NOVEMBER 2020

UNDERSTANDING THE ROLE OF CLIMATE RISK TRANSPARENCY ON CAPITAL PRICING FOR DEVELOPING COUNTRIES

POLICY BRIEF
Limitations

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PICTURE

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Acknowledgements and Contributions

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**SPECIAL CONTRIBUTIONS**

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<tr>
<td>ARC</td>
<td>African Risk Capacity</td>
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<tr>
<td>ASAP</td>
<td>Adaptation SME Accelerator Project</td>
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<tr>
<td>BIS</td>
<td>Bank for International Settlements</td>
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<td>BoE</td>
<td>Bank of England</td>
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<td>CAPEX</td>
<td>Capital Expenditure</td>
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<td>CBA</td>
<td>Cost-Benefit Analysis</td>
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<td>CCRI</td>
<td>Coalition for Climate Resilient Investment</td>
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<td>CCRIF</td>
<td>Caribbean Catastrophe Risk Insurance Facility</td>
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<td>CFA</td>
<td>Climate Finance Advisors, Benefit LLC</td>
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<tr>
<td>COVID-19</td>
<td>Coronavirus Disease</td>
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<td>DFI</td>
<td>Development Finance Institution</td>
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<tr>
<td>ESG</td>
<td>Environmental, Social, and Corporate Governance</td>
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<td>EU</td>
<td>European Union</td>
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<tr>
<td>EU TEG</td>
<td>EU Technical Expert Group on Sustainable Finance</td>
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<td>FCDO</td>
<td>Foreign, Commonwealth and Development Office</td>
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<td>FDI</td>
<td>Foreign Direct Investment</td>
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<td>IFI</td>
<td>International Financial Institution</td>
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<td>FI</td>
<td>Financial Institutions</td>
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<td>FSAP</td>
<td>Financial Sector Assessment Program</td>
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<td>GCA</td>
<td>Global Commission on Adaptation</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>IMF</td>
<td>International Monetary Fund</td>
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<td>IOSCO</td>
<td>International Organisation of Securities Commissions</td>
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<td>MDB</td>
<td>Multilateral Development Bank</td>
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<td>MIGA</td>
<td>Multilateral Investment Guarantee Agency</td>
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<td>NDB</td>
<td>National Development Bank</td>
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<td>NDIC</td>
<td>Nationally Determined Contributions</td>
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<td>NGFS</td>
<td>Network for Greening the Financial System</td>
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<td>NH</td>
<td>Non-Honouring</td>
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<td>OPEX</td>
<td>Operational Expenses</td>
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<td>PPP</td>
<td>Public-Private Partnership</td>
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<td>PRI</td>
<td>Political Risk Insurance</td>
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<td>RDB</td>
<td>Regional Development Bank</td>
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<td>SME</td>
<td>Small and Medium Enterprises</td>
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<td>SOAS</td>
<td>School of Oriental and African Studies University of London</td>
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<td>TA</td>
<td>Technical Assistance</td>
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<td>TCFD</td>
<td>Task Force on Climate-related Financial Disclosures</td>
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<td>UK PRA</td>
<td>United Kingdom Prudential Regulation Authority</td>
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<td>UN</td>
<td>United Nations</td>
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<td>UNEP FI</td>
<td>United Nations Environment Programme Finance Initiative</td>
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<td>VaR</td>
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Executive Summary

Emerging research is showing that climate-related risks can have an impact on the cost of capital paid by vulnerable developing countries. Vulnerability to climate change does have a cost and it is starting to show. At the same time, while awareness of climate-risks among investors is growing rapidly, there is little evidence that investors have, to date, avoided geographies with perceived but unknown climate risks. This is good news for now, although awareness is not the same as active management.

FCDO commissioned the study Understanding the Role of Climate Risk Transparency on Capital Pricing for Developing Countries to understand if (and how) climate risks were impacting investor behaviour and cost of capital for developing countries. In particular, FCDO was interested in understanding whether existing disclosures practices or greater knowledge of climate-related risks influence investor behaviour, and if so what policy makers could do to ensure that climate risks did not have an impact on the cost of capital for developing countries.

The Findings Report from the FCDO commissioned study informs the policy recommendations included in this Policy Brief. This report provides a set of emerging hypotheses of how this dynamic may play out and concludes with a set of policy recommendations for reducing barriers to improved climate risk disclosure and management practices and suggestions for further research. It is based on a review of literature, interviews, a survey and case studies as illustrated in Figure 1, and seeks to understand whether there is evidence that investors are changing their investment decisions based on greater knowledge, information or disclosure of climate risks, and whether there is additional evidence that climate risk is resulting in changes in cost of capital.

FIGURE 1.
Four-part research process

The study included nine core questions (see Figure 2), each of which touched on issues connected to these main questions. Finally, the ongoing pandemic also offered the opportunity to inquire about whether, and if so how, the experience of the economic impacts of COVID-19 might be impacting investor views on climate risks.
STATE OF PLAY
At the moment investors engaged for this study seem to pay little attention to climate change risks in their investment practice. Investors do recognize some types of investment carry financial exposure from climate impacts, including in terms of damages, but this awareness is shaped primarily by events that obviously come with financial exposure, such as costs from extreme weather events (physical risk), and in the case of coal, the financial value at risk of specific fossil-related stranded assets (transition risk), namely coal.

Aside from these clearly obvious examples, investors seem unprepared to assess climate-related financial risks, or view the potential for other financial impacts from climate risks as either too intangible to ascertain in terms of direct financial implications today, or manageable in the context of their overall portfolio exposure. As a result, those engaged for this study do not seem to have made the explicit connection in practice between the full range of climate-related risks and the pricing of their capital in a broad or comprehensive way.
However, investors are not a monolith, and these views seem highly dependent on what information they use to understand climate risk, whether and how investors are assessing and quantifying climate-related financial risks, and importantly the information, tools and methodologies they use to do so. Investors use a wide range of sources of climate-related information, including Environmental, Social, and Corporate Governance (ESG) reports, specialist data providers, and in some cases, climate-related disclosures. The role of climate-related financial disclosures seems limited, and seen to be uneven, incomplete and hard to compare, and as a result not seen as useful (or even usable) in investment decision-making at this point in time. In some ways, disclosure is viewed as a ‘chicken-and-egg’ problem: the analysis and decision-making process up and down the value chain for managing climate risk is not nearly as nuanced as it should be because the data, metrics, taxonomies and information (through disclosure or otherwise) is not there in sufficient volume, quality or comparability. This seems true for investors in both developed and developing economies.

