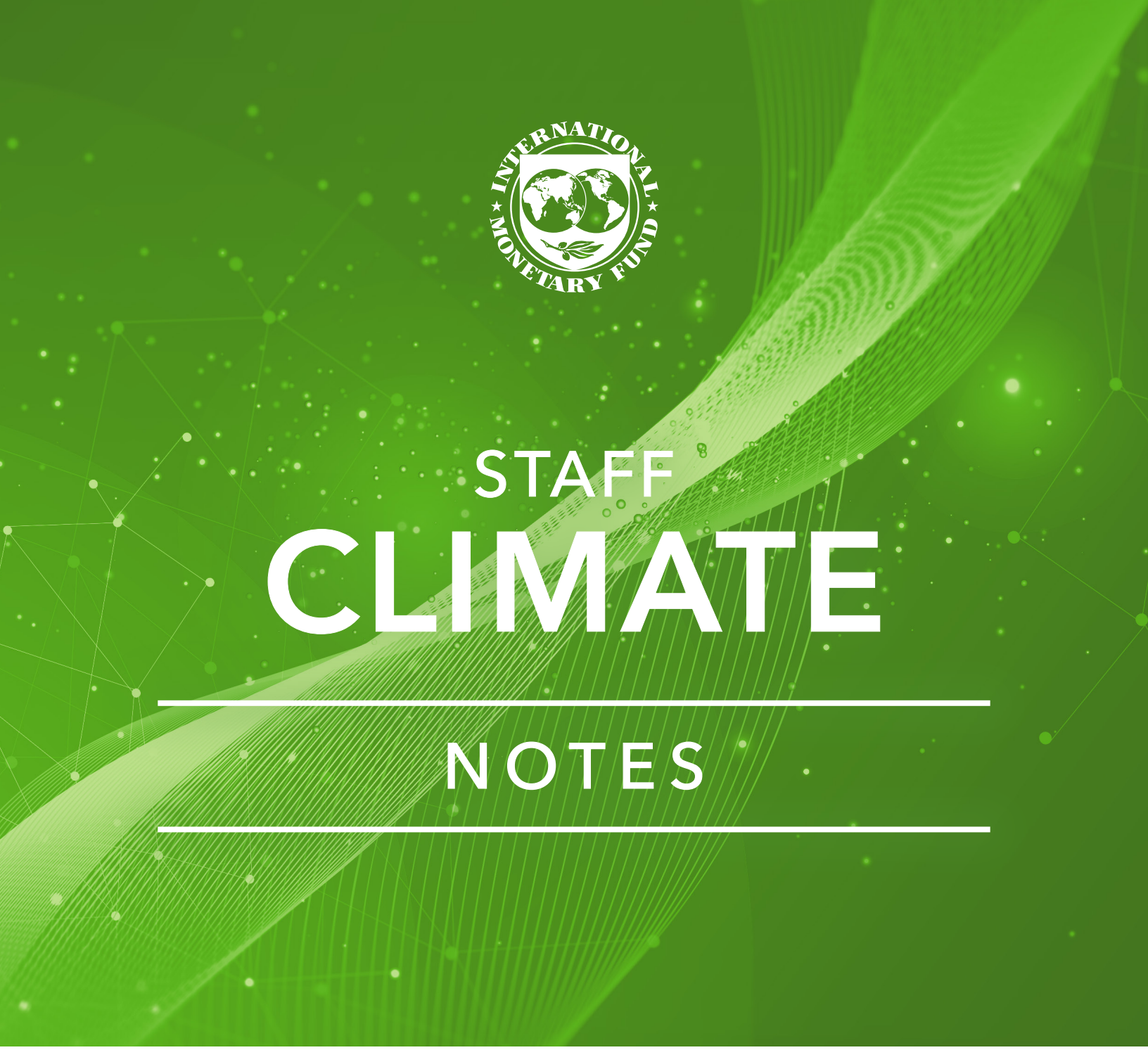

Unlocking Adaptation Finance in Emerging Market and Developing Economies

Deepali Gautam, Ekaterina Gratcheva, Fabio Massimo Natalucci, and Ananthakrishnan Prasad

