 hectares of forests—prioritizing these solutions, which also hold significant jobs and economic growth potential, will be a valuable step toward a resilient recovery. Chile's updated NDC specifically highlights need for action in i) water management and sanitation, and ii) disaster risk management. These are two sectors that can incorporate nature-based solutions while meeting the NDC commitments.

Health, water, and sanitation: Increased intensity and frequency of precipitation, storms, droughts, and heatwaves alongside sea-level rise and increasing water temperatures all threaten water security and sanitation service delivery, and consequently public health. For example, increased flooding can cause damage to wastewater treatment plants, sea-level rise threatens inundation of coastal sanitation infrastructure, and water scarcity compounds existing water security challenges⁹⁶. In the midst of these risks, 75 percent of households in low and middle-income countries are currently unable to wash with soap and water⁹⁷, and an estimated 785 million people lack access to basic drinking-water services⁹⁸.

An increase in investment in climate-adaptive health, water, and sanitation from climate funds, DFIs, and national governments is critical for bolstering resilience to future climate impacts and pandemics⁹⁹. These are critical development needs at all times, but are especially urgent now given the importance of clean water and sanitation to fight infectious disease outbreaks. Investments could include climate-adaptive sanitation (such as anaerobic digestion of bio-waste with low-carbon impact and composting of bio-waste)¹⁰⁰, increasing access to and quality of water services, disease surveillance, detection of viral outbreaks, and monitoring of climate-driven changes in vector-borne diseases. The World Resources Institute notes that climate funds, including the Green Climate Fund, the Climate Investments Funds, and the Adaptation Fund

have to date underfunded activities in the health sector, failing to fully adhere to country-identified needs¹⁰¹.

Agriculture: Covid-19 has disrupted supply chains and led to significant uncertainty for farmers globally, especially for smallholder farmers. It has also impacted food security for low-income workers¹⁰². Lockdown measures and restricted mobility have led to serious economic repercussions, increasing the global poverty rate for the first time in more than two decades and reversing seven years of development progress in Africa. In the near term, attention should be focused on supporting smallholder farmers and providing food security for the unemployed and informal sector workers.

As noted in the Global Commission on Adaptation's flagship report, actions to build more resilient food systems demonstrate benefit-cost ratios between 2:1 and 17:1¹⁰³. In the near term, however, workers impacted by Covid-19 facing financial insecurity and continued underinvestment in the sector may revert to unsustainable or non-climate-adaptive practices¹⁰⁴.

Investing across value chains to support food security and livelihoods will not only increase resilience to future climate impacts, but also protect against supply-chain disruptions resulting from disease-related outbreaks. Interventions could include aligning government financial incentives for farmers with climate-smart production, investing in access to climate information and inclusive

insurance schemes, and increasing access to credit for the more than 500 million small-scale farming households that will be most impacted by climate change. Building climate resilience into agricultural value chains also provides an opportunity for employment—especially for female workers as the sector employs more of them than any other. Gender-sensitive policies and programming hold potential to empower women as well as improve overall quality and quantity of agricultural outputs¹⁰⁵.

Infrastructure: Similar to the recovery from the 2008 financial crisis, public spending on infrastructure has to date been a common feature of economic stimulus packages in 2020, and is likely to be a continued area of significant investment in the Covid-19 recovery in many countries. Investment in climate-resilient infrastructure holds potential to provide jobs, stimulate economic growth, and deliver immediate resilience benefits. GCA's Adapt Now report notes that benefits of building new infrastructure that is climate resilient outweigh the costs by 4:1. Public-private partnerships can unlock private investment for climate-smart infrastructure providing critical services such as water, sanitation, and electricity, leveraging private-sector experience in risk management and capacity to invest in climate-smart technologies.

At minimum, investments in infrastructure should mainstream climate-related risks—for example, storm-proofing coastal residences to respond to sea-level rise and storm surge, or increasing heat resilience in built infrastructure. Systems-level approaches will require an

enhanced understanding of potential cascading impacts across different infrastructure systems and building in redundancies to avoid service disruption.

2. CROSS-SECTORAL STRATEGIC INTERVENTIONS

Beyond sectoral interventions, the following strategic interventions can complement and strengthen all recovery efforts while unlocking further opportunities for building resilience.

Strengthen or develop a National Adaptation Plan. If a country has an existing NAP, it should be used to identify key interventions that can deliver co-benefits that address Covid-19 impacts and adaptation needs (a process for this identification is detailed in Section C.II, with an example given from Fiji). Countries without national adaptation planning efforts underway should begin the process in order to target recovery and resilience together. As the Philippines demonstrates in Box 4, the involvement of the finance ministry is critical to implementation.

Implement policies at the national and sub-national level to encourage resilient development. Especially given significant flows of finance to recovery efforts, governments must have policies in place to allocate resources in ways that also reduce climate risks. Such policies could include: mainstreaming climate risk into national development plans, introduction of climate-proofing standards for infrastructure¹⁰⁶, and strategic investment in research and development of resilient technologies¹⁰⁷.

Box 4. National Climate Governance in the Philippines

Leadership from the Philippines Department of Finance is critical to the Philippines' success to date in financing adaptation measures: it currently chairs the Climate Change Commission, the lead policy-making body of the government leading the coordination, monitoring, and evaluation of programs while ensuring that climate factors are mainstreamed into national, local, and sectoral plans for climate-resilient development.

The Department of Finance is also an active participant in the Coalition of Finance Ministers and a leading member of the Working Group of the Helsinki Principles 4, which aims to mainstream climate change in macroeconomic policy, fiscal planning, budgeting, public investment management, and procurement practices. Finally, the Department of Finance serves as Board Secretariat for managing the People's Survival Fund (PSF), which provides 1 billion pesos (US\$ 20 million) annually in long-term finance for adaptation projects to local government units (LGUs) and accredited local community organizations (LCOs). The Fund may be accessed through LGU and LCO project proposals that meet criteria including exposure to climate risks, poverty incidence, and key biodiversity areas (World Bank 2020k).

Box 5. Sub-National Mainstreaming in Kenya

In 2014, the Kenyan government recognized that integrating adaptation within sub-national county-level development plans was lagging far behind national-level planning. In response, the government mandated that county development plans account for climate impacts and established the County Climate Change Funds (CCCFs) to provide resources to sub-national authorities to build climate resilience (IISD 2018).

The CCCFs mobilize climate finance for sub-national governments for adaptation and mitigation projects. To access the finance, county governments have to demonstrate that development plans in place account for climate risk and are designed to reduce those risks. This program has incentivized local governments to identify local vulnerabilities and begin to take action to improve climate resilience, and the systematic approach required helps reduce maladaptive projects.

Build on existing jobs and other government programs.

Policy-makers should consider what policies or programs are already in place that have potential to support resilience outcomes and consider strategies to shift additional technical and financial resources toward those efforts. In Ethiopia, for example, the country's National Rural Employment Guarantee Act already has a focus on nature-based solutions, including water and land management, reforestation, and soil conservation, so is a clear fit to shift additional emphasis toward rural jobs and improving degraded ecosystems to address climate risks¹⁰⁸.

Improve data availability and accessibility. The importance of investment in systems-level approaches to tracking and interpreting climate risk data has been underlined by risks associated with the Covid-19 crisis. Because climate change creates conditions conducive to the spread of zoonotic diseases, and is associated with a variety of adverse health impacts and increases the transmission seasons of vector-borne diseases, future data collection by epidemiologists and epidemic trackers should take into account the impacts of a changing climate. Furthermore, data that captures socio-economic capacity to respond to and recover from climate hazards (including analyses of down-scaled climate risks and household or community-level economic capacity) is especially important for projects that aim to improve the resilience of systems and communities.

Improved data collection and monitoring can also enhance capacity to undertake robust project due diligence and inform adaptation investments. Many DFIs have already dedicated significant resources toward

building climate information systems, particularly for hydrologic and meteorologic monitoring stations (HydroMet). For instance, the Adaptation Fund's portfolio includes 102 projects with a total funding of US\$ 46 million committed to HydroMet components that cut across various adaptation sectors. AFD's portfolio includes a total of 34 projects with HydroMet components operating in the most vulnerable countries (US\$ 227 million) and GCF has committed around US\$ 877 million to HydroMet-related projects to date.

Investing in improved data systems does not always involve capital-intensive investments. Improving access to data, especially for populations most at risk, and enhanced capacity to monitor socio-economic vulnerabilities can significantly improve adaptation outcomes. For example, Developing Risk Awareness through Joint Action (DARAJA) uses a participatory methodology to co-design weather, climate and early-warning systems for urban informal settlements in Tanzania (Dar es Salaam) and Kenya (Nairobi). Local meteorological departments train communities to better interpret weather information through their preferred channels of communication and plan ahead for heavy rainfall events by, for example, clearing drainage systems.

DFIs can support countries in meeting adaptation priorities by helping strengthen institutional capacity to process and synthesize data at the systems level. This process will also provide a strong basis for the development of clear, credible, and monetizable resilience metrics.



The day after Cyclone Amphan hit the city of Kolkata, India. Picture: iStock

II) FRAMEWORK FOR IDENTIFYING EFFECTIVE INTERVENTIONS









Because the economic, social, and health impacts of the Covid-19 crisis vary significantly within and across countries, governments and DFIs should prioritize interventions based on context-specific considerations of Covid-19 impacts on economic and social conditions as well as underlying climate vulnerability. During the recovery phase, countries must prioritize resources toward investments that target the hardest-hit sectors while supporting jobs in the short term, delivering long-term multiplier effects, and contributing to social and environmental objectives, including building resilience to climate risks.

For DFIs and government policy-makers to identify the most effective interventions applicable to their local contexts, a set of key considerations in the form of a checklist can be a valuable asset. The considerations proposed in Table 5 are adapted from the World Bank's Proposed Sustainability Checklist for Assessing Economic Recovery Interventions, published in April 2020. The checklist is designed to be widely applicable to projects

or policies proposed as parts of stimulus packages or already identified within existing plans, such as Nationally Determined Contributions, and is intended to be flexible to context rather than prescriptive¹⁰⁹.

The considerations are divided into three categories to capture economic, climate, and social outcomes. The climate considerations are demonstrative of emerging best practices among DFIs to ensure that investments are robust in responding to climate impacts. As countries' capacities to undertake climate risk assessments will vary significantly, not all risk assessments will meet the considerations proposed below¹¹⁰. The economic and health/social considerations represent critical elements of a resilient recovery, but not every intervention will or should fit all of those socio-economic criteria. For instance, the economic considerations may be especially critical for countries experiencing a weak economic recovery scenario with a high debt burden and low capacity to access international markets.

Table 5. Key considerations for prioritizing effective recovery and resilience interventions

CLIMATE	
 Climate risk screening	Have interventions been screened for exposure and vulnerability to climate hazards, considering future changes in climate conditions over the investment’s design lifespan? If the intervention addresses system-level adaptation needs, has a set of results-based metrics been proposed against which progress may be tracked?
 Scenario analysis	For longer-term projects, has the intervention considered a range of future climate scenarios and associated impacts?
 Avoids maladaptation and carbon lock-in	Does the intervention avoid outcomes that may lead to making assets/populations/systems more vulnerable compared to before the implementation? Does the intervention avoid locking-in carbon-intensive growth that may also pose stranded asset risks in the future?
ECONOMIC	
 Fosters economic growth	Does the intervention target sectors most affected by Covid-19 and most exposed/vulnerable to current and future climate risks?
 Job creation	Does the intervention create new jobs in the short to medium term, especially where jobs utilize existing local skills? Does the intervention address retraining and reskilling of workers to support sectoral reallocations in the economy as needed?
 Inclusive growth	Does the intervention create new employment opportunities that explicitly aim for gender equity and target underemployed and vulnerable populations? Does the intervention involve increasing employment opportunities and financial inclusion for workers in the informal sector?
HEALTH/SOCIAL	
 Addresses future pandemic risks	Does the intervention improve the population's adaptive capacity to future pandemic risks?
 Builds socio-economic resilience	Does the intervention improve socio-economic resilience—the ability of the population to cope with and recover from shocks, whether health or climate-related?

These considerations may be used to identify and assess a set of interventions, for instance those included in a NAP, proposed stimulus package, or project pipeline. Relevant interventions will vary by financial actor and location of implementation. Sample metrics that may be used to accompany these considerations can be found in Annex V.

Box 6. Identifying Adaptation Interventions in Fiji

In 2020, the World Bank applied its full Proposed Sustainability Checklist for Assessing Economic Recovery Interventions to Fiji's Climate Vulnerability Assessment. Fiji's Climate Vulnerability Assessment includes 125 suggested interventions to address assessed vulnerabilities. An initial screen of these against the World Bank checklist yielded 63 core interventions. These were then assessed further against a budget cut-off assuming a limit to funding available, which narrowed the list to 10. The assessment of Fiji's CVA can inform corollary efforts in other countries to screen potential interventions against key resilient recovery priorities and to prioritize interventions given constrained budgets.

World Bank analysis concluded with a list of the top 10 potential interventions for a stimulus to build resilience, all relevant per the considerations listed in Table 5.

- 1) Improving resilience of rural mini-grids and solar home systems
- 2) Sustainable agricultural practices
- 3) Housing micro-finance (five-year loans) to retrofit existing houses and construct new houses to approved designs and standards
- 4) Community-level investments for improved ecosystem resilience
- 5) Diversification of renewable energy generation
- 6) Expansion of underground distribution lines
- 7) Progressive structural upgrades of all remaining schools and health facilities not affected by Tropical Cyclone Winston
- 8) Expansion of solar generation
- 9) Promotion of alternative income sources not dependent on fisheries
- 10) Reduction of physical water losses

III) IDENTIFICATION AND IMPLEMENTATION OF FINANCIAL INSTRUMENTS

Once adaptation interventions are prioritized per the approach outlined in Section C.II., it is necessary to assess available financial instruments to implement the project goals. This section describes financial instruments that can be utilized for recovery and resilience and outlines how components of a country's implementation context—including fiscal space and access to international markets—affect the kind of instruments countries should prioritize.