**FUTURE CHALLENGE**

Nonetheless, the absence of evidence is not the same as evidence of absence, and climate-related financial risks can and will increase for developing countries. The good news is that while emerging research is showing that vulnerability to climate change has a cost (particularly for sovereign borrowing), early evidence also suggests that investing in resilience can reduce that cost.

Furthermore, and by contrast, failure to invest in resilience will most certainly make countries more vulnerable to climate impacts – and the costs associated with those impacts – reducing their adaptive capacity, impacting economic growth and reducing capital flows of all types. This in turn could increase poverty and inequality, and for many countries may undermine development gains made in the last several decades. In the absence of good risk management and mitigation measures by governments, asset developers, and investors, complemented with cost effective insurance options to help risk share and transfer residual risks, investors may start pricing climate risk for those investments most vulnerable to climate risks as more information about the financial impact of those risks becomes more known (and knowable, through data and analytics).

Today’s policy and investment choices will influence the severity of climate risks in the future, and by extension the costs of those risks. Investors engaged for this study support strong and consistent and mandatory disclosure requirements. Capital flight from developing countries is perceived by investors to be a significant risk of an imperfect disclosure environment.
This Policy Brief provides a summary of the key findings of the study for each of the questions examined, as well as a series of policy recommendations derived from the study. Policy recommendations aim to achieve two specific outcomes for developing countries to be supported by donors and developed country partners and complement other ongoing international efforts. These outcomes are illustrated in Figure 3:

**FIGURE 3.**
Two desired outcomes from recommendations

<table>
<thead>
<tr>
<th>Desired Outcomes</th>
<th>Build the Climate-Risk Management Systems in Developing Countries</th>
<th>Incentivise the Acceleration of Investment in Resilience in Developing Countries</th>
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<td></td>
<td>By addressing specific knowledge, data, capacity and skillset barriers that prevent the full operationalisation of climate-risk management practices across public and private sectors in developing countries</td>
<td>By scaling up funding to accelerate investment in resilience, including physical infrastructure as well as support for sectors, markets and systems (e.g. financial system) which are important components of a resilient economy</td>
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While we do not know the magnitude of future financial risks from climate change today, we do know that accelerating action in developing countries can allow us to manage and potentially minimise many climate-related financial risks. Given the findings of this study, it seems imperative to invest in a country's resilience to climate change. Research cited in this study also implies that by investing (and increasing) the resilience of developing countries, we may help keep capital of all types flowing to those countries, and perhaps simultaneously close the current gap between those countries with better systems to absorb climate-related shocks, and those more vulnerable countries that are less able to do so (physically and economically).
KEY FINDINGS FROM RESEARCH
Key Findings from Research

The following is a summary of the key findings by each of the nine questions included in this study:

INVESTOR INTEREST AND AWARENESS ABOUT CLIMATE RISKS

Q1 - Is there evidence of reluctance to engage in areas of perceived but unknown climate risk?

There is mixed evidence from this study to show that investors are reluctant to engage in areas of perceived but unknown climate risk. Climate risk is an increasingly important factor in investment decision, but this is not yet a driver detering investment behaviour. Most investors consider climate risk as embedded with other risks (e.g. market, political, credit). Of survey respondents 32% consider climate risk as a stand-alone factor while 59% consider risk as part of other types of risks.

Q2 - What are the climate-related data sources investors are relying on to inform their investment decisions?

A variety of data sources are used to inform climate-risk analysis. The research studies investors use a mix of information and data that come from numerous sources. While 65% of survey respondents noted they use climate-related disclosures, this information was characterised by many as inconsistent, non-standard, and not easily "usable" for investment decision-making. The number and variety of data sources available seems to drive uncertainty about how to use climate-related information in decision-making.

CAPITAL FLOWS AND CAPITAL REQUIREMENTS

Q3 - How does greater knowledge, transparency and disclosure of climate risks affect a) the quantum of capital required b) the availability and c) the cost of capital paid by developing countries?

Research is showing that climate risk is beginning to impact the cost of capital paid by developing countries but there is no evidence on its effects on the quantum or availability of capital. Investors interviewed showed low levels of awareness about the research and do not (themselves) currently observe these changes to the cost or availability of their capital for developing countries. Climate risk seems to be affecting sovereign borrowing costs for vulnerable developing countries, and early research may signal benefits (in terms of a reduction of those costs) as a result of a country’s investment in resilience. Further, Investor views on cost or availability of capital may be driven by the lack of depth/sophistication in their own climate risk management practices. More research may be needed on both items.

Q4 - Is there evidence as to whether the investment has been deterred by the additional CAPEX required to make the activity more resilient or because of the higher risk itself?

There is no evidence from this study to conclude that investments were deterred because of higher CAPEX for resilience measures. Some investors questioned whether addressing climate risk would be more costly, while for others, this question was not directly relevant to their investment approach.

Q5 - Are investor project modelling assumptions around higher CAPEX costs to increase resiliency accompanied by assumptions of resulting lower maintenance costs for the life of the asset?

Few investors actively employ a project modelling approach that incorporates an assumption of higher CAPEX being offset by lower maintenance costs for the life of the asset. Where this approach was relevant (DFIs, infrastructure investors) many are actively developing approaches like a CBA or CAPEX/OPEX offset analysis (e.g. CERI methodology) to consider the additional capital required to make an investment resilient. However, notably not all investors supported the assumption that ex-ante resiliency measures require additional quantum of capital and some felt that this assumption warranted further research.