IMF STAFF CLIMATE NOTES 2024/007

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November 2024

Summary

Mitigation and decarbonization efforts are falling short of the 1.5°C goal, making adaptation critical. Developing economies are affected the most, despite having contributed the least to the problem. Nearly 98 percent of adaptation finance comes from public actors, with highly fragmented flows from the private sector. As financing needs increase, bringing private sector finance becomes critical and requires reframing adaptation investments from being seen not just as a risk exposure but also as an investment opportunity. This requires addressing real and perceived investment barriers, public-private collaboration and risk sharing, as well as financial incentives and innovation to unlock scalable, inclusive solutions. Adaptation is more complex than mitigation, with challenges in defining, evaluating, pricing, and scaling investments. Progress on adaptation requires policy reforms, incentives, and partnerships between governments, businesses, and communities and public-private risk sharing.

Executive Summary: Key Messages

The increasing impacts of climate change necessitate substantial investment in adaptation measures, particularly in the poorest countries, which are disproportionately affected despite contributing the least to the problem. Regardless of the growing awareness of the urgent need for significant adaptation interventions, financing for these efforts remains woefully inadequate, especially in the most vulnerable countries. Adaptation finance flows must be scaled up significantly at a time when many emerging market and developing economies (EMDEs) are facing high debt levels, limited fiscal space, and the need to increase revenue mobilization and spending efficiencies for public investments. The urgent challenge is bringing private sector into adaptation finance in EMDEs as public financing will be limited.

- Although adaptation has entered the financial sector's lexicon, nearly 98 percent of adaptation finance comes from public actors. Where adaptation is a public good, the public sector will continue to play an important role - so measures to create fiscal space and pursuing structural reforms are vital.
- The private sector is more comfortable with mitigation because of its clearer metrics and financial returns. Nearly 90 percent of all climate flows are being directed toward mitigation. Adaptation is more complex and less understood than mitigation, which has benefited from significant advancements in policy and financial sectors engagement in recent years.
- The broad range of sectors involved in adaptation and heterogeneity of adaptation needs across different regions, poses significant challenges for the financial industry in evaluating, pricing, and aggregating adaptation investments, sharing risks, and achieving portfolio diversification.

- Scaling up private sector participation must address not only the multiple real barriers to investments but also some perceived ones such as considering adaptation as a mere externality or as a government responsibility.
- To shift this perspective, adaptation needs to be reframed from a risk exposure to a viable investment opportunity. Further, advancing adaptation requires adopting a broader perspective that explores synergies between commercially viable investments and integrates adaptation and resilience consideration across all investment processes.
- Closing the adaptation gap will require comprehensive policy reforms, enhanced incentives, and partnerships involving governments and policymakers, financial institutions, businesses, and local communities. For the international community to advance adaptation efforts effectively, it is essential to make progress in the following key areas:
    - Clarity on definition and alignment of understanding of adaptation to ensure that interventions designed to mitigate climate risks do not unintentionally lead to maladaptation.
    - Enhancements in tracking and measurement of climate finance flows and improved data collection and reporting mechanisms.
    - Improvements in adaptation investment measurement methodologies and ensuring that funds are effectively used to meet the intended adaptation objectives.
    - Striking a balance between funding for climate mitigation and adaptation efforts.
    - Integration of climate adaptation into national and sectoral planning processes.
    - Scaling up blended finance for adaptation and expanding integration of adaptation considerations across all asset classes.
    - Ensuring that developing economies receive equitable support and easier access to climate finance.
    - Increasing awareness and building capacity across all stakeholders of the adaptation finance ecosystem and investment value chain and increased investment in capacity building for countries, especially low-income and vulnerable ones.
    - Developing appropriate incentives and effective risk-sharing mechanisms and fostering stronger collaboration between the public and private sectors.
- Through the Resilience and Sustainability Trust (RST) the IMF is helping low-income and vulnerable middle-income countries foster an enabling environment for green investments and reduce the cost of capital – by strengthening economic fundamentals, implementing effective climate policies, and establish a robust climate information architecture.
- The IMF can play an important role through the deployment of RST, its surveillance, convening power, and knowledge sharing to integrate adaptation and resilience considerations across the global financial architecture.