Table 6 indicates an illustrative range of instruments available to finance climate adaptation, ranging from concessionary financing to commercial investments. This is not an exhaustive list—the table is instead

intended to highlight key instruments for climate adaptation—and numbered examples are discussed in further detail following Table 6.

Selection of a financial instrument will depend on several factors, including:

- 1) required speed of implementation, 2) private investment environment, 3) sovereign debt, and 4) monitoring and evaluation capacity.*



Hydroelectric dam construction. Picture: iStock

Connections between the four factors and the illustrative financial instruments are not intended to be prescriptive, but are instead meant to indicate the kinds of financial instruments best suited to various country contexts. More detail on each of those four factors is below:

Implementation speed¹¹¹: Countries may be especially interested in fast implementation if facing immediate short-term climate risks, especially to vulnerable populations, or if the Covid-19 crisis has had substantial negative economic impacts, including high levels of unemployment. Instruments that are relatively simple or require fewer actors are likely to result in swifter project financing.

Sovereign credit rating: Countries with strong investment environments, as measured by sovereign credit ratings¹¹², can access finance that blends risk appetites of different actors to unlock further capital and meet growing adaptation needs. Countries with the most challenging

investment environments are likely to continue to rely on concessionary financing and liquidity support, at least in the short term.

Sovereign debt: A high sovereign debt level, especially caused or exacerbated by Covid-19, potentially closes off debt mechanisms either because they are overly expensive or create unsustainable future economic impacts. Given low interest rates, a country with sustainable levels of debt might prioritize new bonds for future-focused investments.

Monitoring and evaluation capacity: If a country has capacity for monitoring and evaluation, through either public or private means, it can utilize instruments that have outcome-based payments. Countries without extensive monitoring and evaluation abilities should prioritize instruments without extensive ongoing measurement requirements, in addition to capacity-building and technical assistance financing.

To illustrate the intended use of Table 6, below are two example applications of the factors as applied to prioritization of financial instruments:

- **Country 1** faces very high imminent climate risks (and thus prioritizes fast implementation instruments), is likely to have a relatively weak economic recovery (high and unsustainable sovereign debt), and has difficulty accessing international finance (low investment grade). Given these conditions, country 1 and its development partners should prioritize instruments, including Covid response facilities, investment guarantees, and grants to ensure the most vulnerable communities are protected from short-term risks without creating longer-term economic constraints.
- **Country 2** faces less imminent climate risks (not prioritizing fast implementation) and has stronger underlying financial and governance conditions than country 1 (relatively high investment grade, low sovereign debt, and monitoring and evaluation capacity). Given these conditions, country 2 should prioritize instruments, including outcome-contingent payments, catastrophe risk bonds, and climate resilience bonds.

The examples below are tied numerically to Table 6 and are illustrative of the application of financial instruments to achieve adaptation outcomes across sectors and potential avenues to finance a resilient recovery in the future.



#1 Covid response facilities and bonds that mainstream climate risk considerations

Governments and DFIs acted immediately to rapidly disburse emergency funds and cushion the impact of Covid-19. Mainstreaming climate risk concerns and considering adaptation needs can allow funds to achieve dual benefits, while avoiding the lock-in of climate risks over the long term.

AfDB Example: The African Development Bank put in place a Covid rapid response facility as soon as the pandemic broke out—raising a US\$ 3 billion ‘Fight Covid-19 Social Bond’ with a three-year maturity in March 2020, the largest dollar-denominated social bond ever launched in international capital markets—and in April 2020 announced a Covid-19 Response Facility to provide up to US\$ 10 billion to African governments and the private sector¹¹³. The bank immediately developed guidelines for mainstreaming climate, including climate-related risk, into projects financed through those efforts. AfDB has also developed targets to ensure that operations are climate informed and trackable as climate finance.



#2 Debt relief to free fiscal space to address climate risk

The Coalition of Finance Ministers has identified several related instruments to help mitigate increasing sovereign debt issues while ensuring funds are channeled to sustainable recovery¹¹⁴. These include a fund for purchasing non-SDG related debt that can transition to purchasing only SDG-aligned bonds over time, guarantees for sovereign bonds with an SDG component, and sovereign debt swaps with a resilience component. It will be important for debt relief initiatives to be targeted at specific needs, avoiding potential moral hazard or disruption of countries’ efforts to secure finance from the market.

Seychelles Debt Swap Example: In 2018, the Seychelles government developed a debt-for-nature swap for US\$ 27 million in sovereign debt in partnership with The Nature Conservancy, Global Environment Facility, and the United Nations Development Programme. The swap was structured to invest in climate resilience, fishery management, and conservation¹¹⁵. This arrangement enabled the Seychelles government to mobilize US\$ 15 million in private investment and save over US\$ 8 million in interest charges over 10 years¹¹⁶.



#3 Reduced premium payments for catastrophe risk bond schemes in developing countries

The pandemic has constrained the fiscal capacity of many countries, making debt service and insurance premium payments a heavier burden compared to pre-pandemic times. DFIs can support countries in maintaining coverage against natural disasters and climate-related hazards that may further hinder their capacity to recover quickly from impacts of the pandemic.

African Risk Capacity Example: African Risk Capacity (ARC) was formed in 2013 by African Union member states with financial support from KfW. ARC is a risk-pooling mechanism that offers African countries insurance covering natural disasters, especially as the region experiences more intense and more frequent climate shocks. Because Covid-19 has limited the fiscal capacity of many African member countries, the German government provided €19.5 million in one-off funding for ARC premium payments and KfW implemented Covid-19 support through the ARC to nine countries¹¹⁷.

Caribbean Catastrophe Risk Insurance Facility (CCRIF) Example: CCRIF is a company operating in the Caribbean that provides parametric insurance to Caribbean and Central American governments. Parametric insurance is index-based and provides a payout when climate conditions deviate from an agreed upon threshold in a chosen weather parameter. CCRIF was developed with technical leadership from the World Bank and capitalized by a number of governments in North America and Europe, the European Union, the World Bank, Caribbean Development Bank, and through membership fees paid by participating governments. In the midst of the Covid-19 crisis, CCRIF made a payout of US\$ 10.7 million to the Government of Nicaragua following Tropical Cyclone Eta, within 14 days of the event. As with the ARC, CCRIF member governments received support from development partners (including the EU and the Canada-CARICOM Climate Adaptation Fund) to cover portions of their insurance costs for the 2020-22 policy years¹¹⁸.



#4 Insurance-based risk mitigation approaches

In countries with established insurance industries, introducing adaptation-linked insurance instruments is a way to make adaptation investments safer and attract private investors. These instruments require clear monitoring and evaluation, and are best for countries facing acute climate risks.

Insurance-linked approach to mangrove conservation: RISCO, under development by Conservation International, is a first-of-its-kind social enterprise that overcomes existing barriers to mangrove protection by connecting the adaptation and mitigation values of mangroves to their beneficiaries, most of whom do not have the knowledge or resources needed to protect mangroves—including insurance companies¹¹⁹. RISCO will engage in mangrove conservation and restoration in partnership with local communities, selecting sites where mangroves provide high flood-reduction benefits, and modeling that value. Insurance companies will pay an annual fee for these services. RISCO will also generate and sell blue carbon credits to organizations seeking to meet voluntary or regulatory climate targets.

Insurance-linked approach through blockchain to address crop risks: Blockchain Climate Risk Crop Insurance is a digital platform proposed by Sprout Insure and ACRE Africa wherein crop insurance policies are plugged into smart contracts on a blockchain and indexed to local weather¹²⁰. During an extreme weather event, the policies are automatically triggered, which facilitates fair, transparent and timely payouts. For farmers, the instrument reduces transaction costs during the processing of claims. In the long term, an integrated insurance platform model can reduce the costs of issuing a policy by up to 41 percent, enabling a premium reduction of up to 30 percent. Reduced claim cycles, from three months to one week, and increased transparency also build trust among stakeholders.



#5 Climate resilience bonds

There have recently been efforts to launch bond offerings dedicated solely to climate resilience. These projects are best for entities that can borrow relatively inexpensively and are otherwise fiscally constrained, especially with high acute climate risks that need quick access to capital to avoid harm to extremely vulnerable populations.

EBRD Resilience Bond Example: EBRD issued the first dedicated climate resilience bond at US\$ 700 million in 2019 with the aim of financing existing and new climate-resilience activities all aligned with the Climate Resilience Principles (CRP) spearheaded by the Climate Bonds Initiative¹²¹. Further efforts to implement climate resilience bonds, given constrained public fiscal space, will be able to draw lessons from the EBRD issuance.



#6 Public-private partnerships to address climate risks

To date, most public infrastructure projects do not incorporate measures to address climate risk because of a lack of incentives to do so and uncertainty around physical climate impacts and the valuation of those measures. Public and private actors can design PPPs to reflect climate-related risks and incorporate resilience-building interventions into public infrastructure projects. The Commission's Adapt Now report likewise notes that funding public infrastructure will require the development of blended approaches that share the costs and benefits of investing in resilience for that infrastructure¹²².

Zambian Energy Resilience PPP Example: To address a climate-related increase in drought frequency affecting hydropower electricity supply in Zambia, the Zambian government partnered with IFC, the World Bank, and MIGA to tender two utility-scale development projects. This PPP engaged IFC for site selection, due diligence, and adaptation assessment, the World Bank for guarantees, and MIGA for insurance for the project. The project resulted in solar power development at among the lowest prices by cents/kWh to date in the region¹²³.

Santiago Water Fund PPP Example: In Chile, the PPP Santiago Water Fund works to protect 80 percent of the city's freshwater—at risk due to climate-related shifts in precipitation—by investing in conservation, green infrastructure, and river basin restoration. It is Chile's first water fund and relies on the co-operation of many public and private stakeholders, including the Regional Government, the Association of Rural Municipalities, a local water utility, corporations Nestlé and Anglo American, and NGOs, including the Nature Conservancy¹²⁴.



#7 Equity funds

Equity funds work best as ways to invest in companies or projects in countries with a strong credit rating, or with appropriate risk mitigation, to attract institutional investors to increase the size and diversification of funds under management.

Growth equity fund approach to adaptation SME

growth: CRAFT, from the Lightsmith Group, is the first commercial investment vehicle to focus on expanding the availability of technologies and solutions for climate adaptation and resilience. As a growth equity fund, CRAFT will invest in 10-20 companies, located in both developed and developing countries, which have proven technologies and solutions for climate resilience and have demonstrated market demand and revenue. The Fund, together with an accompanying Technical Assistance Facility, will help companies—such as weather analytics, catastrophe risk modeling services, and drought-resilient seed companies, among others—expand into new sectors and geographic markets.

Equity fund approach to water risk: Climate Investor Two, from Climate Fund Managers (of Climate Investor One, which reached final close at US\$ 850 million in 2019), comes from a consortium of Dutch development bank FMO, SNV Netherlands Development Organisation (SNV), World Wide Fund for Nature (WWF-NL), and Climate Fund Managers (CFM), which won the tender to manage the €160 million Dutch Fund for Climate and Development (DFCD), awarded by the Dutch Government. This pioneering partnership of financial institutions and NGOs aims to help developing countries build climate-resilient economies. Climate Investor Two will manage

€75 million of the total DFCD for cornerstone investment and will focus on water, oceans and sanitation sub-sectors, including: municipal and industrial water and wastewater supply, desalination, bulk water supply, waste and wastewater to energy, and riverine and coastal ecosystem management and protection.



#8 Liquidity support that incorporates climate risk

As DFIs shift, at least in the near term, toward liquidity finance, some are exploring how to use that financing to encourage clients to pursue improved climate governance and build climate risk assessment into decision-making.

EBRD Example: Prior to the onset of the Covid-19 pandemic, EBRD had already begun to incorporate corporate climate governance considerations into finance operations. In 2020, as part of a US\$ 100 million financing facility for the Louis Dreyfus Company (LDB)—a global agribusiness firm—EBRD and LDB agreed to a climate corporate governance approach in line with guidelines from the Task Force on Climate-related Financial Disclosures. This approach will include development of climate-related risk management tools and climate scenario stress testing of grain production in Ukraine and cotton production in Turkey¹²⁵.

IV) MEASURING ADAPTATION OUTCOMES

Impact metrics are crucial for a full accounting of adaptation finance because the incremental cost of adaptation is not directly reflective of the benefit of that investment. There are numerous challenges to measuring impact and progress in adaptation, given the context-specific nature of adaptation needs, the multi-dimensional quality of adaptive capacity, and challenges of measuring outcomes against immeasurable counterfactual outcomes. The limitations of using finance volume as an indicator of progress in climate adaptation is a point of wide consensus among DFIs, though it remains important as the only current measure with any level of uniformity.

Due to the challenges outlined, in addition to tracking adaptation finance flows, efforts should focus on



enhancing the comparability and consistency of sets of indicators, building on collaboration among actors across sectors¹²⁶. Currently, common indicators applied across international climate funds to assess adaptation progress tend to focus on outputs, such as the number of beneficiaries, people trained, and the number of new and improved policy frameworks and/or institutionalized structures¹²⁷. In general, there are fewer indicators focused on measuring adaptation outcomes, with the exception of the Adaptation Fund, which employs outcome indicators such as meters of coastline protected, area of natural habitat restored, and increased or avoided decrease in incomes.

Moving forward, leaders in adaptation finance and tracking should prioritize development of frameworks for measuring adaptation progress at the global level. Key criteria to guide the development of these frameworks include aggregability, transparency, feasibility, coherency, and ability to be measured over time. Metrics that are useful for effective adaptation planning at the local level may not always translate easily into metrics required for reporting progress at the global level. Thus, feasibility and sensitivity to national context are two important criteria to consider when selecting metrics for measuring global progress.

D. KEY FINDINGS AND CONCLUSIONS

Even prior to the Covid-19 crisis, adaptation finance was insufficient to meet estimated global needs given accelerating climate risks. Climate change will continue to materially impact sovereign risk and governments are facing climate risk premiums on their cost of capital.

The Covid-19 crisis has accelerated and exacerbated these risks and finance gaps, especially for developing countries. Recovery from the crisis will require concerted action on the part of governments, development finance institutions, and the private sector.