Q6 - Where climate risks are better understood, are costs of capital lower to reflect greater confidence? Are these effects equally felt in the developed and developing world? Are there interventions (e.g. insurance) which can encourage this?

Investors support the hypothesis that better information and disclosure would lead to more accurate risk-adjusted pricing (both positive and negative). Research suggests negative effects of information and disclosure may be felt greater in developing countries if not managed well. Investors were not aware that climate risk information or disclosure was impacting costs of capital, or that (according to recent research) this was already occurring. Investors did perceive innovative insurance mechanisms to address climate-related risks (e.g. CRIF, ARC) to be working well and support the expanding the application of these mechanisms.

Q7 - Does greater transparency and disclosure of climate risks affect existing investment flows to developing countries and/or developed countries?

Evidence was mixed whether greater transparency and disclosure is currently affecting existing investment flows to developing or developed countries. All engaged for this study noted that climate-related disclosures today were not entirely useful or usable for climate risk management, and there was no consensus about whether greater disclosure would impact capital flows to developing countries, and many thought such transparency may help flows. 14% of survey respondents cite portfolio reallocation between developing and developed countries as one of the potential consequences when they integrate climate risk into their investment decision processes. More research is needed to further examine the changes in the wider market as compared with investor perception and sentiment.

RECOMMENDED POLICY ACTION FOR DEVELOPING COUNTRIES

Q8 - What mitigation actions could governments and donors take to maintain investment attractiveness?

Investors recognise that disclosures are a crucial mechanism for better climate risk management but highlight the tools, skills and capacity are a necessary condition for disclosure and that significant gaps exist in this area. Investors also support the view that the absence of good climate risk management and information could have significant unintended consequences for developing countries ability to become resilient and adapt to climate change. – Two main types of outcomes manifested by investors include:

i) Build the climate risk management systems in developing countries

ii) Incentivise the acceleration of investment in resilience in developing countries

Q9 - How has the experience with COVID-19 changed/not changed how you assess risk and how will this carry into your thinking on climate risk?

Evidence was mixed whether COVID-19 impacted investor thinking about climate risk. Some interviewees said they view the pandemic as having accelerated a closer focus on sustainability and responsibility. 63% of survey respondents declared that their experiences with COVID-19 have not impacted their thinking on climate risk.
POLICY IMPLICATIONS
Policy Implications

At a high level, this study serves as both an assessment of emerging research and a snapshot of current investor views around the impact of climate risks on investor behaviour, and many of the findings provide relevant insights for policy makers from both developed and developing economies.

The questions included covered a range of important issues including actions that investors take to identify, assess, quantify, and manage climate-related financial risks, and in doing so how those actions influence capital allocation, pricing of capital, including the risk-based premium charged for their investments (i.e. the cost of capital for an investment), and overall investor behaviour.

Some of the questions were specifically focused on issues related to disclosure in the context of Task Force on Climate-related Financial Disclosures (TCFD), and others were focused on areas more relevant for integrating climate-related considerations into investment appraisal and risk management practices, many of which are necessary activities for an investor to undertake its own disclosures around climate-related risks and opportunities.

Each of the core questions are connected to these high-level issues around the relationship between climate risk and investor behaviour, but many deserve much further research to fully assess in terms of their specific implications on capital flows.

This is particularly true for the impacts on these issues for capital flows and the cost of capital for developing countries. Emerging research points to clear and quantifiable connections between a country’s vulnerability and resilience to climate change, and its own sovereign borrowing costs notably for this study, the borrowing costs of developing countries (Buhr et al, 2018; Beirne et al, 2020; Delghi, Feng, et al., 2020; Kling et al, 2019; and UNEP-FI and Climate Finance Advisors, Benefit LLC, 2019). Early research shows that investing in resilience (a country’s capacity to apply economic investments and convert them to adaptation actions economic, governance and social readiness), is connected with reductions in the negative impacts that vulnerability to physical climate risks may have on bond yields (Delphi, Feng, et al., 2020). While these studies are specific around the relationship between climate-risk and certain types borrowing, they are important early signals of the impact of climate-risk to capital costs. Notably, recent research has not shown that there is an equivalent association between vulnerability and the quantum and availability of capital for developing economies, yet.

However, it is important to acknowledge that far more quantified research is needed to understand if and how climate risks may be a driver of capital costs and flows, particularly for investments in developing countries, and particularly for private capital flowing to those investments. While existing research has been promising in showing these connections for sovereign borrowing costs, there are significant analytical challenges in isolating climate-related drivers of risk premia from other drivers, or other market-specific issues, such as lending in local currency, and the impact of COVID-19 on overall investment flows.

Nonetheless, existing published research indicates climate-risks are having an impact on cost of capital for sovereigns, and this stands in contrast with the findings from interviews and surveys undertaken for this study. Those interviewed and surveyed are aware that climate change can cause increased value at risk on the one hand, but on the other hand are not yet themselves actively pricing-in such risk for their own investments in developing countries. This disconnect may point to diversity

"Investing in adaptation and mitigation helps improve climate change resilience and lowers government bond spreads. Countries that are more resilient to climate change have lower bond yields and spreads relative to countries with greater vulnerability to risks associated with climate change."

Delghi, Feng, et al., 2020
of views across a range of investor types, versus those that primarily invest in developing countries, such as infrastructure investors and development finance institutions. Nonetheless, this disconnect highlights that investors may not (yet) be paying sufficient attention in their investment practices to the connection between climate risk and returns, even though awareness of the general issues around climate-risk are rising rapidly.

As investor awareness grows, this study points to TCFD and disclosure mechanisms being a key driver – but not necessarily because investors are using disclosures as a key source of information used in climate-risk management processes today. Investors note that disclosure alone is not yet a driver for investor behaviour (and thus capital allocation and cost of capital); today climate-related financial disclosures were not in and of themselves sufficiently robust or comparable to be influential in decision-making, but where available are used in combination with other sources.