Current State of Adaptation Landscape and Emergence of the Resilience and Sustainability Trust

Amid increasing evidence of climate change impacts, there is a growing recognition that climate adaptation is becoming an unavoidable and essential priority. In its 2023 Sixth Assessment Report, the Intergovernmental Panel on Climate Change provided the most detailed analysis of adaptation to date. This report emphasized that adaptation must be scaled up urgently and that financial systems should play a critical role in mobilizing the necessary resources. Climate change impacts are intensifying, with more frequent and severe weather events—such as floods, droughts, and heat waves—posing significant risks to assets, infrastructure, and economies. Even with aggressive emissions reductions, some climate impacts are now unavoidable, necessitating immediate and sustained investment in adaptation to safeguard economic stability and development gains. The Sixth Assessment Report is, among numerous studies and voices, a warning that current adaptation efforts are insufficient, particularly in developing economies, calling to significantly increase financing to scale up adaptation projects, enhance resilience, and mitigate future losses (IPCC AR6 2023).

Despite persistent calls to action on adaptation by global climate organizations for over two decades, financing for these efforts remains inadequate, particularly in the most vulnerable countries. According to the 2023 United Nations Adaptation Gap Report, which is the most quoted source on adaptation finance gap, annual climate adaptation needs in developing economies are estimated to be $194–$366 billion, approximately 10 to 18 times more than current financing flows. Based on the Climate Policy Initiative (CPI) tracking methodology for climate finance, while mitigation finance has accelerated to $1.2 trillion annually in 2021–22, adaptation finance saw a more modest increase despite reaching the all-time high of $63 billion. Studies suggest that 75 to 90 percent of all climate finance is directed toward mitigation (United Nations Framework Convention on Climate Change, United Nations Environment Programme, Organisation for Economic Co-operation and Development). Despite the considerable uncertainty surrounding current measurements of adaptation flows and needs, as discussed in the section “Adaptation Finance: Definitions, Measurements, and Uncertainty,” there is a growing consensus that the needs for adaptation finance are increasing, and the global adaptation funding gap is widening at an alarming rate. The failure to scale up adaptation investments will inevitably lead to more unabated climate impacts and subsequent loss and damage, making many EMDEs—notably low-income countries and small island developing states—even more vulnerable to climate-related extreme events.

The public sector has historically driven the conceptualization and implementation of adaptation finance, while the financial sector’s interest has grown more recently, spurred by increasing recognition of climate risks to financial stability and to long-term investment returns and profits. As climate change continues to pose serious risks to ecosystems, economies, and communities, particularly in developing economies, the need for engagement of the financial industry and new financial mechanisms to support adaptation efforts has been gaining momentum recently. The public sector has been focusing on adaptation since the early 2000s, raising awareness and prioritization of climate adaptation in the global policy agenda, with the adaptation finance becoming a critical component of the international climate negotiations over time and only starting to gain traction with the financial industry over the past several years, as discussed in the section” State of Adaptation Investments”.

To date, measured adaptation finance flows are dominated by the public sector, with highly fragmented flow trickling from the private sector. Based on CPI tracking of climate finance, 98 percent of adaptation finance comes from public actors[1]. Based on the recent Standard Chartered Bank (SCB) survey of 150 global investors, asset managers, and bankers, financial firms have allocated just 0.4 percent of their capital to adaptation projects in EMDEs. Just 0.19 percent of their capital is in adaptation projects in Asia, with 0.07

[1] In September 2024, CPI introduced an updated tracking methodology and a bespoke taxonomy to better identify adaptation-relevant private finance leading to a fourfold increase in private adaptation finance to USD 4.7 billion annually from an average of USD 1 billion previously tracked by CPI for the period 2019 to 2022 for the same set of private sector institutions (CPI, 2024).

percent invested in adaptation in the Middle East, and 0.03 percent in Africa (SCB 2024). Based on a World Economic Forum's survey of global businesses, only a minority is investing significantly in adaptation projects that build their own resilience or that of the communities in which they operate, as many businesses find it difficult to make a strong business case to fund large adaptation projects.