Finance remains critical to accelerating climate-adaptation efforts to build global resilience to worsening climate impacts and respond to the Covid-19 crisis. The following key findings are informed by the report analysis:

1) There is a real risk of a 'low upside' scenario, where adaptation finance drops dramatically over the coming years.

US\$ 30 billion in adaptation finance flowed on average annually in 2017-18, far below the expected needs of up to US\$ 300 billion annually by 2030^{128 129}. Developing countries face an increasingly steep adaptation funding challenge in the context of Covid-19 and pressure on budgets has been compounded by a decline in tax revenues and global trade. Countries now face dual risks to their sovereign credit ratings: 1) limited fiscal space, and 2) increasing awareness of climate impacts.

To date, the approximately US\$ 20.5 trillion pledged to Covid-19 recovery globally has not focused on addressing climate risks and DFI adaptation finance is likely to have declined in 2020. High uncertainty remains regarding the distribution of vaccines, further stimulus packages, and consequent strength of recovery and fiscal space available for climate-resilient investment, notably for infrastructure which drives the

majority of adaptation finance flows. Recent Covid outbreaks and a lack of international initiative on debt restructuring, beyond the temporary reprieve offered by the G20 DSSI, make a low-upside economic recovery scenario a distinct possibility

2) However, there are many interventions that would help avoid this outcome, stimulating resilient economic recoveries:

These interventions include a number of high-impact sectoral approaches:

- **Nature-based solutions:** Investing in NBS can sustain and enhance the incomes and jobs of workers in sectors like agriculture, fisheries and forestry.
- **Health, water, and sanitation:** An increase in investment in climate-adaptive health, water, and sanitation from climate funds, DFIs, and national governments is critical for bolstering resilience to future climate impacts and pandemics.
- **Agriculture:** Investing across value chains to support food security and livelihoods will not only increase resilience to future climate impacts, but also protect against supply-chain disruptions resulting from disease-related outbreaks.
- **Infrastructure:** At minimum, investments in infrastructure should mainstream climate-related risks—for example, storm-proofing coastal residences to respond to sea-level rise and storm surge, or increasing heat resilience in built infrastructure.

As well as cross-sectoral approaches to complement and strengthen recovery efforts:

- **Strengthen or develop a National Adaptation Plan:** Adaptation planning should be used to identify key interventions that can deliver co-benefits that address Covid-19 impacts and adaptation needs.

- **Implement policies at the national and sub-national level to encourage resilient development:** Especially given significant flows of finance to recovery efforts, governments must have policies in place to allocate resources to actors best placed to identify and reduce climate risks.
- **Build on existing jobs and other government programs:** Policy-makers should consider what policies or programs are already in place that have potential to support resilience outcomes and consider strategies to shift additional technical and financial resources toward those efforts.
- **Improve data availability and accessibility:** Data that captures socio-economic capacity to respond to and recover from climate hazards (including analyses of down-scaled climate risks and household or community-level economic capacity) is especially important for projects that aim to improve the resilience of systems and communities.

3) To determine which interventions would be most effective, countries should:

- **Adopt a clear screening process for evaluating and prioritizing adaptation interventions.** This process should include identifying adaptation interventions across the universe of systems-level and asset-level options and prioritizing them based on a set of climate, economic, and health/social criteria aiming to build toward a resilient recovery.
- **Identify and select financial instruments that are most applicable to the economic and climate context in question.** Select one or a suite of instruments informed by the required speed of implementation, economic fundamentals, including credit rating and sovereign debt levels, and the country's monitoring and evaluation capacity. Support for project pipelines of bankable resilience opportunities and participation in blended finance structures for sharing performance risks can help mobilize the private sector.

4) Major efforts in several areas will be required to keep a truly climate-resilient recovery within reach:

- **Increasing—or at minimum maintaining—ODA levels:** In June 2020, the OECD estimated that total

external finance across both public and private-sector sources for countries eligible for ODA will fall by US\$ 700 billion in 2020. This decline in overall finance is extremely concerning given the already small component of that finance which has flowed to climate adaptation. Given accelerating climate risks, it will be more important than ever that donor countries commit to continued funding for developing country adaptation efforts.

- **Collaboration on debt relief for some of the most climate-vulnerable countries:** The Coalition of Finance Ministers has identified a set of solutions to help mitigate increasing sovereign debt issues while ensuring funds are channeled to sustainable recovery¹³⁰. These include: 1) a fund for purchasing non-SDG related debt that can transition to purchasing only SDG-aligned bonds over time, 2) guarantees for sovereign bonds with an SDG component (e.g. Ghana's 2030 bond with an IDA guarantee of 40 percent), and 3) sovereign debt swaps with a resilience component (e.g. the Seychelles' debt swap of US\$ 27 million was used to invest in resilience, fishery management, and biodiversity).
- **Mainstreaming climate risk into liquidity support:** A key strategy to engage the private sector already underway is addressing climate-related risks through liquidity support. Many DFIs and commercial banks have shifted toward emergency liquidity finance and several are incorporating mechanisms to incentivize good climate governance and resilience building through climate risk assessments. Especially in circumstances with significant fiscal constraints, this mechanism can be valuable to shift resilience outcomes within the limited bounds of the current macroeconomic climate.
- **Implementing whole-of-government adaptation planning and policy:** Enhancing national and sub-national planning and risk management capacity can help governments and DFIs prepare for and prioritize adaptation interventions. For example, countries can build internal capacity for risk management, including increased agency or ministry coordination. This coordination should include a role for ministries of finance in drafting NDCs and integrating climate investment needs into fiscal planning and other budgetary processes.



Barrier to protect against erosion from the sea. Picture: iStock

- **Vastly improving climate risk data from both public and private sectors:** The importance of investment in systems-level approaches to tracking and interpreting climate risk data has been underlined by risks associated with the Covid-19 crisis. Improved data collection and monitoring can enhance project due diligence, inform adaptation investments, and improve capacity to monitor socio-economic vulnerabilities to benefit adaptation outcomes. DFIs can support countries in meeting adaptation priorities by helping strengthen institutional capacity to process and synthesize data at the systems level. The push for climate-related risk disclosure will also support collection of climate risk-related data and development of consistent metrics in parallel in the private sector.
- **Adopting consistent and comparable metrics that capture adaptation and resilience benefits in addition to tracking flows:** Impact metrics are crucial for a full accounting of adaptation finance because the incremental cost of adaptation is not directly reflective of the benefit of a given investment. Moving forward, leaders in adaptation finance and tracking should prioritize development of frameworks for measuring

adaptation progress at the global level. Key criteria to guide the development of these frameworks include aggregability, transparency, feasibility, coherency, and ability to be measured over time.

CONCLUSION

In an increasingly interconnected world, Covid-19 is only one recent example of how global shocks can lead to serious economic damage and undermine global progress in sustainable development. In this sense, climate risks and pandemic risks share many commonalities: both respect no borders, and have impacts that are cross-sectoral and hardest on the poor and marginalized. Both risks require swift and coordinated international response and strengthening underlying socio-economic vulnerabilities can mitigate their impact. Bolstering our systems to respond to and cope with future risks based on lessons learnt from the pandemic can simultaneously benefit our resilience to climate risks.

Action taken now by governments, DFIs, the private sector, and other stakeholders to bolster adaptation finance flows will be critical to determining the course of the resilient recovery and the pathway toward a more climate-resilient future.

E. REFERENCES

African Development Bank Group. 2020. "Our Covid-19 response to date."

<https://www.afdb.org/en/news-events/our-Covid-19-response-date?page=1>.

African Development Bank Group. 2020a. "African Development Bank Covid-19 response: moving from commitment to action"

<https://www.afdb.org/en/news-and-events/african-development-bank-Covid-19-response-moving-commitment-action-36188>.

African Development Bank Group. 2020b. "Togo: African Development Bank approves \$3 million loan reallocation to agriculture sector for Covid-19 response."

<https://www.afdb.org/en/news-and-events/press-releases/togo-african-development-bank-approves-3-million-loan-reallocation-agriculture-sector-Covid-19-response-36497>.

African Development Bank Group. 2020c. "Rwanda: African Development Bank commits \$98 million for multisector Covid-19 response."

<https://www.afdb.org/en/news-and-events/press-releases/rwanda-african-development-bank-commits-98-million-multisector-Covid-19-response-37032>.

African Development Bank Group. 2020d. "Madagascar: African Development Bank provides \$2.13 million for farmers to cover drought-related economic losses."

<https://www.afdb.org/en/news-and-events/press-releases/madagascar-african-development-bank-provides-213-million-farmers-cover-drought-related-economic-losses-36817>.

Agence Française de Développement. 2020. "France Launched, via AFD, the 'Covid-19 – Health in Common' Initiative to Support African Countries."

<https://www.afd.fr/en/actualites/france-lance-a-fd-Covid-19-health-common-initiative-support-african-countries>.

Alianza Latinoamericana de Fondos de Agua. 2019. "Santiago-Maipo water fund"

<https://www.fondosdeagua.org/content/dam/tnc/nature/en/documents/latin-america/SantiagoMaipoWaterFund.pdf>.

Armitage R, Nellums L. 2020. "Water, climate change, and Covid-19: prioritizing those in water-stressed settings" The Lancet.

[https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196\(20\)30084-X/fulltext](https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(20)30084-X/fulltext).

Asian Development Bank. 2020a. "\$500 Million ADB Loan to Boost the Philippines' Disaster Resilience."

<https://www.adb.org/news/500-million-adb-loan-boost-philippines-disaster-resilience>.

Asian Development Bank. 2020b. "\$500 Million ADB Loan to Help Boost Indonesia's Disaster Resilience."

<https://www.adb.org/news/500-million-adb-loan-help-boost-indonesia-s-disaster-resilience>.

Asian Development Bank. 2020. "Accelerating Climate and Disaster Resilience and Low-Carbon Development Through the Covid-19 Recovery"

<https://www.adb.org/sites/default/files/publication/647876/climate-disaster-resilience-low-carbon-Covid-19-recovery.pdf>.

Bartlow, A.W., Manore, C., Xu, C., Kaufeld, K. A., Del Valle, S., Ziemann, A., Fairchild, G. and Fair, J.M. . 2019.

"Forecasting Zoonotic Infectious Disease Response to Climate Change: Mosquito Vectors and a Changing Environment." Veterinary Sciences.

<https://www.mdpi.com/2306-7381/6/2/40>.

Brookings. 2020. "Sustainable development finance proposals for the global Covid-19 response."

https://www.brookings.edu/wp-content/uploads/2020/08/Development-Financing-Options_Final.pdf.

- CARIAA. 2016. "Review of Current and Planned Adaptation Action in Bangladesh."
<https://www.iisd.org/system/files/publications/idl-55862-bangladesh.pdf>.
- Caribbean Catastrophe Risk Insurance Facility. 2020. "Tropical Cyclone Eta Triggers CCRIF Payout of US\$10.7 Million to Nicaragua"
<https://www.ccrif.org/news/tropical-cyclone-eta-triggers-ccrif-payout-us10-7-million-nicaragua>.
- Climate Policy Initiative. 2019. "Global Landscape of Climate Finance 2019."
<https://www.climatepolicyinitiative.org/wp-content/uploads/2019/11/2019-Global-Landscape-of-Climate-Finance.pdf>.
- De Pinto A, Seymour G, Bryan E, Bhandari P. 2020. "Women's empowerment and farmland allocations in Bangladesh: evidence of a possible pathway to crop diversification." Climatic Change.
<https://www.ifpri.org/publication/womens-empowerment-and-farmland-allocations-bangladesh-evidence-possible-pathway-crop>.
- Development Initiatives. 2020. "Tracking aid flows in light of the Covid-19 crisis."
<https://devinit.org/data/tracking-aid-flows-in-light-of-the-Covid-19-crisis/>.
- Devex. 2020a. "Interactive: Who's funding the Covid-19 response and what are the priorities?."
<https://www.devex.com/news/interactive-who-s-funding-the-Covid-19-response-and-what-are-the-priorities-96833>.
- Devex. 2020b. "Breaking: UK cuts aid budget to 0.5% of GNI."
<https://www.devex.com/news/breaking-uk-cuts-aid-budget-to-0-5-of-gni-98640>.
- Devex. 2020c. "Philippine Disaster Recovery Foundation."
<https://www.devex.com/organizations/philippine-disaster-resilience-foundation-pdf-117188>
- DFAT. 2020. "Fiji Covid-19 Development Response Plan."
<https://www.dfat.gov.au/sites/default/files/Covid-response-plan-fiji.pdf>.
- EU Technical Expert Group on Sustainable Finance. 2020. "Taxonomy Report: Technical Annex."
https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/200309-sustainable-finance-teg-final-report-taxonomy-annexes_en.pdf.
- European Bank for Reconstruction and Development. 2019. "World's first dedicated climate resilience bond, for US\$ 700m, is issued by EBRD."
<https://www.ebrd.com/news/2019/worlds-first-dedicated-climate-resilience-bond-for-us-700m-is-issued-by-ebrd-.html>.
- European Bank for Reconstruction and Development. 2019. "Joint Report on Multilateral Development Banks' Climate Finance."
<https://www.ebrd.com/2019-joint-report-on-mdb-climate-finance>.
- European Bank for Reconstruction and Development. 2020. "Agribusiness and climate corporate governance."
<https://www.ebrd.com/news/2020/agribusiness-and-climate-corporate-governance.html>.
- European Network on Debt and Development. 2020a. "Kenya, Covid-19 and debt."
https://www.eurodad.org/kenya_Covid_19_debt.
- European Network on Debt and Development. 2020b. "The Philippines, Covid-19 and debt: Left alone to deal with the pandemic."
https://www.eurodad.org/the_philippines_Covid_19_and_debt_left_alone_to_deal_with_the_pandemic
- Evans E. 2020. "World Bank CAT DDO's triggered by coronavirus, disburse almost \$900m." Artemis.
<https://www.artemis.bm/news/world-bank-cat-ddos-triggered-by-coronavirus-disburse-almost-900m/>.
- Financial Stability Board. 2020. "The Implications of Climate Change for Financial Stability."
<https://www.fsb.org/wp-content/uploads/P231120.pdf>.
- Gibb R, Franklins L, Redding D, Jones K . 2020. "Ecosystem perspectives are needed to manage zoonotic risks in a changing climate." The BMJ.
<https://www.bmj.com/content/371/bmj.m3389>.