However – and importantly – the TCFD framework seems to be becoming the most common language used for climate-related due diligence. Notwithstanding the current challenges with disclosure, many investors support mandatory disclosure in principle, in part because they see climate-risk disclosure as being valuable for their own ability to identify, assess, quantify and manage climate-related financial risks.

And, while it may be too early to tell whether disclosures themselves are driving financing costs or flows (positively or negatively), it seems that many investors recognise the significant downside risks of incomplete, inconsistent and incomparable disclosures, and many investors do believe these risks may disproportionately impact the more vulnerable, less resilient communities, including developing economies because they tend to be those lacking the skills or regulation for full disclosure. Capital flight is seen as a potential risk of an imperfect, and ad-hoc climate-risk disclosure environment, but it does not obviate the need for prudent – thorough – climate risk management practices among all financial actors. Greater application of the TCFD framework in climate-risk assessment and due diligence shows important progress, if only because it evidences that investors are seeking out information necessary for appraising these risks, and such approaches can and will (eventually) help to improve the quality of disclosures.

The data, metrics, taxonomies and informational challenges that underpin today’s problems with disclosure exist in both developed and developing economies. These same challenges affect the ability to properly undertake and execute a climate-risk management approach across all types of investment. Beyond the informational challenges, capacity challenges also exist, and those interviewed for this study highlighted that both public and private financial decision-makers lack climate-risk management capacity and technical skills, but that these gaps are more acute in developing countries, precisely where they are needed most.

The policy implications of these findings also underscore the important role that the international development finance architecture, including the multilateral development banks (MDBs), bi-lateral aid agencies and the International Monetary Fund (IMF), can play in helping developing countries overcome these challenges. Indeed, these institutions will be essential in helping developing countries address all aspects of climate change, including helping build the climate-risk management capacity while simultaneously accelerating investment in resilience. The following section provides a series of policy, technical assistance and investment recommendations specifically focusing on efforts to support developing countries address these challenges. These recommendations are derived from the study’s interviews, surveys and research, and include tangible actions that simultaneously help (i) a country to increase its capacity for resilience and (ii) accelerate their investment in resilience. Critical to delivering these recommendations are the institutions that are best placed to execute on these actions and provide the conduit to ensuring such policy, capacity and investment to developing countries is delivered. It is in the interests of donors and development finance institutions alike to facilitate these efforts through all means possible.
RECOMMENDED POLICY ACTIONS
Recommended Policy Actions

The four Policy Recommendations are focused specifically on areas that donors and developed country governments can promote to support developing countries in their ‘race to resilience’ regardless of their varying levels of vulnerability to climate risk. Specifically, the recommendations are targeted to achieve two specific outcomes as illustrated in Figure 3.

These recommendations are not exclusive of other international efforts to build approaches, tools, methodologies or policies to accelerate climate-risk management, or other global actions to speed up investment in resilience. Rather these are meant to complement those efforts, and perhaps accelerate the adoption of those efforts by developing countries. These recommendations recognise that specific attention needs to be given for developing the same, or greater, level of sophistication and capacity in developing countries to accelerate their resilience to climate change.

Figure 4 illustrates four overarching recommendations and how these relate to the two outcomes identified in Figure 3. Additionally, it identifies illustrative actions deemed important to achieve the goals within these interventions and are not exhaustive. Note, some illustrative actions may be useful to achieve the objective of multiple recommendations (e.g. building capacity among developing country policymakers). More detail on each of the action, along with examples, is provided in subsequent sections.
## FIGURE 4.
Four overarching policy recommendations to help developing countries in the race for resilience

<table>
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<tr>
<th>Desired Outcomes</th>
<th>Build the Climate-Risk Management Systems in Developing Countries</th>
<th>Incentivise the Acceleration of Investment in Resilience in Developing Countries</th>
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| Barriers         | • Climate-related information and sources too varied and inconsistent  
                   • Lack of tools for understanding, quantifying climate risk  
                   • Lack of skills, capacity within public and private investors to develop robust analyses  
                   • Lack of clear policy guidance and requirements related to climate-risk management (including disclosure, stress testing, etc.)  
                   • Lack of sufficient scale/availability of climate-related risk/resilience instruments available for developing countries to address climate risk  
                   • Insufficient application of public development finance to accelerate climate-related resilient investments | |
| Main Recommendations | Recommendation #1: Climate risk management systems and skills  
Build climate-risk management systems and skills in developing countries | Recommendation #2: Domestic policy  
Integrate climate risk/resilience into developing country financial policy and regulation | Recommendation #3: Financial instruments  
Develop financial instruments to help developing countries to manage climate risks and incentivise green/resilient investment | Recommendation #4: Public financing  
Accelerate climate-resilient investment by leveraging international and domestic public funding |
| Illustrative Actions | 1. Efforts to accelerate the identification and assessment of climate-related risks  
2. Efforts to implement methods and approaches that help quantify and enable better risk pricing of climate-related risks  
3. Efforts to enhance capacity of regulators, policymakers, companies and financial sector actors to incorporate financial aspects of predicted climate change | 1. Integrate climate risk management into financial policy and regulation in developing countries (prudential, fiscal, monetary, and standard setting)  
2. Integrate climate-resilience objectives into economic and sector-based policies aligned with Paris and country’s NDC goals  
3. Accelerate the adoption of common climate risk disclosures and support mandatory disclosure requirements in developing countries | 1. Scaling-up risk sharing mechanisms  
2. Scaling-up risk transfer mechanisms  
3. Scaling-up incentives tied to resilience/adaptation outcomes | 1. Policy Support: Ensure the post-COVID-19 stimulus is green and climate-resilient  
2. Funding/Financing: Create financing vehicles for investment in resilience  
3. Funding/Financing: Address common risks investors face to help unlock capital for resilience management tools to lower overall risk in developing countries facing softening investment flows due to climate risks |
RECOMMENDATION #1: BUILD CLIMATE-RISK MANAGEMENT SYSTEMS AND SKILLS IN DEVELOPING COUNTRIES

Policymakers and donors should invest in climate-risk management infrastructure to accelerate the adoption of climate-risk management practices in developing countries, in both the public and private sector.