Based on IMF staff's extensive outreach with stakeholders and insights from RST engagements, adaptation is seen as more complex and less understood than mitigation. Within the financial industry, the concept of "investing in climate" is broadly associated with mitigation investments, with very few institutions focusing specifically on adaptation. Mitigation is seen as an opportunity, while adaptation is perceived as a risk management strategy. Many in the financial sector are more comfortable with mitigation because of its clearer metrics and financial returns, while adaptation is often viewed as a government responsibility with skepticism about its investment potential. Some institutions even voice concern that being active in adaptation may be perceived as not being serious about mitigation and a form of greenwashing. Annex 1 provides an overview of the financial sector's perspectives on mitigation versus adaptation, highlighting key distinctions that influence financial sector's interest in adaptation investment opportunities.

Although tracked private investment flows for adaptation are currently small and there are few instruments with adaptation benefits as a primary focus, there is growing evidence that adaptation is rising up the agenda of the financial industry. Based on SCB's recent survey, three-quarters of banks, asset managers, and investors expect that climate adaptation finance will become mainstream in the near term. Fifty-five percent of respondents intend to increase their adaptation investments over the next 12 months. Seventy-seven percent of the world's top finance firms are stating that it is a strategic focus and 68 percent actively working on strategies for adaptation finance and investment (SCB 2024).

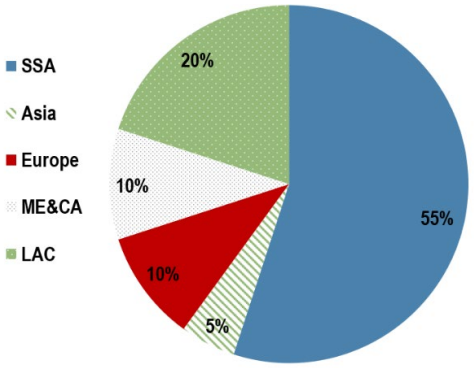
In discussions with the IMF staff, stakeholders highlighted increased collaboration between the public and financial sectors on adaptation, resulting in new instruments and investment approaches aimed at innovative solutions. Some financial institutions reported a more proactive approach in partnering with governments and development banks to co-finance adaptation projects, resulting in a growing pipeline of investment platforms and financial products at various stages of development. These initiatives aim to leverage concessional funds to de-risk private investments in adaptation for EMDEs or capitalize on new technologies to finance adaptation on a commercial basis. There have also been advancements in developing technical guidance for integrating adaptation and resilience considerations across sustainable debt markets (CBI, 2024) and equity markets (GARI, 2024). Section 4 explores the evolving landscape of adaptation investment from blended finance to capital market instruments, and highlights two recent investment platforms in EMDEs with adaptation as a primary objective.

For growing awareness and interest to translate into material investments in adaptation by the financial industry, continuous efforts are needed across the adaptation finance ecosystem. While three out of five private financial institutions intend to increase their allocation to adaptation investments, according to the SCB survey, they also highlight multiple barriers to investment and call for more product innovation and public-private partnerships to unlock capital for adaptation, practical investment guidance, and investor-relevant metrics. It is also important to address perceived barriers, such as long-standing beliefs and misconceptions within the industry (SCB 2024). The perception of adaptation as a mere externality or as carrying negative cash flows—often framed as "future costs avoided"—deters many in the financial sector from considering adaptation holistically in their investment processes. To shift this perspective, adaptation needs to be reframed from a risk exposure to a viable investment opportunity. Further, advancing adaptation requires adopting a broader perspective that explores synergies between commercially viable investments and integrates adaptation and resilience consideration into a wider context. Addressing these complexities and fostering innovation present an opportunity to develop new ways of thinking about adaptation and create more effective and inclusive adaptation finance solutions.