- Global Commission on Adaptation. 2020. "Adapt Now: A Global Call for Leadership on Climate Resilience." https://cdn.gca.org/assets/2019-09/GlobalCommission_Report_FINAL.pdf.
- Global Innovation Lab for Climate Finance. 2019a. "Restoration Insurance Service Company (RISCO)." <https://www.climatefinancelab.org/project/coastal-risk-reduction/>.
- Global Innovation Lab for Climate Finance. 2019b. "Blockchain Climate Risk Crop Insurance." <https://www.climatefinancelab.org/project/climate-risk-crop-insurance/>.
- Gounder N. 2020. "Fiji economic survey: Low growth the new normal?" Asia & the Pacific Policy Studies. <https://onlinelibrary.wiley.com/doi/full/10.1002/app5.307>.
- Government of Bangladesh General Economics Division. 2015. "7th Five Year Plan" https://www.unicef.org/bangladesh/sites/unicef.org/bangladesh/files/2018-10/7th_FYP_18_02_2016.pdf.
- Government of Bangladesh Ministry of Environment and Forests. 2009. "National Adaptation Programme of Action (NAPA)." <https://unfccc.int/resource/docs/napa/ban02.pdf>.
- Government of Bangladesh Ministry of Finance. 2019. "Bangladesh Economic Review 2019." <https://mof.gov.bd/site/page/44e399b3-d378-41aa-86ff-8c4277eb0990/BangladeshEconomicReview>.
- Government of Chile. 2014. "Plan Nacional de Adaptacion Al Cambio Climatico." <https://www4.unfccc.int/sites/NAPC/Documents/Parties/Chile%20NAP%20including%20sectoral%20plans%20Spanish.pdf>.
- Green Climate Fund. 2020. "Tipping or turning point: Scaling up climate finance in the era of Covid-19." https://www.greenclimate.fund/sites/default/files/document/gcf-working-paper-tipping-or-turning-point-scaling-climate-finance-era-Covid-19_0.pdf.
- Green Climate Fund Philippines. 2019. "People's Survival Fund." <https://www.gov.ph/web/green-climate-fund/people-s-survival-fund>.
- Harvard T.H. Chan. 2020. "Coronavirus and Climate Change." <https://www.hsph.harvard.edu/c-change/subtopics/coronavirus-and-climate-change/>.
- IDFC. 2019. "IDFC's Contribution to the Climate Action Summit." <https://www.idfc.org/wp-content/uploads/2019/09/official-idfc-communicue-vdef21-09-2019-22h50-cet.pdf>.
- IFC. 2010. "Scaling-Up SME Access to Financial Services in the Developing World." https://www.enterprise-development.org/wp-content/uploads/ScalingUp_SME_Access_to_Financial_Services.pdf.
- IFC. 2020a. "Fiji Covid-19 Business Survey: Tourism Focus." <https://www.ifc.org/wps/wcm/connect/4fc358f9-5b07-4580-a28c-8d24bfaf9c63/Fiji+Covid-19+Business+Survey+Results+-+Tourism+Focus+Final.pdf?MOD=AJPERES&CVID=ndnpJrE>.
- IFC. 2020b. "Impacts of the Covid-19 Crisis on Private Equity Funds in Emerging Markets." <https://www.ifc.org/wps/wcm/connect/2099c86a-0f99-404f-b407-0691869bc00e/202008-Covid-19-Impacts-PE-EMs.pdf?MOD=AJPERES&CVID=ngxmslN>.
- IISD. 2018. "sNAPshot: Kenya's County Climate Change Funds." <https://www.iisd.org/publications/snapshot-kenyas-county-climate-change-funds>.
- IMF. 2020a. "Challenges in Forecasting Tax Revenue." <https://www.imf.org/~media/Files/Publications/Covid19-special-notes/en-special-series-on-Covid-19-challenges-in-forecasting-tax-revenue.ashx>.
- IMF. 2020b. "World Economic Outlook." <https://www.imf.org/-/media/Files/Publications/WEO/2020/October/English/text.ashx>.
- IMF. 2020c. "Response to Covid-19." <https://www.imf.org/en/About/FAQ/imf-response-to-Covid-19>.
- IMF. 2020d. "Global Policy Responses to Capital Flow Volatility." <https://blogs.imf.org/2020/12/23/global-policy-responses-to-capital-flow-volatility/>.

IMF. 2020e. "Chile: Request for an Arrangement Under the Flexible Credit Line."

<https://www.imf.org/~media/Files/Publications/CR/2020/English/1CHLEA2020003.ashx>.

IMF. 2020f. "Helping Bangladesh Recover from Covid-19."

<https://www.imf.org/en/News/Articles/2020/06/11/na-06122020-helping-bangladesh-recover-from-Covid-19>.

IMF. 2020. "Real GDP growth; Annual percent change."

https://www.imf.org/external/datamapper/NGDP_RPCH@WEO/OEMDC/ADVEC/WEOWORLD.

IMF. 2020. "IMF Executive Board Approves a US\$739 Million Disbursement to Kenya to Address the Impact of the Covid-19 Pandemic."

<https://www.imf.org/en/News/Articles/2020/05/06/pr20208-kenya-imf-executive-board-approves-us-million-disbursement-address-impact-Covid-19-pandemic>.

Insurance Institute for Business & Home Safety. "Fortified Construction Standards"

<https://ibhs.org/fortified/>.

Insurance Journal. 2020. "Why World Bank's Controversial Pandemic Bonds Didn't Function as Hoped."

<https://www.insurancejournal.com/news/international/2020/12/10/593490.htm>.

Inter-American Development Bank. 2020. "Private Markets for Climate Resilience: Global Report."

<https://publications.iadb.org/en/private-markets-for-climate-resilience-global-report>.

Inter-American Development Bank. 2020. "How can green bonds help to build resilience after Covid-19?"

<https://blogs.iadb.org/sostenibilidad/en/how-can-green-bonds-help-to-build-resilience-post-Covid-19/>.

IPCC. 2014. "AR5 Synthesis Report: Climate Change 2014."

<https://www.ipcc.ch/report/ar5/syr/>.

JICA. 2020a. "Covid-19 Emergency Support to The Water Sector in Kenya."

<https://www.jica.go.jp/project/english/kenya/012/news/general/200709.html>.

JICA. 2020b. "Continuing Supply of Disinfected Safe Water throughout Tajikistan."

https://www.jica.go.jp/english/our_work/thematic_issues/water/news200720.html.

JICA. 2020c. "Emergency Support for Covid-19 Infection Control Measure in Sudan."

https://www.jica.go.jp/english/our_work/thematic_issues/water/news200727.html.

JICA. 2020d. "Chlorine Procurement for Water Supply in Palestine by JICA Urgent Support."

https://www.jica.go.jp/english/our_work/thematic_issues/water/news200731.html.

JICA. 2020e. "Ex-Ante Evaluation (for Japanese ODA Loan)."

https://www.jica.go.jp/english/news/press/2020/c8h0vm0000faxmkl-att/20200915_10_jizenhyoka_en.pdf.

Johns Hopkins Coronavirus Resource Center. 2020. "Mortality Analyses."

<https://coronavirus.jhu.edu/data/mortality>.

KfW. 2020a. "Third quarter of 2020: KfW promotional business volume doubled as a result of coronavirus aid programmes; back to earning profit."

https://www.kfw.de/KfW-Group/Newsroom/Latest-News/Pressemitteilungen-Details_615552.html.

KfW. 2020b. "Greater climate resilience through African Risk Capacity (ARC)"

https://www.kfw-entwicklungsbank.de/International-financing/KfW-Development-Bank/About-us/News/News-Details_620288.html.

Khan M. 2020. "Debt-for-Adaptation Swap – Investment in Adaptation and Resilience." Heinrich Böll Foundation, Center for Sustainable Finance (SOAS, University of London), and Global Development Policy Center (Boston University).

https://www.boell.de/sites/default/files/2020-12/Background%20Paper%20_3.pdf?dimension1=division_ip.

Lawler D. 2020. "The challenge of 2021: Vaccinating the world." Axios.

<https://www.axios.com/when-countries-will-get-vaccines-c81dbfce-d9e4-4770-92dc-5f0f534e3122.html>.

- Leiter T, Olhoff A, Al Azar R, Barmby V, Bours D, Clement V, Dale T, Davies C, and Jacobs H. 2019. "Adaptation metrics: current landscape and evolving practices" Global Commission on Adaptation. www.gca.org.
- Mercy Corps. 2019. "The facts: How climate change affects people living in poverty." <https://www.mercycorps.org/blog/climate-change-poverty>.
- ND-GAIN. 2017. "University of Notre Dame Global Adaptation Index Country Index Technical Report." https://gain.nd.edu/assets/254377/nd_gain_technical_document_2015.pdf.
- New York Times. 2020. "After Covid, China's Leaders Face New Challenges From Flooding." <https://www.nytimes.com/2020/08/21/world/asia/china-flooding-sichuan-chongqing.html>.
- OECD. 2020a. "Job Creation and Local Economic Development 2020: Rebuilding Better". "How Covid-19 could accelerate local labour market transitions." <https://www.oecd-ilibrary.org/sites/a0361fec-en/index.html?itemId=/content/component/a0361fec-en#chapter-d1e6734>.
- OECD. 2020b. "The impact of the coronavirus (Covid-19) crisis on development finance." <http://www.oecd.org/coronavirus/policy-responses/the-impact-of-the-coronavirus-Covid-19-crisis-on-development-finance-9de00b3b/>.
- Prime Minister of Canada. 2020. "Prime Minister announces additional support for businesses to help save Canadian jobs." <https://pm.gc.ca/en/news/news-releases/2020/05/11/prime-minister-announces-additional-support-businesses-help-save>.
- Reuters. 2020a. "Hurricanes Eta, Iota hit Nicaragua with \$743 million in economic losses." <https://www.reuters.com/article/us-storms-centralamerica/hurricanes-eta-iota-hit-nicaragua-with-743-million-in-economic-losses-idUSKBN284351>.
- Reuters. 2020b. "U.N. chief calls for more climate finance for poor nations as 2020 goal slips." <https://www.reuters.com/article/us-climate-change-summit-finance-idCAKBN28M0Y5>.
- S&P Global Market Intelligence. 2020a. "The Impact of the Covid-19 Pandemic on the Private Equity Market." <https://www.spglobal.com/marketintelligence/en/news-insights/research/the-impact-of-the-Covid19-pandemic-on-the-private-equity-market>.
- S&P Global Market Intelligence. 2020b. "G20 Sovereign Debt Suspension: To Apply, Or Not To Apply." <https://www.spglobal.com/ratings/en/research/articles/201201-g20-sovereign-debt-suspension-to-apply-or-not-to-apply-11750938>.
- S&P Global Market Intelligence. 2020c. "Chile central bank eases 2020 contraction forecast, expects recovery in H2." <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/chile-central-bank-eases-2020-contraction-forecast-expects-recovery-in-h2-60204488#:~:text=Chile's%20central%20bank%20revised%20its,decline%20it%20predicted%20in%20June.&text=The%20bank%20sees%20the%20copper,%25%20to%204%25%20in%202022>.
- Statista. 2020. "Total estimated employment in Kenya from 2015 to 2019." <https://www.statista.com/statistics/1134332/total-employment-in-kenya/>.
- TCFD. 2020. "Third TCFD Status Report Shows Progress & Highlights Need for Greater ClimateRelated Disclosures and Transparency." https://assets.bbhub.io/company/sites/60/2020/10/TCFD-2020-Status-Report-Press-Release_FINAL.pdf.
- TechnoServe. 2020. "5 Ways Covid-19 is Affecting Smallholder Farmers Around the World." <https://www.technoserve.org/blog/5-ways-Covid-19-is-affecting-smallholder-farmers/>.
- The Asia Foundation. 2012. "A Situation Analysis of Climate Change Adaptation Initiatives in Bangladesh." <https://asiafoundation.org/resources/pdfs/SituationAnalysisofCCinitiatives.pdf>.