The key barriers that investors cited to fully integrating climate risk into investment decisions include data, metrics, taxonomies and informational challenges. These elements form critical pieces of an investor’s (public or private) climate-risk management toolkit and are necessary to enable those investors to fully manage and reduce climate-related risks and capture climate-related resilience investment opportunities. These challenges not only prevent comprehensive and comparable disclosures, but make it nearly impossible to implement a thorough climate-risk management strategy.

These challenges exist in both developed and developing economies. Much attention is being paid to accelerate progress on these issues, particularly through the development of common metrics and taxonomies (e.g. EU Technical Expert Group on Sustainable Finance (EU TEG), Adaptation SME Accelerator Project (ASAP)). Also, through the application of data analytics to help undertake key climate-risk analysis, (e.g. scenario analysis and Value at Risk (VaR)), cost-benefit analysis (CBA) and climate-related risk and benefits estimation models (e.g. Coalition for Climate Resilient Investment (CCRI) methodology) for investment-decision making and portfolio management. Furthermore, coalitions of financial policy-making bodies, such as Network for Greening the Financial System (NGFS), International Organisation of Securities Commissions (IOSCO), and Bank for International Settlements (BIS), are actively developing guidelines and best practices for the integration of climate-risk issues for financial policy makers, and international bodies such as the IMF at a macro level to foster the alignment with the Paris Agreement. On both these issues, accelerating the adoption of these approaches, tools, and methodologies by developing countries should be a priority.

Capacity building will be critical. Coupled with the tools as described above, ensuring there are sufficient people within both public and private organisations with the skillsets to identify, assess and quantify climate-related risks is vital for enabling those organisations to fully address climate change within public and private financial institutions in developing countries cannot be overstated.

The following provides a list of illustrative actions that policymakers and donors can support which can accelerate the development and implementation of climate-risk management practices within developing countries, to help both the public and private financial stakeholders integrate climate-considerations into their investment processes in tangible and actionable ways.

Many of these recommendations are focused on the adoption of key climate-risk management practices and building capacity within institutions and organisations, and as such fall into the categories of Knowledge Transfer, Technical Assistance and Capacity Building. Thus, illustrative actions herein are investments in tools, skilled people and capacity, and likely to require grant funding.
### TABLE 1.
Illustrative actions recommendation 1

<table>
<thead>
<tr>
<th>Efforts to accelerate the identification and assessment of climate-related risks</th>
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| **1.1.** | • Promote the application and implementation of existing climate-related taxonomies and methodologies for identifying climate risk (hazards, vulnerability, and exposure) in developing countries (e.g. EU TEG, ASAP, etc.).  
• Scale and apply common climate-risk and resilience metrics to allow for comparability across sectors and by which investors identify climate-related risks into investment decisions.  
• Develop climate risk identification guidance for resilient investment in specific sectors/industries, including risks that arise from different physical and transition outcomes across a wide range of sectors and geographies across a country.  
• Promote the ongoing application of climate-related warming scenarios to developing countries and their financial systems, building from NGFS scenario guidance, and expand the application of standard climate-related warming scenarios when assessing climate-related risks to investments and portfolios. Support the implementation of infrastructure that allows for the creation of a climate change predictive database (e.g. hydromet services, other data sources) to provide a baseline of more granular data on a common set of climate hazards to enable decision-useful climate risk assessment at specific locations and over different timeframes. |
| **1.2.** | • Accelerate the adoption of existing quantitative approaches to understand climate-related financial risks, over different time horizons (specific to investor needs), including:  
  • For assets, infrastructure and other public investments, approaches that quantify cost-benefit analysis for climate-resilience, and in particular methodologies which can be integrated into financial structuring for raising debt/capital for those projects, and which may be relevant for cost-of-capital issues (e.g. CCRI).  
  • For investors, approaches that quantify return-on-investment and value-at-risk approaches most useful for their investment decision making processes and portfolio management.  
  • Undertake economy-wide, sector-wide, and/or regional assessments of the climate-related financial impacts of physical climate risks – both acute and chronic – to overall economic growth and stability, with support from international organisations (e.g. development finance institutions (DFIs), IMF). Publicise economic growth estimates based on these data. |
| **1.3.** | • Fund capacity building and training programs for developing country financial regulators and policymakers on methodologies, metrics and approaches to identify, assess and quantify climate-related risks with support from international organisations (e.g. IMF).  
• Fund capacity building and training programs for developing country companies, investors and the financial sector adopt and employ methodologies, metrics and approaches to identify, assess and quantify climate-related risks (e.g. CCRI, other climate-risk tools) to better understand climate risks and how these risks will affect investment returns in relevant investment and development timeframes, with support from international organisations (e.g. MDBs, DFIs, etc.). |
RECOMMENDATION #2: INTEGRATE CLIMATE RISK/RESILIENCE INTO DEVELOPING COUNTRY FINANCIAL POLICY AND REGULATION

Support the creation/adoption of financial system regulations and policies in developing countries that are Paris-aligned and accelerate a country’s Nationally Determined Contributions (NDCs) goals.

Efforts within international bodies and coalitions to develop best practices for addressing climate risk in financial policy and regulation have accelerated over the last two years. Many of these are highly relevant for developing countries. The NGFS, the Bank of England (BoE), IOSCO, BIS, the Coalition of Finance Ministers and others have been working not only on a series of principles but also on specific approaches for financial policy makers to “operationalise” climate-related risk management within financial systems. Many of these coalitions and bodies include representatives from vulnerable developing countries.