Box 1. IMF Resilience and Sustainability Facility: Deployment to Date

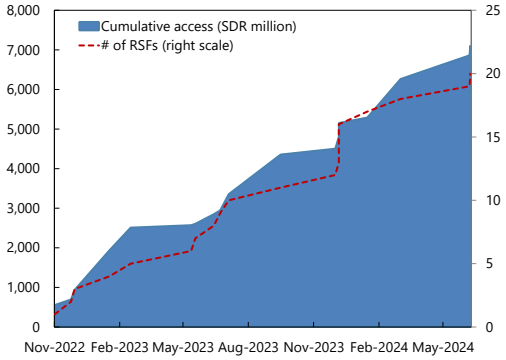
Resilience and Sustainability Facility (RSF) arrangements are supporting a range of macro-critical climate policy reforms, including sectoral measures when warranted. The first 20 RSF arrangements (Figures 1.1 and 1.2) approved by the IMF Executive Board encompass 237 reform measures (RM) spanning various climate-related areas. Key factors in shaping a country's climate-related reforms (and the overall reform package) were the findings of climate diagnostics, the landscape of climate policies and frameworks, past or ongoing efforts of development partners, the assessed additionality of reforms, countries' implementation capacity and institutional strength, and development partner collaboration (especially for sectoral reforms).

Figure 1.1. Approved RSF Arrangement by Region



Source: IMF staff calculations.
Note: LAC = Latin America and the Caribbean; ME&CA = Middle East and Central Asia; RSF = Resilience and Sustainability Facility; SSA = sub-Saharan Africa.

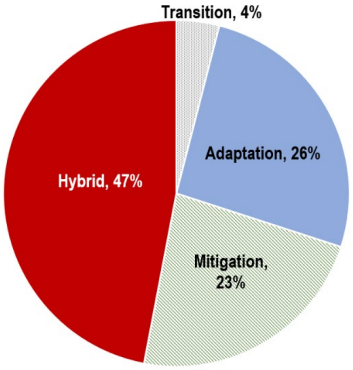
Figure 1.2. Number and Volume of Approved RSF Arrangements to Date (as of March 15, 2024)



Source: IMF staff calculations.
Note: RSF = Resilience and Sustainability Facility; SDR = special drawing right.

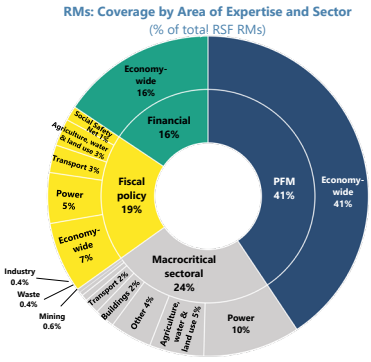
RSF-supported reforms seek to assist the prospective balance of payment stability directly through adaptation measures and indirectly through certain mitigation measures (Figure 1.3) such as phasing out of fossil fuel subsidies, which create fiscal space for investment in resilient infrastructure, including green electricity generation, or through reducing reliance on imported fossil fuels. Many reform measures also simultaneously cover adaptation, transition, and mitigation. For instance, a public financial management reform such as incorporating climate change considerations into public investment management frameworks potentially affect both adaptation and mitigation; and, for fossil fuel exporters, such a reform also contribute to managing the prospective balance of payments impact of the global transition to low-carbon economies.

Figure 1.3. Approved RSF Reform Measures



Source: IMF staff calculations.
Note: RSF = Resilience and Sustainability Facility.

Figure 1.4. Coverage of Reform Measures by Area of Expertise and Sector



Source: IMF staff calculations.
Note: PFM = public financial management.