- The Coalition of Finance Ministers for Climate Action. 2020. "Better Recovery, Better World: Resetting climate action in the aftermath of the Covid-19 pandemic." <https://www.financeministersforclimate.org/sites/cape/files/inline-files/Better%20Recovery%2C%20Better%20World%20FINAL.pdf>.
- The Coalition of Finance Ministers for Climate Action. 2020. "Helsinki Principle 4: Mainstream." <https://www.financeministersforclimate.org/mainstream>.
- The Telegraph. 2020. "Locust swarms could be heading for one of the most vulnerable regions on earth, warns UN." <https://www.telegraph.co.uk/global-health/climate-and-people/locust-swarms-could-heading-one-vulnerable-regions-earth-warns/>.
- UNCTAD. 2020. "World Investment Report 2020." https://unctad.org/system/files/official-document/wir2020_en.pdf.
- UNDP. 2018. "GCF National Adaptation Plan Project in Bangladesh." <https://www.adaptation-undp.org/projects/NAP-Bangladesh-GCF#:~:text=Bangladesh%20has%20already%20developed%20a%20National%20Adaptation%20Plan%20Roadmap.&text=The%20BCCSAP%20articulates%20the%20national,Year%20Plan%20national%20planning%20documents>.
- UNDP-UNEP Poverty Environment Initiative. 2015. "Bangladesh." <https://www.unpei.org/bangladesh-2/>.
- UNEP. 2018. "UN Environment Adaptation Gap Reports." <https://www.unenvironment.org/resources/adaptation-gap-report>.
- USAID. 2017. "Climate Change Risk Profile: Philippines." https://www.climatelinks.org/sites/default/files/asset/document/2017_Climate%20Change%20Risk%20Profile_Philippines.pdf.
- USAID. 2018a. "Climate Risk Profile: Kenya." https://www.climatelinks.org/sites/default/files/asset/document/2018_USAID-ATLAS-Project_Climate-Risk-Profile-Kenya.pdf.
- USAID. 2018b. "Climate Risk Profile: Pacific Islands." https://www.climatelinks.org/sites/default/files/asset/document/2018-26-Feb_CadmusCISF_Climate-Risk-Profile-Pacific-Islands.pdf.
- USAID. 2018c. "Climate Risk Profile: Bangladesh." https://www.climatelinks.org/sites/default/files/asset/document/2018-02-Mar_CadmusCISF_Climate-Risk-Profile-Bangladesh.pdf.
- VividEconomics. 2020. "Greenness of Stimulus Index." <https://www.vivideconomics.com/casestudy/greenness-for-stimulus-index/>.
- VividEconomics & Finance 4 Biodiversity. 2020. "Integrating climate change and biodiversity into the response to Covid-19: International financial flows." <https://www.vivideconomics.com/wp-content/uploads/2020/05/200429-enhancing-nature-with-Covid-international-financial-flows.pdf>.
- Volz U. 2020. "Investing in a Green Recovery." IMF. <https://www.imf.org/external/pubs/ft/fandd/2020/09/investing-in-a-green-recovery-volz.htm>.
- Willis Towers Watson. 2019. "Private-sector led Coalition for Climate Resilient Investment." <https://www.willistowerswatson.com/en-US/News/2019/09/private-sector-led-coalition-for-climate-resilient-investment>.
- World Bank. 2016. "Investing in Urban Resilience: Protecting and Promoting Development in a Changing World." <https://openknowledge.worldbank.org/handle/10986/25219>.
- World Bank. 2017. "Targeted SME Financing and Employment Effects." <http://documents1.worldbank.org/curated/en/577091496733563036/pdf/115696-REVISED-PUBLIC-SMEs-and-Jobs-final.pdf>.
- World Bank. 2018. "Groundswell. Preparing for Internal Climate Migration." <https://openknowledge.worldbank.org/handle/10986/29461>.

World Bank. 2019. "Seychelles: Introducing the World's First Sovereign Blue Bond."

<http://pubdocs.worldbank.org/en/242151559930961454/Case-study-Blue-Bond-Seychelles-final-6-7-2019.pdf>.

World Bank. 2020a. "Planning for the economic recovery from Covid-19: A sustainability checklist for policymakers."

<https://blogs.worldbank.org/climatechange/planning-economic-recovery-Covid-19-coronavirus-sustainability-checklist-policymakers>.

World Bank. 2020b. "World Bank Approves \$1 Billion Financing for Kenya, to Address Covid-19 Financing Gap and Support Kenya's Economy."

<https://www.worldbank.org/en/news/press-release/2020/05/20/world-bank-approves-1-billion-financing-for-kenya-to-address-Covid-19-financing-gap-and-support-kenyas-economy>.

World Bank. 2020c. "Madagascar Disaster Risk Management Development Policy Financing with a Catastrophe Deferred Drawdown Option (Cat DDO)."

<https://projects.worldbank.org/en/projects-operations/project-detail/P167941>.

World Bank. 2020d. "World Bank Provides US\$8 Million to Strengthen Agriculture and Food Security in Belize."

<https://www.worldbank.org/en/news/press-release/2020/08/27/world-bank-strengthens-agriculture-food-security-belize>.

World Bank. 2020e. "Covid-19 to Add as Many as 150 Million Extreme Poor by 2021."

<https://www.worldbank.org/en/news/press-release/2020/10/07/Covid-19-to-add-as-many-as-150-million-extreme-poor-by-2021>.

World Bank. 2020f. Poverty and Shared Prosperity 2020: Reversals of Fortune

World Bank. 2020g. "Reversing Setbacks to Poverty Reduction Requires Nations to Work Together for a Resilient Recovery."

<https://www.worldbank.org/en/news/immersive-story/2020/11/09/reversing-setbacks-to-poverty-reduction-requires-nations-to-work-together-for-a-resilient-recovery>.

World Bank. 2020h. "Covid 19: Debt Service Suspension Initiative."

<https://www.worldbank.org/en/topic/debt/brief/Covid-19-debt-service-suspension-initiative>.

World Bank. 2020i. "Kenya's GDP Contracts Under Weight of Covid-19, Impacting Lives and Livelihoods."

<https://www.worldbank.org/en/news/press-release/2020/11/25/kenyas-gdp-contracts-under-weight-of-Covid-19-impacting-lives-and-livelihoods#:~:text=NAIROBI%2C%20November%2025%2C%202020%20E2%80%94,kenya%20and%20its%20trading%20partners>.

World Bank. 2020j. "Covid-19 crisis could reverse years of growth in Chile's middle-class."

<https://blogs.worldbank.org/latinamerica/Covid-19-crisis-could-reverse-years-growth-chiles-middle-class>.

World Bank. 2020k. "Philippines Economic Update December 2020: Building a Resilient Recovery."

<https://www.worldbank.org/en/events/2020/12/09/report-launch-philippines-economic-update-december-2020-building-a-resilient-recovery>.

World Economic Forum. 2020. "How debt for climate swaps could spur a green recovery"

<https://www.weforum.org/agenda/2020/10/debt-climate-swaps-spur-green-recovery>.

World Health Organization. 2018. "Climate change and health."

<https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health#:~:text=Climate%20change%20affects%20the%20social,malaria%2C%20diarrhoea%20and%20heat%20stress>.

World Health Organization. 2019a. "Discussion paper: Climate, Sanitation and Health"

https://www.who.int/water_sanitation_health/sanitation-waste/sanitation/sanitation-and-climate-change20190813.pdf?ua=1.

World Health Organization. 2019b. "Drinking-water"

<https://www.who.int/news-room/fact-sheets/detail/drinking-water>.

- World Resources Institute. 2020a. "Nature is An Economic Winner for Covid-19 Recovery"
<https://www.wri.org/news/coronavirus-nature-based-solutions-economic-recovery>.
- World Resources Institute. 2020b. "Key Investments Can Build Resilience to Pandemics and Climate Change"
<https://www.wri.org/blog/2020/04/coronavirus-pandemic-climate-change-investments>.
- World Resources Institute. 2020c. "Mainstreaming Climate Adaptation into Development: Three Lessons from Kenya"
<https://www.wri.org/blog/2020/08/insider-three-lessons-mainstreaming-climate-adaptation>.
- World Resources Institute. 2020d. "Chile's Enhanced Climate Plan Sets an Example for Other Countries"
<https://www.wri.org/blog/2020/07/chiles-enhanced-climate-plan-sets-example-other-countries>.
- WorldOMeter. 2020. "Coronavirus Cases"
https://www.worldometers.info/navirus/?fbclid=IwAR2UgycDn8i64zB71xUGm5svanZxQELU6IEEzgiNRtMnVLtBQtyKqPW_e8.
- WWF & International Labour Organization. 2020. "Nature Hires: How Nature-based Solutions can power a green jobs recovery"
https://www.ilo.org/wcmsp5/groups/public/---ed_emp/documents/publication/wcms_757823.pdf.
- Xinhua. 2020. "Fijian economy expected to contract by 21.7 percent in 2020 on shrinking tourism industry"
http://www.xinhuanet.com/english/2020-07/02/c_139183765.htm#:~:text=In%20a%20statement%20which%20revises,in%20the%20island%20nation's%20history.



Volunteers plant mangrove saplings in swamps near Saphan Hin Park, Phuket, Thailand. Picture: iStock

F. ANNEX

I) DEFINITION OF CLIMATE ADAPTATION

The **Joint MDB-IDFC Framework for Climate Resilience**

Metrics defines **climate-change adaptation** as ‘*the process of human and natural systems adjusting to the actual or expected impacts or effects of climate change;*’ and **climate resilience** as ‘*strengthening a system to withstand climate-related shocks or stressors where adaptation and resilience intersect... the capacity of a system to cope with, or recover from, those [effects of multiple shocks] while retaining the essential components of the original system.*’¹³¹

These definitions reflect how our understanding of adaptation has evolved over time, from a narrow focus on biophysical vulnerabilities to the wider socio-economic drivers of vulnerability and capacity to respond. Adaptation ‘needs’ are thus framed as including the necessity to address underlying vulnerabilities such as informational, capacity, financial,

institutional, and technological needs, beyond a hazard-based approach¹³². This evolution is especially relevant in the context of Covid-19 where vulnerabilities addressed by adaptation action will include impacts of the pandemic on lives and livelihoods. The evolution in understanding of climate adaptation is reflected in recent taxonomies of adaptation activities, which broadly distinguish between asset-focused and systems-focused approaches to adaptation¹³³.

II) STAGES OF ADAPTATION ACTION AND FINANCE

Risk Assessment and Planning

Starting with a comprehensive adaptation needs assessment and plan is key for identifying risks and preparing for those risks in advance. The assessment should integrate a top-down and bottom-up approach, combining a top-down assessment of biophysical hazards and a bottom-up assessment of different factors that affect the vulnerability of populations and natural systems, including social, financial, institutional, and technological needs (IPCC, 2017). DFIs can provide technical assistance and other capacity-building resources to support developing countries' assessment and planning needs, for example through the NDC Partnership and grants. This process should also involve strong participation from local vulnerable populations in order to address underlying inequities and better account for knowledge in indigenous communities, women and youth (GCA, 2020).

Responding and Preparing

Building on the risk assessments, DFIs can provide technical and financial assistance for addressing the identified climate risks by supporting the integration of resilience standards across all sectors and projects, as well as participating in risk-sharing arrangements with other project stakeholders. This may involve addressing specific adaptation needs within a country's health, education, water, and agricultural sectors through infrastructure investment, or putting processes in place to respond quickly to climate risk events when they occur. Examples of this stage include:




- **The World Bank's Disaster Risk Financing approach** as applied to existing social protection measures to increase the speed, predictability, and effectiveness of response by pre-identifying appropriate triggers and beneficiaries (Financial Protection Forum, 2020).
- **The Nigerian government's Water Requirement Satisfaction Index**, which includes a tool for calculating the number of potential additional beneficiaries and the costs of scaling up.
- **The Malawi government's Covid-19 Urban Cash Intervention program**, which built on Malawi's existing Social Cash Transfer program to identify where Covid-19 impacts were greatest and registered additional beneficiaries, enabling rapid response.


Recovery and Learning

Ex-post climate risk events, adaptation actions should target areas of greatest potential impact to restore the essential functions of human and natural systems, not just to the way they were operating before, but in a way that improves their overall adaptive capacity and resilience. This would involve building back with updated resilience standards, learning from how the risk event impacted the system, and feeding back the lessons learnt into future adaptation plans. DFIs have a critical role to play in supporting recovery services, incorporating new information into future adaptation plans, and disseminating lessons learnt. Recovery efforts may also involve a reassessment of the insurance, contingent credit lines, and other risk financing instruments, and updating trigger mechanisms as necessary.

III) BARRIERS TO TRACKING ADAPTATION FINANCE

Table 7. Barriers to financing and tracking adaptation activities

BARRIER TYPE	DETAILS
 <p>Lack of climate outcome/impact metrics</p>	<p>It is very difficult to assess what volume of adaptation finance is needed and where it should be directed due to the shortcomings of our current approach to aggregating adaptation finance flows. We currently discuss adaptation finance gaps in terms of aggregated finance volume (e.g. US\$ 30 billion annual average in 2017-18). The challenge with this approach is that it does not capture the efficacy of finance flowing (e.g. US\$ 30 billion one year could do more than US\$ 35 billion the next in terms of responding to climate risks if the finance were more effective in delivering resilience outcomes).</p> <p>This challenge applies in many kinds of finance (including climate mitigation), but it is an especially significant problem in adaptation where a lack of common impact metrics makes it difficult to overcome (unlike in mitigation where CO2e emissions reductions functions as a standard metric).</p> <p>An additional challenge is that resilience outcomes are difficult to track against a moving baseline—for example, other development projects may have also contributed to improved social outcomes in a given region. Moreover, the level of aggregation for a given metric often comes at the cost of losing context sensitivity. Such challenges have hindered progress on the development of common metrics, making a full accounting of progress on adaptation impossible.</p>
 <p>Context-specific barriers</p>	<p>This barrier is specific to the market and location where implementation of adaptation projects occurs and especially impacts private actors who are reliant on efficient policy and institutional environments. Core challenges include:</p> <ul style="list-style-type: none"> • Poor policy environment: Policy environment lacks conditions supportive to sector-specific investment. • Poor institutional environment: Legal and regulatory institutions and infrastructure that support investment are lacking. • Poor market environment: Market environment is unsupportive to sector-specific and general investment. • Poor value chains and human capital: Environment lacks the organizations and people with necessary capabilities for the investment to take place and be successful.
 <p>Business model and internal capacity barriers</p>	<p>Activity- and implementer-specific barriers also exist that hamper implementation of adaptation projects. These include:</p> <ul style="list-style-type: none"> • Uncertain or unknown value-add of activity: Value or benefit of the technology is not known to users or is uncertain. • High cost: Upfront and/or operational cost of technology is high. • Lack of technical capacity: Prospective users of the technology do not have the technical capacity necessary to implement or use it. • Lack of internal capacity: Internal management and operational capabilities of the adaptation product or service provider are insufficient to scale.

BARRIER TYPE	DETAILS
 <p>Lack of physical climate data</p>	<p>There is a critical lack of climate data in many geographies—especially in least developed countries (LDCs)—which limits adaptation projects and leads to uncertainty around optimal approaches. The poorest countries have the most significant lack of climate data: either they are post-conflict, or simply do not have the funding and technical resources to develop climate information such as 30-year time series data, groundwater baseline data, or 24-48 hour precipitation data.</p> <p>Lack of quality climate data particularly limits some types of adaptation finance instruments. For resilience bonds, for example, to make progress on implementation, there is a need for climate information to inform outcome measurements. Another example of the impact of limited physical climate data is in Bhutan, which faces shifting geographic patterns of water availability. There is sufficient water per capita, but the water-rich areas of the country have shifted. Farmlands are dry, people have migrated elsewhere to become day laborers, and there is insufficient climate information to inform adaptive decision-making.</p>

Source: Adapted and expanding on CPI 2018 Paper: 'Understanding and Increasing Finance for Climate Adaptation in Developing Countries'.