Financial system governance bodies within developing countries can and will play a key role in ensuring that climate considerations – including risks posed by physical impacts from climate change – are addressed locally within domestic policies, regulations, and enabling measures (UNEP-FI and Climate Finance Advisors, 2019). The domestic policy and regulations that promote resilience and sustainability within those countries will have a determining effect on not only the investments that are made, but also the economic resilience of those economies. And this in turn can help developing countries improve their resilience overall and strengthen their ability to adapt to climate change.

Also, developing country policy makers are well positioned to think strategically about how to best deploy the range of public and private capital, from both domestic and international sources to invest in their own development and climate adaptation/resilience goals given they understand the specific investment needs of their countries. Understanding how climate-related risks will impact public financing sources will be important to strategically allocating scarce public resources toward the most sustainable and resilient investments given the changes a country may expect to face given a warmer planet. Given that in almost all circumstances funding needs to address climate change exceed the capacity of public balance sheets, and climate-related risks may affect a country’s ability to raise capital from a variety of sources, it will be important to build awareness and capacity among policy makers to enable them to more strategically allocate public budgets, understand which mal-adaptive investments should not be supported with public funding, and in turn focus on mobilizing private investment to accelerate climate resilient investment.

The following actions illustrate efforts that can be undertaken to accelerate the adoption of approaches and best practices that are emerging from many of the international coalitions supporting climate-risk management within the financial system, and include efforts that may also be relevant to achieve the objectives of Recommendation #4.

Many of these recommendations focus on accelerating the adoption of key policy and regulatory approaches, and as such fall into the categories of Knowledge Transfer, Technical Assistance and Capacity Building programs. Furthermore, many of the recommendations can be easily integrated into already-existing public sector programs provided by many development finance institutions, the World Bank and the IMF, and thus are expected to be funded with grant-based funding.
ILLUSTRATIVE ACTIONS: PROVIDE CAPACITY BUILDING, TECHNICAL ASSISTANCE AND DIRECT FUNDING TO SUPPORT DEVELOPING COUNTRY POLICY MAKERS TO SUPPORT THE ADOPT EMERGING BEST PRACTICES FOR INTEGRATING CLIMATE-RELATED RISKS INTO FINANCIAL POLICIES, INCLUDING HELPING COUNTRIES TO:

2.1. Integrate climate risk management into financial policy and regulation in developing countries (prudential, fiscal, monetary, and standard setting)

- Accelerate the adoption of NGFS guidance to support developing country policymakers/ regulators to undertake climate-related scenario analysis for their central banks and supervisors, including assessing climate-related risks across a range of economic and financial variables (e.g. GDP, inflation, equity and bond prices, loan valuations), with support from international organisations (e.g. NGFS, IMF, DFIs).
- Support countries in undertaking a comprehensive mapping of transition and physical climate risk transmission channels within an economy in order to more fully assess and understand the impacts of climate risk on the financial system, with support from international organisations (e.g. IMF, DFIs).
- Support regular and ongoing IMF and World Bank macro-economic climate-diagnostic approaches which undertake the necessary identification, assessment and quantification of macro climate-related risks to a developing country economy in order to inform international aid policy (e.g. integrating climate into FSAPs), application of donor funds and other approaches to ensure funding continues to support resilience investment in developing countries.
- Adopt climate risk integration frameworks and action plans for regulated entities (where appropriate), including setting supervisory expectations and promoting transparency and disclosure requirements among both supervisors and supervised institutions, with support from international organisations (e.g. IMF, DFIs).
- Adopt and promote coherent and consistent climate risk guidelines (e.g. TCFD) for disclosure of both physical risks and transition risks and require disclosing entities to report on these metrics.
- Integrate physical climate risk considerations more thoroughly into stress-testing approaches for regulated financial institutions, grounding those approaches in NGFS guidance on scenarios analysis. Consider adopting emerging practices around risk-weighting specific climate-related assets, with support from international organisations (e.g. UK PRA, NGFS, IMF, DFIs).
- Develop contingency financing approaches for disaster risk management for countries to ensure the costs of climate risks are integrated into disaster risk management funding approaches (by both domestic and international sources) and develop approaches for fiscal risk management and contingency finance, with support from international organisations (e.g. international financial institutions (IFIs)/regional development banks (RDBs)).
- Promote the creation of safety nets and financial support mechanisms for communities most vulnerable to physical climate risks, where the potential for vulnerability may become an issue exacerbated by climate change, and where this may impact capital availability (including cost), with support from international organisations (e.g. IMF, World Bank, IFIs, RDBs).

2.2. Integrate climate-resilience objectives into economic and sector-based policies aligned with Paris and country’s NDC goals

- Provide technical assistance and direct funding to further support developing country policy makers to and specifically to ensure that climate-related risks and resilience opportunities are integrated into NDC plans as they are translated into investible pipelines for investors.
- Provide support to help integrate resilience goals into country’s financial and economic planning, including support developing country policy makers to develop and use their existing sources of public funds (public budgets, international development aid) strategically, allocating funding in a manner that enables them to catalyse additional private investment and maximise capital from all sources that supports their adaptation and resilience goals.
- Support the adoption of a “price on carbon” for developing country public sector investments, and or create market incentives for private sector investments to accelerate low carbon/net zero investments (e.g. price carbon to reflect its externalities to lead to more efficient investment).

2.3. Accelerate the adoption of common climate risk disclosures and support mandatory disclosure requirements in developing countries

- Support the adoption of mandatory climate-related disclosure in developing countries using a consistent framework and methodology (e.g. TCFD).
- Help regulators in developing countries to lay out a roadmap to oversee the implementation of mandatory climate-related disclosure by the industries they regulate.
- Fund capacity building and training programs to help companies and investors adopt climate risk disclosures to communicate their ability to manage and capture climate-related financial risks and opportunities.
RECOMMENDATION #3: DEVELOP FINANCIAL INSTRUMENTS TO HELP DEVELOPING COUNTRIES MANAGE CLIMATE RISK AND INCENTIVISE GREEN/RESILIENT INVESTMENT

Policymakers and donors should support the development of financial instruments that can both accelerate risk-transfer mechanisms (e.g. insurance), and instruments that can explicitly address climate risks through risk-sharing, including in both the public and private sector.