IV) COUNTRY CASE STUDIES

Case studies highlighting **Kenya, Fiji, Chile, Bangladesh, and the Philippines** illustrate how each country's capacity to access international finance for adaptation changed in 2020 given Covid-19, how considerations including external debt, fiscal space, and sovereign credit rating inform that capacity, and how the overall state of each country's economy impacts domestic investment in adaptation finance. These countries were selected for diversity in geography, climate vulnerability, capacity to finance adaptation, and advancement of adaptation planning underway.

These case studies highlight—when relevant—key recovery work taking place in each country targeting climate risk and resilience building, especially when that work is focused on the most impacted sectors of the economy. Beyond current findings in each country, the case studies assess key successes and gaps in approaching adaptation finance and suggest lessons for countries facing similar economic and climate conditions.



1. KENYA

Economic considerations:

Projections estimate that Kenya's economy will contract between 1.0 percent and 1.5 percent in 2020¹³⁴. The Kenyan government implemented a Covid-19 response

plan worth 0.8 percent of Kenya's 2020 GDP and the IMF Executive Board approved a US\$ 739 million disbursement to Kenya to address Covid-19 impacts in May 2020¹³⁵. In the same month, the World Bank approved US\$ 1 billion in financing to Kenya to address the financing gap exacerbated by Covid-19 and to backstop Kenya's economy¹³⁶.

Kenya likely faces a weak economic recovery scenario. This context presents the risk of potential defaults, yielding overall lower capacity to respond to climate-adaptation needs and to plan ahead, and a heavy reliance on international aid. Employment is likely to be affected across the Kenyan labor market—where more than 80 percent of employment is in the informal sector—impacting jobs in services, agriculture, and industry (representing 43 percent, 34 percent, and 16 percent of Kenya's GDP in 2019)¹³⁷.

Covid-19 health considerations:¹³⁸

The health impacts of Covid-19 have been relatively moderate as compared to the situation in other countries. The country has reported a total of approximately 90,000 cases, a case-fatality rate of 1.7 percent, and three deaths per 100,000 people. The deaths from Covid-19 per capita figure ranks Kenya 117th out of 170 countries assessed by Johns Hopkins Coronavirus Resource Center.

Climate considerations:

Per USAID¹³⁹, Kenya faces climate hazards across at least five sectors: agriculture, water, human health, ecosystems, and energy and infrastructure. Impacts will include reduced grain yields, water damage to crops and land, increased saltwater intrusion, increased risk of vector-borne diseases, degradation of coastal habitats, and storm damage to infrastructure. Per ND-GAIN, Kenya is the 39th most vulnerable country overall to climate impacts, 45th most vulnerable to food risks¹⁴⁰, and 12th most vulnerable to water risks¹⁴¹. Furthermore, Kenya experienced a locust plague which had devastating impacts on agricultural production in 2020.

Key findings and recommendations:

1) Success of Kenya's County Climate Change Funds could be applicable to other countries: In 2014, the Kenyan government recognized that integrating adaptation within sub-national county-level development plans was lagging far behind national-level planning. In response, the government mandated that county development plans account for climate impacts and established the County Climate Change Funds (CCCFs) to provide resources to sub-national authorities to build climate resilience¹⁴².

The CCCFs mobilize climate finance for sub-national governments for adaptation and mitigation projects. To access the finance, county governments have to demonstrate that development plans in place account for climate risk and are designed to reduce those risks. This program has incentivized local government to identify local vulnerabilities and begin to take action to improve climate resilience, and the systematic approach required helps reduce maladaptive projects¹⁴³.

2) Kenya has been hard hit by economic impacts from climate change and Covid-19 and warrants further international finance: Kenya's president Uhuru Kenyatta indicated that losses from climate impacts could represent 3 percent of Kenya's GDP¹⁴⁴ annually and indicated that Kenya will require approximately US\$ 62 million from 2020-30 to implement its climate action plan—including approximately US\$ 40 million for adaptation¹⁴⁵. Beyond climate impacts, Kenya's current economic conditions suggest a high likelihood of facing a low-upside economic recovery scenario and therefore a need to focus on immediate recovery actions to spur economic growth, ameliorate job losses, and stem social impacts.

When assessing adaptation interventions, implementers should continue to focus—as with finance thus far from the World Bank, IMF, and the Kenyan Government—on backstopping Kenya's economy through mainstreaming climate adaptation. Action could include Covid response facilities and bonds that mainstream climate risk considerations, liquidity support to Kenyan SMEs that incorporates climate risk, and debt relief to free fiscal space to address climate risk.

3) Kenya is facing a mounting debt crisis and should explore debt-for-adaptation swaps, in collaboration with DFIs such as the AfDB: Kenya has thus far declined to participate in the G20 Debt Service Suspension Initiative, amid concerns regarding the impact of participation on Kenya's ability to access international financial markets. The country is paying an interest rate of between 6.9 percent and 8.3 percent on Eurobonds and faces a potential sovereign credit downgrade amid economic conditions that would increase interest rates and severely limit its ability to refinance its debts¹⁴⁶. Furthermore, Kenya's public debt is projected to reach 69.8 percent of GDP by 2023 and its public debt service is expected to increase from 9.8 to 12.9 percent of GDP between 2019 and 2023¹⁴⁷.

Amid Kenya's mounting debt burden, combined with accelerating climate risks, there may be significant opportunities for DFIs to engage in potential debt-for-adaptation swaps in Kenya. Through these swaps, bilateral and multilateral debt relief could enable Kenya to reduce its external debt and invest freed funds in national climate-adaptation programs. To make these swaps viable, the swaps should be structured to incentivize investment in high-benefit or dual-benefit sectors, including early-warning systems and improving resilience of infrastructure, agriculture, forestry, and fisheries¹⁴⁸.

**2. FIJI****Economic considerations:**

The Fijian economy is heavily reliant on tourism, exports, and remittances and has thus been severely impacted by the Covid-19 crisis and related global economic lockdown. Fiji's economy is forecast to contract by more than 20 percent in 2020¹⁴⁹. The decline in tourism alone has left approximately one-third of the workforce (115,000 people)

unemployed or underemployed and Fiji is facing a budget deficit forecast of US\$ 1.35 billion (or approximately one-quarter of Fiji's GDP)¹⁵⁰. Fiji's future economic and fiscal stability is reliant on a return to international tourism as swiftly as allowable given health constraints¹⁵¹. Fiji has elected to participate in the World Bank DSSI program—which the World Bank estimates could yield potential savings of US\$ 13.4 million or 0.2 percent of 2019 GDP—just 1 percent of Fiji's budget deficit¹⁵².

Covid-19 health considerations:

As of November 2020, Fiji has had significant success in controlling the Covid-19 pandemic largely through closing its borders. The country has had 44 cases and two deaths (0.2 deaths per 100,000 people) from Covid-19 to date¹⁵³. Unlike the other case study countries, Fiji is not tracked in the Johns Hopkins Coronavirus Resource Center data, but its reported deaths to date would rank it seventh-lowest in global deaths from Covid-19 per capita.

Climate considerations:

Per USAID¹⁵⁴, Fiji faces climate hazards across at least six sectors: coastal zones, livelihoods and tourism, agriculture, water resources, health, and energy and infrastructure. Impacts include saltwater intrusion into habitats, damage to coastal ecosystems, decreased crop yields and food insecurity, decreased water availability for crops, shifts in infectious disease patterns, and damage to key infrastructure.

Per ND-GAIN, Fiji is the 86th most vulnerable country overall to climate impacts, 13th most vulnerable to ecosystem services risks¹⁵⁵, and 71st most vulnerable to human habitat risks¹⁵⁶. Additionally, in 2016, Fiji was devastated by Tropical Cyclone (TC) Winston, which caused estimated damage and losses of US\$ 1.38 billion (or 31 percent of Fiji's annual GDP). Fiji was again impacted by a cyclone, TC Harold, in April 2020, which exacerbated Covid-19 impacts as it caused widespread crop damage at a moment when the country was already experiencing severe economic impacts due to a lack of travel and uncertain export markets. Four cyclones are forecast on average for the 2020-21 season, so Fiji is expected to continue to face considerable storm risks going forward.

Key findings and recommendations:

1) Fiji has already undergone substantial and sophisticated adaptation planning and prioritization efforts which can inform other countries' efforts: Fiji submitted a National Adaptation Plan in 2018. The plan includes actions across five systems and five sectoral components, including climate information services and management, resource mobilization, food and nutrition security, human settlements, and infrastructure.

Fiji is unique among these case studies because the World Bank has already applied the full Proposed Sustainability Checklist for Assessing Economic Recovery Interventions to Fiji's Climate Vulnerability Assessment. Fiji's Climate Vulnerability Assessment includes 125 suggested interventions to address assessed vulnerabilities. An initial screen of the interventions against the checklist by the World Bank yielded 63 core interventions. These were then assessed further against a budget cut-off assuming a limit to funding available, which narrowed the list of interventions to 10. The assessment of Fiji's CVA can inform corollary efforts in other countries—to screen potential interventions against key resilient recovery priorities to prioritize interventions given constrained budgets.

The World Bank's analysis concluded with a list of the top 10 potential interventions for a stimulus to build resilience:

- 1) Improving resilience of rural mini-grids and solar home systems
- 2) Sustainable agricultural practices
- 3) Housing micro-finance (five-year loans) to retrofit existing houses and construct new ones to approved designs and standards
- 4) Community-level investments for improved ecosystem resilience
- 5) Diversification of renewable energy generation
- 6) Expansion of underground distribution lines
- 7) Progressive structural upgrades of all remaining schools and health facilities not affected by Tropical Cyclone Winston
- 8) Expansion of solar generation
- 9) Promotion of alternative income sources not dependent on fisheries
- 10) Reduction of physical water losses

2) Fiji has several core efforts underway to finance climate adaptation, but is falling short of its own targets to meet annually identified climate finance needs.

Core efforts underway include a sovereign green bond raised in 2017—Fiji was the first developing country to successfully issue a sovereign green bond for FJD 100 million (US\$ 49 million)—and an Environmental and Climate Adaptation Levy that began in 2017 and raised nearly FJD 400 million (~US\$ 200 million) between August 2017 and December 2019 to fund climate adaptation. Despite these efforts and others—totaling FJD 780 million (US\$ 380 million) annually between 2016 and 2019 in domestic and international public climate finance—the flows fall short of the FJD 3.3 billion (US\$ 1.6 billion) in annually identified climate finance needs.

Because adaptation interventions have already been rigorously assessed, there is potential for DFIs and the government of Fiji to explore a range of financial mechanisms to mobilize investment for the prioritized interventions—including those above. Relevant financial mechanisms given the economic situation in Fiji may include new or continued use of low-cost project debt from DFIs to finance adaptation projects, additional debt relief through DSSI or similar efforts, and debt-for-adaptation swaps¹⁵⁷.



3. CHILE

Economic considerations:

Like many countries in Latin America, Chile's economy has been severely affected by the Covid-19 crisis: in December 2020, Chile's central bank projected an economic contraction for 2020 of between 4.5 percent and 5.5 percent¹⁵⁸. The IMF notes that Chile's economy has strong fundamentals, but will be affected into 2021 by a deterioration in global demand for Chilean exports, a sharp decline of capital inflows toward emerging markets generally, and a tightening of global financial conditions¹⁵⁹.

In response to the crisis thus far, the Chilean government has instituted a number of relief measures in 2020, including cash handouts, loan and mortgage deferrals, and a law creating eligibility for individuals to withdraw 10 percent of their pensions early to create a liquidity injection into the economy¹⁶⁰. Research just before

Covid-19 highlighted factors that could push the newly expanding middle class in Chile back into poverty, including several which tie to this economic crisis: catastrophic health expenditures and long unemployment spells. World Bank simulations since the crisis estimate that the share of the Chilean population with stable middle-class incomes may decline from 63 percent to 54 percent given economic conditions¹⁶¹.

Covid-19 health considerations:

Chile has been among the countries most impacted by Covid-19 in terms of health outcomes. The country has reported a total of over 580,000 cases, a case-fatality rate of 2.8 percent, and 86 deaths per 100,000 people. The deaths from Covid-19 per capita figure ranks Chile 20th out of 170 countries assessed by Johns Hopkins Coronavirus Resource Center.

Climate considerations:

Per the World Bank¹⁶², Chile will experience climate impacts across at least three hazards: drought, wildfires, and shifting precipitation patterns. As a result, it will face increased incidence of drought with potential impacts on water availability, food production and energy, impacts on agricultural lands and long-term soil health, and increases in flash flooding and variability of precipitation. Per ND-GAIN, Chile is the 22nd least-vulnerable country overall to climate impacts, but is near the average (78th most at risk out of 185 countries) in terms of risks to human habitat¹⁶³.

Key findings and recommendations:

1) Chile has substantial policy and planning efforts underway which are robust and could be prioritized further for a resilient recovery.

Chile produced a national climate-change adaptation plan in 2014 and submitted a National Adaptation Plan in 2017¹⁶⁴. In April 2020, Chile also submitted an enhanced Nationally Determined Contribution. The enhanced NDC scales up Chile's climate ambition and includes several key relevant updates for a resilient recovery: 1) it dictates that every climate commitment Chile makes must safeguard a just transition (i.e. jobs programs for fossil fuels) and integrate UN Sustainable Development Goals, including water security and overcoming poverty, and 2) it includes a target of restoring one million hectares of natural ecosystems to deliver dual benefits for climate-adaptation outcomes, including water security and emissions sequestration¹⁶⁵.

Because Chile has emphasized the importance of nature-based solutions in building adaptation—including a commitment to restoring 100,000 hectares of forests—prioritizing these solutions, which also hold significant jobs and economic growth potential, will be a valuable step toward a resilient recovery. Chile's updated NDC specifically highlights the need for action in 1) water management and sanitation, and 2) disaster risk management. These are two sectors that can incorporate nature-based solutions while meeting NDC commitments such as setting water security goals and improving water management at the watershed level.

2) Chile experiences significant non-climate-related natural disaster risks, including from earthquakes, and has worked to integrate disaster risk-reduction efforts across climate and non-climate-related risks. In its updated NDC, Chile lists as a contribution to adaptation an aim to increase capacity to adapt to climate-related risks and to manage adverse effects of other socio-natural disasters. For example, the contribution commits that by 2030, Chile's National Policy for Disaster Risk Reduction 2019-30 will be fully implemented and that the policy will be harmonized with the Sendai Framework for Disaster Risk Reduction¹⁶⁶.

Countries like Chile that face dual risks from climate and non-climate-related disasters should follow suit to integrate planning across risks and design financing strategy to mitigate all kinds of natural hazard risks. There are also opportunities for countries to build on existing non-climate-focused disaster risk-reduction financing mechanisms already in place—including catastrophe bonds for earthquake risks and strategies to make natural disaster insurance more affordable—and apply those mechanisms to climate-related risks.



4. BANGLADESH

Economic considerations:

Bangladesh's economy is agriculture, manufacturing, and trade based¹⁶⁷. Its economy has been growing by almost 7 percent annually for the last decade, led in part by the national government's rigorous five-year planning process¹⁶⁸. Industry growth, including mining and small and large-scale manufacturing, has been a leading sector. The IMF now projects a 2 percent growth rate

for 2020—a decline of 6 percentage points from 2019, although growth is projected to pick up back to 6 percent in 2021¹⁶⁹.

The IMF reports that Bangladesh's economy has been most affected through three means: 1) a drop in domestic activity after a Covid-19 shutdown was announced on March 26, 2) an 83 percent fall in exports year-on-year in April (ready-made garment exports represent more than 80 percent of Bangladesh's exports), and 3) a fall in remittances from Bangladeshis living largely in the Middle East, who have been affected by both the pandemic and the drop in oil prices.¹⁷⁰

Bangladesh was at low risk of external debt distress prior to the Covid-19 crisis, with the deficit around 1-2 percent of GDP¹⁷¹. The IMF anticipates that despite heightened crisis borrowing, which may raise Bangladesh's public debt-to-GDP ratio over 40 percent, debt should still remain fairly sustainable given the low risk prior to the crisis¹⁷². The IMF approved loans totaling US\$ 732 million in 2020 to support Bangladesh through the Covid-19 crisis.

Covid-19 health considerations:

The health impacts of Covid-19 in Bangladesh have been moderate as compared to the situation in other countries. It has reported a total of just under 500,000 cases, a case-fatality rate of 1.5 percent, and five deaths per 100,000 people. The deaths from Covid-19 per capita figure ranks Bangladesh 110 out of 170 countries assessed by Johns Hopkins Coronavirus Resource Center.

Climate considerations:

Per USAID, Bangladesh faces climate hazards across at least five sectors: agriculture and food security, water resources, human health, ecosystems, and energy¹⁷³. Climate impacts include reduced crop yields, fisheries and livestock losses, decreases in potable water supplies, higher prevalence of infectious diseases, reduced natural flood protection, and decreased hydropower capacity. Per ND-GAIN, Bangladesh is ranked the 27th most vulnerable country overall to climate impacts, seventh most vulnerable to water risks¹⁷⁴, and 30th most vulnerable to health risks¹⁷⁵.

Key findings and recommendations:

1) Bangladesh has robust adaptation planning underway, which can help prioritize interventions addressed through funding mechanisms established to date: Bangladesh has not submitted a formal National

Adaptation Plan (NAP), but has developed a National Adaptation Programme of Action (revised in 2009)¹⁷⁶. The Green Climate Fund has financed a project for Bangladesh to formulate a NAP with a focus on long-term adaptation investment and national capacity enhancements. GCF has contributed just over US\$ 2 million to this project, which is expected to be completed in 2021¹⁷⁷.

Bangladesh has established two primary funding mechanisms for adaptation projects: the Bangladesh Climate Change Trust Fund, established in 2010, which receives funding from the Government of Bangladesh, and the Bangladesh Climate Change Resilience Fund, which is funded by international actors, including the United Kingdom, Australia, the European Union, and others¹⁷⁸. These funds have been key to developing infrastructure projects, including embankments, cyclone-resilient housing, and water and waste management, but have not been as focused on capacity building.

Bangladesh's current economic conditions, including a relatively sustainable debt burden and strong economic growth prospects in 2021, suggest a high-upside economic recovery should be considered. Bangladesh has benefited from investments made over decades by UNDP, GEF, and other international actors to define an adaptation strategy and mainstream that approach into the national government¹⁷⁹. Adaptation is already a core tenet of the Government of Bangladesh's seventh five-year plan (set to end in 2020)¹⁸⁰, including spending up to US\$ 1 billion a year on adaptation projects,¹⁸¹ and figures to play a large role in the development of the eighth five-year plan as well.

2) Institutions in Bangladesh have sophisticated coordination capacity and are instrumental in adaptation implementation—a lesson for countries with similar economic and climate considerations:

Bangladesh has taken advantage of its sustainable debt load and strong economic growth to plan ahead and entrust institutional actors with implementing a long-term vision. The Ministry of Environment, Forest and Climate Change (MoEFCC) is the lead government agency responsible for implementing Bangladesh's climate-adaptation strategy. This role includes international communication, managing local stakeholder interactions, including with the national government, and mobilizing funds to implement policies¹⁸².

The Planning Commission is another agency that has played a key role in implementing this adaptation strategy. Two programs that have seen especially valuable contributions from the Commission are: 1) screening investment proposals submitted to the development plan early in the process to ensure sufficient coordination with local actors¹⁸³, and 2) allowing projects under US\$ 250 million to be submitted directly to the BCCTF or BCCRF to reduce delays¹⁸⁴.



5. THE PHILIPPINES

Economic considerations:

Prior to the Covid-19 crisis, the Philippines' economy was projected to grow 6.3 percent in 2020. That projection has been revised to a contraction of 8.1 percent in 2020, likely reversing gains in poverty reduction in recent years. While unemployment rates have decreased from 17.6 percent in April to around 8.7 percent in October, following the easing of quarantine measures, this remains nearly double the unemployment rate in 2019¹⁸⁵. A core element of the government's strategy to address the impact of the pandemic has been emergency support for vulnerable groups and individuals—totaling 11 percent of the country's GDP. This support is funded in part by an Asian Development Bank grant providing rapid emergency financing.

The government's response package has caused an enormous increase in public debt, which is expected to rise from 34 percent to 48 percent of GDP from 2019 to 2020. Fiscal reforms implemented over the past four years have prepared the country to enter the pandemic in a relatively strong fiscal position, and as a middle-income country, the Philippines is ineligible for participation in the DSSI. Nonetheless, to address the growing debt situation, the Philippines is preparing to implement austerity measures and has developed plans for fiscal consolidation in 2021¹⁸⁶.

Covid-19 health considerations:

The health impacts of Covid-19 have been moderate compared to other countries. The country has reported just under 450,000 cases, a case-fatality rate of 1.9 percent, and eight deaths per 100,000 people. The mortality rate per capita ranks the Philippines 90th out of 170 countries assessed by Johns Hopkins Coronavirus Resource Center.

Climate considerations:

The Philippines faces climate hazards across at least six sectors: agriculture, water, energy, coastal ecosystems, infrastructure/services, and human health¹⁸⁷. Key climate impacts include increasing pest infestations, increased flood and landslide risk, reduced energy production potential, reduced marine habitat, damage to water and sanitation facilities, and increased risk of vector-borne diseases.

Per ND-GAIN, the Philippines is ranked the 66th most vulnerable country overall to climate impacts, ninth most vulnerable to water risks¹⁸⁸, and 56th most vulnerable to human habitat risks¹⁸⁹. The Philippines has not yet submitted a National Adaptation Plan. The Philippines is also highly exposed to non-climate-related disasters such as volcanoes and earthquakes, ranking ninth in the World Risk Index of most disaster-prone countries, and sees substantial losses every year in damage to crops, properties, and infrastructure. This underscores the need for strengthening the government's holistic risk management capacity, integrated into efforts to address growing climate concerns. In the past, climate-related events such as typhoons were considered part of disaster risk management rather than identified separately as climate-adaptation needs. However, with more intense and prolonged typhoon seasons—the country experienced 21 typhoons in 2020—a more nuanced approach to addressing climate-adaptation needs is taking shape.

Key findings and recommendations:

1) The Department of Finance's leadership is critical to the Philippines' success to date in financing adaptation measures: The Department of Finance currently chairs the Climate Change Commission, the lead policy-making body of the government leading the coordination, monitoring and evaluation of programs, while ensuring that climate factors are mainstreamed into national, local and sectoral plans for climate-resilient development.

The Department of Finance is also an active participant in the Coalition of Finance Ministers and a leading member of the Working Group of the Helsinki Principles 4, which aims to mainstream climate change in macroeconomic policy, fiscal planning, budgeting, public investment management, and procurement practices¹⁹⁰. Finally, the Department of Finance serves as Board Secretariat for managing the People's Survival Fund (PSF), which provides 1 billion pesos (US\$ 20 million) annually in long-term finance for adaptation projects to local

government units (LGUs) and accredited local community organizations (LCOs). The Fund may be accessed through LGU and LCO project proposals that meet criteria including exposure to climate risks, poverty incidence, and key biodiversity areas¹⁹¹.

2) Work is underway—and more is needed—to address fragmented institutional capacity in risk management:

Efforts are underway within the government to ensure a clear allocation and accountability of tasks across the National Disaster Risk Reduction and Management Council (NDRRMC) and the interagency taskforce implementing the National Action Plan for Covid-19. To improve coordination on disaster risk management in the future, a bill has been proposed to establish a central Department of Disaster Resilience that can provide a clear chain of command and serve as a dedicated unit with permanent staff. Similar harmonization efforts across institutions working on disaster risk and climate adaptation will be critical in other countries seeking to coordinate risk management across government agencies.

3) The Philippines is at high risk of a range of natural disasters and is working toward enhancing long-term resilience planning capacity.

The government has a catastrophe risk model in place that allows simulation of typhoons and earthquakes to predict economic damage. Based on the model projections, in the long-term, the Philippines faces 130 billion pesos (US\$ 2.7 billion) in average annual loss from typhoons and 40 billion pesos (US\$ 830 million) from earthquakes. In addition, the government has recently implemented a nationwide asset registry system to document all critical assets, co-operating with the Department of Science and Technology to integrate information on risk hazards. This will enhance the government's long-term capacity to more accurately predict damage estimates, as well as identify potential cascading impacts across infrastructure systems.

As the Philippines moves to more robustly address the full range of natural disaster risks it faces, there should be continued efforts to combine national and local capacities, with the national government providing physical hazards data and local governments providing ground knowledge of vulnerabilities. This approach will necessarily differ by the local government unit's capacity—as some local governments are relatively affluent and have more resources, while others will need substantially more assistance¹⁹².



A young mother holding her baby in a flooded settlement beside the Ciliwung River in South Jakarta. Picture: iStock

4) There is a strong foundation for increasing engagement from the private sector: The Philippine Disaster Resilience Foundation (PDRF) was launched in 2009, led by the country's largest private corporate actors and NGOs, in response to the President's Special National Public Reconstruction Commission's request to increase support for post-disaster reconstruction programs. PDRF's functions were reorganized and enhanced in 2013 to become an umbrella organization for private-sector engagement in disaster preparedness, relief and recovery, addressing five key areas: shelter, livelihood, education, environment, and water-infrastructure-sanitation-health (WISH)¹⁹³. PDRF leads the region's first private-sector-led Emergency Operations Center that acts as a hub to monitor and coordinate early warnings and responses to disasters, while also supporting the preparedness and business continuity of SMEs. A host of training resources and specialized courses are available to ensure common knowledge sharing across resilience stakeholders.



6. LESSONS LEARNT

A number of key themes emerge across the five country case studies:

Regardless of Covid health impacts, nearly all countries are experiencing significant impacts to economic growth from the global crisis. Fiscal capacity, debt sustainability, and ability to access international markets for finance will be determining factors in countries' ability to meet imminent climate risks while also recovering from the pandemic. Some countries can look to instruments such as resilience or recovery bonds to raise capital for investment, while others will require partnership with creditors and donors, for example, through debt-for-adaptation swaps.





Enhancing national-level planning and risk management capacity can help country governments and DFIs prepare for and prioritize adaptation interventions as part of their recovery. For example, Fiji's substantial policy and planning efforts allowed for an analysis that concluded with a top 10 of potential interventions for a stimulus to build resilience. Chile and Bangladesh likewise have robust adaptation planning underway which could be useful in further prioritizing interventions for a resilient recovery. Meanwhile, in the Philippines, the Department of Finance has shown leadership in strengthening the country's overall climate-adaptation strategy and integrating necessary interventions into public finance management.






Supporting sub-national capacity to assess local vulnerabilities and develop resilience plans is critical to recovery. Kenya dedicated funds to support sub-national capacity to draw up development plans through its County Climate Change Funds, while the Philippines has a People's Survival Fund that supports local government units in adaptation projects. Both countries have seen significant success to date in building capacity at the sub-national level and incentivizing local risk management and resilience planning.

The private sector should be active participants in early discussions to understand needs, ensure effective planning outcomes, and identify opportunities for scaling up. In the Philippines, for example, the Philippine Disaster Resilience Foundation has played an active role in disaster response and contributes to the country's capacity to prepare for and provide support after a disaster without further stretching fiscal resources.