Beyond policy measures and risk-management assessment tools, certain types of financial instruments can be useful to help developing countries enhance their resilience and reduce vulnerability (particularly financial vulnerability). These instruments often address the riskiness of an investment and are useful to both (i) help share risks across different types of investors, and (ii) fill financing gaps which may be present as a result of real or perceived riskiness of an investment. Examples include:

1. **Risk transfer mechanisms**: Insurance and guarantee mechanisms help transfer risks of loss to underwriters and provide a level of security for investors which often enable financing to flow. Developing countries vary significantly in the level of insurance penetration in their own markets, including the number of insurance products offered, hazards covered, applications and market options. Yet insurance is an important component of overall economic resilience and enables a sovereign to improve its financial "resilience" in times of disasters. In many developed countries, higher levels of insurance penetration allow governments to focus more of their post-disaster resources on rebuilding efforts, and economic analysis confirms that countries with higher rates of insurance penetration seem to show greater sovereign strength (as measured by sovereign ratings) (Delghi, A., Feng, A., et al., 2020). As a result, insurance coverage seems to be an important function of sovereign financial health, and an economy's overall resilience.

2. **Risk-sharing mechanisms**: Risk sharing mechanisms which enable different types of capital to bear appropriate risks (e.g. public capital may bear different and/or higher risks vs. private capital) are widely used in financing developing country investments (both public and private) and typically involve structuring approaches which result in enhancing the risk profile of an investment for the purpose of crowding-in a broader range of investors. Risk sharing and credit enhancement approaches can be useful as a part of a strategy to manage climate-related risks by allocating certain climate-related risks to public investors.

3. **Incentives tied to resilience/adaptation outcomes**: The rise in specific results-based financing products for sustainability and climate related outcomes can be scaled up in the context of developing countries. Such products are in theory tied to both (i) the risk assessment outcomes, and the investment in associated resilience measures that address those risks. Sustainability-linked loans are on the rise by private lenders, and corporates in developed economies are using these lending facilities to complement their sustainability goals. Similar approaches are relevant for developing countries, particularly in the context of development finance that supports critical infrastructure and public-private partnerships (PPP).

The following provides a list of illustrative financial instruments that can be useful to provide these types of risk management options, and are relevant for transferring climate risks between and from both public and private actors to reduce (financial) vulnerability, enhance resilience to climate change impacts, as well as financial instruments which are relevant to address financing gaps directly resulting from climate risks.

Many of these recommendations may require public sources of capital (both international and domestic) to help underpin the creation or capitalisation of new instruments, and will require DFIs, MDBs or governments to put them into the market. As such these concepts fall into the category of public financing solutions and are expected to utilise public capital for their funding, and are most appropriately implemented with support from multilateral, bi-lateral, and in some cases national development finance institutions (e.g. MDBs, DFIs, national development banks (NDBs)).
TABLE 3.
Illustrative actions recommendation 3

<table>
<thead>
<tr>
<th>Illustrative Actions: Provide funding to develop financial instruments and mechanisms – including climate-related insurance mechanisms – that are specifically designed to help developing countries mitigate and manage climate-related risks, including funding programs, facilities, funds that help countries to:</th>
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<tr>
<th>3.1. Scaling-up risk sharing mechanisms</th>
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<tbody>
<tr>
<td>• Provide credit enhancement for developing country issuance of Resilience Bonds, or other innovative instruments, to mobilise financing (from international and domestic sources) to address resilience and adaptation measures, and where use-of-proceeds support investment in resilience.</td>
</tr>
<tr>
<td>• Fund contingent lines of low-interest credit/reserves linked to extreme events, providing countries with predictable low- or no-cost financing on standby for climate-related risks, including high-frequency, low severity events as well as low-frequency-high-severity events. These could complement insurance mechanisms as part of a risk-financing strategy for a country.</td>
</tr>
<tr>
<td>• Fund/support/provide financing for a program of loan guarantees for climate-resilient investments in developing countries, particularly those linked with approaches to quantify resilience measures (e.g. CBA/CCRI) for infrastructure, municipal/sub-sovereign investments.</td>
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<tr>
<th>3.2. Scaling-up risk transfer mechanisms</th>
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<tbody>
<tr>
<td>• Fund and scale up climate and disaster risk finance and insurance solutions for individuals, households and SMEs, including those that target vulnerable sectors (e.g. agriculture, water) and vulnerable communities in developing countries, including inclusive microinsurance schemes that foster resilience for households, enterprises and smallholder farmers against the effects of extreme weather events.</td>
</tr>
<tr>
<td>• Fund and scale up comprehensive, risk-layered climate-related disaster risk finance strategies and parametric insurance coverage for sovereign entities, including developing pooling mechanisms for sub-sovereigns and sovereigns to be insured (directly or via intermediary risk pools (e.g. Caribbean Catastrophe Risk Insurance Facility (CCRIF), African Risk Capacity (ARC), etc.)). Pooled financing mechanisms can help serve as sources of capitalisation with a risk-diversified capital base.</td>
</tr>
<tr>
<td>• Support the creation of local insurance markets that incentivise resilience/resilient behaviour by providing technical assistance for countries and local insurance providers to prepare and implement climate-related insurance products tailored for local resilience needs/specific markets/sectors relevant for the geography/country, including through the design of disaster risk finance strategies, risk modelling and assessment, and include pricing incentives for incorporating higher resilience into project planning.</td>
</tr>
<tr>
<td>• Fund, support and finance climate-related insurance coverage for some assets, particularly public sector/PPP assets which may be unable to bear costs of insurance, but for which the ability to crowd-in financing is dependent on such risk transfer mechanisms.</td>
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<tr>
<th>3.3. Scaling-up incentives tied to resilience/adaptation outcomes</th>
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<tr>
<td>• Fund and support the creation of results-based financing products that specifically address climate-related risks (both physical and transition), including:</td>
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<tr>
<td>• Resilient sustainability-linked loans or lending programs targeted for developing countries, where loans/credit line pricing is linked to performance of physical resilience measures/investments, and tied to resilience outcomes identified ex-ante</td>
</tr>
<tr>
<td>• Green sustainability-linked loans or lending programs targeted for developing countries, where loans/credit line pricing is linked to performance low-carbon transition measures/investments and tied to emissions outcomes identified ex-ante.</td>
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RECOMMENDATION #4: ACCELERATE CLIMATE-RESILIENT INVESTMENT BY LEVERAGING INTERNATIONAL AND DOMESTIC PUBLIC FUNDING

Leverage the international and domestic public balance sheet/DFIs to help developing countries incentivise the acceleration of climate resilient investment.