V) SAMPLE METRICS FOR PRIORITIZING EFFECTIVE RECOVERY AND RESILIENCE INTERVENTIONS

Table 8. Metrics and considerations for assessing adaptation interventions

	KEY CONSIDERATIONS	EXAMPLE METRICS
Climate		
 Climate risk screening	<p>Have interventions been screened for exposure and vulnerability to climate hazards, considering future changes in climate conditions over the investment's design lifespan?</p> <p>If the intervention addresses system-level adaptation needs, has a set of results-based metrics been proposed against which progress may be tracked?</p>	<p>Type of climate hazards identified and their likelihood of occurrence</p> <p>Number of people or value of assets at risk</p> <p>Measures taken to avoid potential impacts</p> <p>For infrastructure projects delivering critical services, number of beneficiaries at risk and associated impacts in the event of service disruption</p>
 Scenario analysis	<p>For longer-term projects, has the intervention considered a range of future climate scenarios and associated impacts?</p>	<p>Groundwater recharge rates</p> <p>Projected changes in drought frequency and precipitation patterns</p> <p>Expected recovery time for critical infrastructure systems after a major event</p>
 Avoids maladaptation and carbon lock-in	<p>Does the intervention avoid outcomes that may lead to making assets/populations/systems more vulnerable compared to before the implementation?</p> <p>Does the intervention avoid locking in carbon-intensive growth that may also pose stranded asset risks in the future?</p>	<p>Baseline assessment of exposure and vulnerability of assets and populations at risk</p> <p>Consideration of potential cascading impacts across infrastructure systems</p> <p>Tons of CO2 emissions associated with the project (across construction and operation phases)</p>
Economic		
 Fosters economic growth	<p>Does the intervention target sectors most affected by Covid-19 and most exposed/vulnerable to current and future climate risks?</p>	<p>Contraction and projected growth in economic sector being addressed</p> <p>Amount of stimulus funding allocated to the addressed sector</p> <p>Average productivity growth</p> <p>Short and long-term multipliers?</p>

 Job creation	<p>Does the intervention create new jobs in the short to medium term, especially where jobs utilize existing local skills?</p> <p>Does the intervention address retraining and reskilling of workers to support sectoral reallocations in the economy as needed?</p>	<p>Unemployment figures by sector</p> <p>Number of jobs created per US\$ 1 million in investment</p>
 Expands fiscal space	<p>Does the intervention address subsidy reforms and other necessary policies to reduce the effect of distorting subsidies?</p> <p>Does the intervention implement measures (e.g. carbon pricing) that can generate more revenue or involve policies for enhancing capacity to manage debt?</p>	<p>Number and type of policies implemented that increase fiscal space</p> <p>Amount of savings achieved through fiscal reforms</p>
Social		
 Inclusive growth	<p>Does the intervention create new employment opportunities that explicitly aim for gender equity and target underemployed and vulnerable populations?</p> <p>Does the intervention involve increasing employment opportunities and financial inclusion for workers in the informal sector?</p>	<p>Share of unemployed, low-income and informal-sector workers that benefit from the intervention</p> <p>Measures that incorporate gender-sensitive elements</p> <p>Amount of funding targeting training and skilling workers for the new economy</p> <p>Share of population</p> <p>Average income of farmers</p>
 Builds socio-economic resilience	<p>Does the intervention improve socio-economic resilience—the ability of the population to cope with and recover from shocks?</p>	<p>Change in poverty rates (last five years)</p> <p>Share of population exposed/vulnerable to climate risks, with impacts disaggregated across income groups as possible</p> <p>Access to modern energy</p> <p>Access to improved water and sanitation</p> <p>Share of population with access to emergency loans and financial savings (in a bank account)</p>
 Addresses future pandemic risks	<p>Does the intervention improve the population's adaptive capacity to future pandemic risks?</p>	<p>Vulnerable population's access to basic water and sanitation services, access to medical care</p> <p>ICU units per population</p>

1. CPI 2019
2. UNEP 2018
3. Devex 2020a
4. As of October 25, 2020.
5. World Resources Institute, forthcoming
6. BlackRock 2020
7. Adaptation finance is defined for this work as finance that builds strength systems to withstand climate-related shocks and stressors and builds capacity to cope with and recover from those impacts.
8. CPI 2019
9. UNEP 2018
10. World Bank 2020f
11. World Bank 2018
12. GCA 2019
13. Adaptation finance refers to all resources directed to activities aimed at reducing the vulnerability of human or natural systems to the impacts of climate change and climate-related risks, by maintaining or increasing adaptive capacity and resilience. Adaptation taxonomies broadly distinguish between asset-focused (resilience of) and systems-focused (resilience through) activities, with asset-focused interventions involving the mainstreaming climate risk considerations across investments that do not have an explicit adaptation objective, and systems-focused interventions referring to activities designed with the primary intent to deliver adaptation benefits by reducing the exposure and vulnerability of systems to climate hazards (further details in Annex I).
14. The limited private-sector adaptation finance tracked in the Landscape is due both to genuinely low flows of private finance given bankability concerns and other challenges as well as tracking issues, including confidentiality restrictions and a lack of incentive or outlet to report investments publicly, which makes the tracking difficult.
15. EBRD 2019
16. Prime Minister of Canada 2020
17. IMF 2020b
18. World Bank 2020e
19. UNCTAD finds in a November 2020 report "Impact of the Covid-19 Pandemic on Trade and Development: Transitioning to a New Normal" that Covid-19 impacts have been asymmetrically severe on the most vulnerable, especially affecting low-income households, migrants, informal workers, and women. This is at least in part because Covid-19 has most severely impacted sectors that disproportionately employ vulnerable groups – tourism and small and medium-sized enterprises.
20. Mercy Corps 2019
21. The average increase in unemployment across more than 100 countries tracked in the IMF's World Economic Database was nearly 50 percent from October 2019 to October 2020.
22. OECD 2020a
23. Johns Hopkins Coronavirus Resource Center. "Mortality Analyses". As of 5 Jan 2021; IMF International Monetary Fund. "Real GDP growth; Annual percent change". As of Jan 2021. Change from 2019 to 2020 is calculated as 2019 percent subtracted by 2020 percent. For example, a change in GDP growth from 5 percent to -4 percent is calculated as a decrease of 9 percentage points.
24. IFC 202
25. IMF. "Real GDP growth; Annual percent change" as of Jan 2021
26. IMF 2020c
27. CPI and University of Oxford, forthcoming
28. IMF 2020b
29. Beirne et al., 2020; Buhr et al., 2018; Kling et al., 2020
30. S&P 2020a
31. World Bank 2020h
32. ND-GAIN 2017. ND-GAIN assesses vulnerability to climate risks through a three-factor approach, assessing 1) exposure, 2) sensitivity, and 3) adaptive capacity. ND-GAIN assesses readiness by assessing countries' ability to leverage investments in adaptation. Readiness is assessed in three components: economic readiness, governance readiness and social readiness.
33. IMF, as of Dec 2020
34. The Telegraph 2020
35. Reuters 2020
36. New York Times 2020
37. GCF 2020
38. ibid
39. FSB 2020
40. Bartlow et al. 2019
41. Gibb et al 2020
42. Harvard T.H. Chan. 2020
43. WHO 2018
44. Tracking for the previous year is typically only available by the second half of the year – e.g., 2020 data will be reported in mid-late 2021.

45. GCF 2020
46. Per CPI analysis of BNEF Covid-19 Green policy tracker, as of December 2020.
47. Further details on France's Adaptation Action Plan are available in Annex A.
48. Brookings 2020
49. AFD 2020
50. AfDB 2020a
51. World Bank 2017
52. IFC 2010
53. KfW 2020a
54. For example, see AfDB 2020c
55. Volz, Ulirich. 2020
56. AfDB 2020b
57. World Bank. 2020d
58. Per interviews with KfW, AfDB, ADB.
59. JICA 2020a
60. JICA 2020b
61. JICA 2020c
62. JICA 2020d
63. JICA 2020e
64. ADB 2020a
65. Ibid
66. World Bank 2020c
67. Artemis 2020
68. Insurance Journal 2020
69. AfDB 2020d
70. BlackRock 2020
71. One exception is EBRD linking financial support to corporate climate governance, to encourage behavioral change and better integrate climate risk management – See EBRD 2020
72. IMF 2020d
73. OECD 2020b
74. UNCTAD 2020
75. IFC 2020b
76. TCFD 2020
77. Willis Tower Watson 2019
78. IADB 2020
79. Development Initiatives, as of Dec 2020
80. ibid
81. IMF 2020a; OECD 2020b
82. Devex 2020b
83. CPI GLCF database
84. Axios 2020
85. Ibid.
86. Joint Report on MDBs Climate Finance 2020; IDFC 2020
87. IDFC 2019
88. IMF 2020b
89. IMF 2020b
90. Informed by: EU TEG Sustainable Finance (2020) Taxonomy Report: Technical Annex; Climate Bonds Initiative (2019) Climate Resilience Principles; Joint MDB-IDFC (2019) A Framework and Principles for Climate Resilience Metrics in Financing Operations.
91. WRI 2020a
92. Ibid.
93. WWF and ILO 2020.
94. VividEconomics 2020
95. GCA 2020
96. WHO 2019a
97. Armitage, Richard and Laura B Nellums. 2020
98. WHO 2019b
99. WRI 2020b
100. Climate-adaptive sanitation projects could include monitoring of flows to trigger alerts to fix pumps or trigger public health warnings for sewer overflows, installation of pumped marine outfalls, and upgrade of sewer systems and wastewater treatment plants.
101. WRI 2020b
102. Technoserve 2020
103. GCA 2020
104. VividEconomics and Finance 4 Biodiversity 2020
105. De Pinto et al. 2020; Quisumbing, et al. 2019
106. Insurance Institute for Business & Home Safety
107. ADB 2020b

108. WRI 2020a
109. World Bank 2020a
110. To address this limitation, DFIs and governments should consider investing in data systems and long-term planning capacity as detailed in Section C.I.
111. Exact implementation speed required for a country depends in part on the project and country needs.
112. Credit ratings including and above BBB are generally considered investment grade.
113. AfDB 2020a
114. The Coalition of Finance Ministers for Climate Action 2020
115. World Economic Forum 2020
116. World Bank 2019
117. KfW 2020b
118. Caribbean Catastrophe Risk Insurance Facility 2020
119. Global Innovation Lab for Climate Finance 2019a
120. Global Innovation Lab for Climate Finance 2019b
121. IDB 2020
122. The Global Commission on Adaptation 2019
123. World Bank 2016
124. Alianza Latinoamericana de Fondos de Agua 2019
125. EBRD 2020
126. Leiter et al 2019
127. Ibid.
128. CPI 2019
129. UNEP 2016
130. The Coalition of Finance Ministers for Climate Action 2020
131. Definitions are adapted from World Bank's Adaptation and Resilience Action Plan 2019.
132. IPCC. 2014. "AR5 Synthesis Report: Climate Change 2014". Available at: <https://www.ipcc.ch/report/ar5/syr/>
133. Informed by: EU TEG Sustainable Finance (2020) Taxonomy Report: Technical Annex; Climate Bonds Initiative (2019) Climate Resilience Principles; Joint MDB-IDFC (2019) A Framework and Principles for Climate Resilience Metrics in Financing Operations.
134. World Bank 2020i
135. IMF 2020
136. World Bank 2020b
137. Statista 2020
138. All health impacts data across case studies is as of December 22, 2020.
139. USAID 2018a
140. Indicated by projected change of cereal yields, projected population change, food import dependency, rural population, agriculture capacity, and child malnutrition.
141. Indicated by projected change in annual runoff, projected change of annual groundwater recharge, freshwater withdrawal rate, water dependency ratio, access to reliable drinking water and dam capacity.
142. IISD 2018
143. World Resources Institute 2020c
144. Kenya's GDP in 2019 was just under US\$ 100 billion or about US\$ 1800/capita, per the World Bank.
145. Reuters 2020b
146. European Network on Debt and Development 2020a
147. Ibid.
148. Khan 2020
149. Xinhua 2020
150. DFAT 2020
151. Gounder 2020
152. World Bank 2020h
153. WorldoMeter 2020
154. USAID 2018b
155. Indicated by projects change of biome distribution, projected change of marine biodiversity, dependency on natural capital, ecological footprint, protected biomes, and engagement in international environmental conventions.
156. Indicated by projected change of warm period, projected change of flood hazards, urban concentration, age dependency ratio, quality of trade and transport-related infrastructure, and paved roads.
157. These financial mechanisms are discussed in additional depth in Section C.III.
158. S&P Global 2020c
159. IMF 2020e
160. Ibid.
161. World Bank 2020j
162. World Bank Climate Change Knowledge Portal - Chile Vulnerability

163. Indicated by projected change of warm period, projected change of flood hazards, urban concentration, age dependency ratio, quality of trade and transport-related infrastructure, and paved roads.
164. Government of Chile 2014
165. World Resources Institute 2020d
166. Chile's Nationally Determined Contribution, Update 2020
167. Government of Bangladesh Ministry of Finance 2019
168. Government of Bangladesh General Economics Division 2015
169. IMF 2020f
170. Ibid.
171. Government of Bangladesh Ministry of Finance 2019
172. IMF 2020f
173. USAID 2018c
174. Indicated by projected change in annual runoff, projected change of annual groundwater recharge, freshwater withdrawal rate, water dependency ratio, access to reliable drinking water and dam capacity.
175. Indicated by projected change of deaths from climate-change induced diseases, project change of length of transmission season of vector-borne diseases, slum population, dependency of on external resources for health services, medical staffs, access to improved sanitation facilities.
176. Government of Bangladesh Ministry of Environment and Forests 2009
177. UNDP 2018
178. CARIAA 2016
179. The Asia Foundation 2012
180. Government of Bangladesh General Economics Division 2015
181. UNDP-UNEP Poverty Environment Initiative 2015
182. The Asia Foundation 2012
183. Ibid.
184. CARIAA 2016
185. World Bank 2020kf
186. European Network on Debt and Development 2020b
187. USAID 2017
188. Indicated by projected change in annual runoff, projected change of annual groundwater recharge, freshwater withdrawal rate, water dependency ratio, access to reliable drinking water and dam capacity.
189. Indicated by projected change of warm period, projected change of flood hazards, urban concentration, age dependency ratio, quality of trade and transport-related infrastructure, and paved roads.
190. The Coalition of Finance Ministers for Climate Action 2020
191. Green Climate Fund Philippines 2019
192. World Bank 2020k
193. Devex 2020c



GLOBAL
CENTER ON
ADAPTATION

WILHELMINADE 149C
3072 AP ROTTERDAM
THE NETHERLANDS
+31(0)88-371780 0
WWW.GCA.ORG



CLIMATE
POLICY
INITIATIVE