Clearly, investing in resilience is not only important for long-term sustainability, but is likely to also come with its own financial benefits, including in a reduction in the “cost” of vulnerability. The previous recommendations focus specifically on actions that are needed to build the technical and capacity skills for developing countries to properly assess climate risks and identify opportunities to invest in resilience. They also focus on financial risk management approaches, including developing innovative instruments specifically targeted towards climate-risk reduction, transfer and sharing, and they address policy measures that can help a country fully integrate climate-related considerations across policy and regulations.

However, even with increased attention given to putting in place these tools, capacities and policies, these efforts may take time to implement, and for their impacts to be realized. Such delays may in turn reduce the window of opportunity to build-in resilience into investments in a way that can address expected impacts of climate change.

Investment in a country’s climate-related resilience should be prioritised as part of overall post-COVID-19 economic recovery, and policy makers should integrate climate resilience as a fundamental principle for all economic and investment efforts in developing countries going forward. In fact, integrating sustainability and climate-related considerations into the economic recovery is not only prudent to address the climate crisis, but provides the greatest return on investment given these unprecedented times and the scale of the public capital required to bring economic activity back to levels pre-pandemic.

The following actions illustrate efforts that can be undertaken by donors, DFIs and developing country governments to incentivise the acceleration of climate-resilient investments across a developing country economy. Many of these recommendations are focused on both (i) post-COVID-19 economic stimulus efforts and (ii) deploying and leveraging both aid and government budgets into investment vehicles and approaches that will catalyse investment in resilience.

These recommendations may require public sources of capital (both international and domestic) to help underpin the creation of dedicated financing instruments and investment vehicles and will require development institutions or governments to put them into the market. As such these concepts fall into the category of public financing solutions and are expected to utilise public sources of capital as the basis of their funding.
Illustrative Actions: Provide policy support for post-COVID-19 stimulus strategies, and provide funding and financing that incentivises the acceleration of climate-resilient investment across developing countries, including helping countries to:

4.1. Policy Support: Ensure the post-COVID-19 stimulus is green and resilient

- Investing in climate-aligned stimulus actions, and prioritising climate-resilience into post-COVID-19 stimulus strategies, including:
  - Encourage “green” stimulus as part of debt forgiveness and/or debt-relief for climate tied to subsequent climate-resilient expenditures/Debt-for-Climate Swaps in Financing for Development Process: Support ongoing efforts by IMF, the UN, donors and others to incentivise developing countries to integrate climate-related financial policies and climate-risk management practices as part of post-COVID-19 debt relief and green economic stimulus actions.
  - Promoting clean and resilient regulatory reform which incentivises sector-based policies aligned with low/net-zero transition (e.g. fuel standards, pollution standards, energy efficiency).
  - Reform maladaptive tax and subsidy policies which are not aligned with a country’s low/net-zero transition (e.g. fossil fuel subsidies).

4.2. Funding/Financing: Create financing vehicles for investment in resilience

- Create the financing vehicles for climate-resilience: Where there are gaps in the financial ecosystem in developing countries, supporting the creation of financial mechanisms/funds/facilities/institutions specifically designed to invest in adaptation/resilience, and “crowd in” private investment at the local level; examples include:
  - Aggregation vehicles/funds for adaptation
  - Resilience banks/national and regional green banks
  - Infrastructure banks; and
  - SME finance, micro-finance vehicles targeting resilience
- Scale up IFI, RDB and other DFI climate resilience bonds, leveraging the credit-quality of MDBs to raise capital for climate-resilient investment in developing countries where use of proceeds ensures resilience measures are integrated into MDB projects, technical assistance is delivered to developing countries, and data is gathered and reported.
- Ensure all MDBs and other DFIs investment and Advisory/Technical Assistance (TA) programs integrate climate-risk screening and incorporate resilience as a driver of investment.
- Accelerate the adoption of climate risk screening of developing country’s public investment programs and from DFIs and IFIs and integrate into procurement standards for publicly and privately financed projects (including PPPs and own investments).

4.3. Funding/Financing: Address common risks investors face to help unlock capital for resilience management tools to lower overall risk in developing countries facing softening investment flows due to climate risks

- Promote financial products tailored to address other risks faced by developing country investors if there is evidence of decreased investor interest because of climate change. Transferring exposure to these risks should focus on lowering overall risk faced by investors.
- Leverage the risk bearing nature of DFIs/MDBs to address key non-climate barriers that inhibit international foreign direct investment (FDI) into developing countries and where addressing such barriers can increase financing, including towards resilient investments; examples include as:
  - Local currency solutions for resilience: Provide local currency loans or currency hedging products to transfer some developing country currency risk from investors.
  - Loan guarantees for political, market or economic risks for climate-resilient investments: Increase loan guarantees for investments in developing countries to share some political, market, or economic risk faced in developing countries.
  - Climate-related political risk insurance mechanisms: Leverage PRI providers (e.g. the Multilateral Investment Guarantee Agency (MIGA)) to integrate climate-related elements alongside existing PRI and non-honouring (NH) insurance products to increase their attractiveness; and where relevant provide financial support/subsidies to address cost concerns for climate-related PRI/NH products also, PRI linked to NDCs and/or carbon markets.
References