RSF programs emphasize macro-critical policy and institutional reforms, tailored to the nature of climate challenges, capacity, and level of development (Figure 1.4). Key reform areas include integrating climate change considerations into public investment management and public-private partnership frameworks; green public financial management and planning/budget cycles (for example, budget preparation, execution, reporting, and auditing processes); carbon pricing and subsidy reforms; expansion of social safety nets; risk assessments and management (for example, macro-fiscal, financial, and disaster risks); energy transition (for example, renewables and energy efficiency); improving financial sector data, definition, and disclosures; and developing robust supervisory frameworks for climate risks, as well as mobilizing climate finance. With the support of development partners, reform measures have also been tailored to address specific types of climate change challenges by targeting sector-specific vulnerabilities (for example, water scarcity, electricity market reforms, transportation).

Countries vary widely in their starting points and capacities to implement climate reforms, influenced by institutional strength, governance, and inter-agency coordination. In countries with weaker capacities, like fragile or small developing states, implementing climate reforms can be especially challenging and requires significant capacity development. Consequently, the perceived quality of RMs differs depending on a country's capacity and previous experience with climate reforms, highlighting the need for tailored diagnostics and context-specific evaluations when designing and comparing RMs across countries.

Source: IMF (June 2024).

Since its operationalization in 2022, the RST provides concessional longer-term financing to help eligible members address longer-term structural challenges such as climate change. Specifically, the RST aims to enhance economic resilience and sustainability by (i) supporting policy reforms that reduce macro-critical risks associated with select longer-term structural challenges, including the impact of climate change, and (ii) augmenting policy space and financial buffers to mitigate the risks arising from such longer-term structural challenges—thereby contributing to prospective balance of payments stability During the first 24 months of operation, 20 arrangements under the Resilience and Sustainability Facility (RSF) have been approved by the IMF Executive Board—with total commitments of about $9.5 billion as of the end of August 2024. Several countries have expressed interest in having one such arrangement in the near term. Box 1 provides details of the RST programs to date.

For countries with market access and Resilience and Sustainability Facility arrangements, the IMF has helped the authorities convene climate finance country roundtables in close partnership with major stakeholders—the World Bank, regional multilateral development banks (MDBs), and other public and private actors. The roundtables serve as platforms for discussion and collaboration among policymakers, international financial institutions, and the private sector, aimed at discussing and developing solutions that link climate goals with macroeconomic policies. These discussions provide a unifying umbrella for identifying (1) the main barriers to increased climate financing; (2) complementary reforms, capacity development needs, and comparative expertise; and (3) programmatic approaches (for example, frameworks for developing financing vehicles) for crowding in additional financing. The IMF's macroeconomic perspective allows these types of discussions to be embedded in a coherent macroeconomic framework.

The deployment of the RST offers early valuable lessons for scaling up adaptation finance: the importance of longer-term financing in addressing the structural challenges posed by climate change, enabling countries to invest in sustainable adaptation measures; the necessity of integrating climate adaptation and resilience into broader economic policies and frameworks to ensure coherence and effectiveness and thereby facilitate an enabling environment to catalyze additional financing from the public and private sectors; and the critical role of capacity building in enabling countries to effectively access and utilize adaptation finance.

This note contributes to the policy dialogue on scaling up adaptation finance. Adaptation challenges and access to financial resources vary significantly across EMDEs. In seeking to advance different approaches to and sources of adaptation finance, especially in EMDEs, the note (1) synthesizes the financial industry's perspective on adaptation investments, highlighting key distinctions between strategies for adaptation and mitigation; (2) examines the current state of the adaptation finance ecosystem and focuses on a subset of financial instruments suitable for adaptation; and (3) draws lessons from the RST and the IMF's role in the broader climate finance architecture. The analysis incorporates insights from IMF staff's outreach to institutions across the public, private, nongovernmental organizations, and academic sectors, as well as engagement with stakeholders in the context of the RST. In addition, it draws on findings from industry surveys and relevant publications.

The rest of the note proceeds as follows. The section "Adaptation Finance: Definitions, Measurements, and Uncertainty" discusses current challenges in defining and measuring multiple facets of adaptation, including countries' adaptation needs and the tracking of adaptation finance flows. The next section "Adaptation Finance in Emerging Market and Developing Economies" delves into the layers of the adaptation finance ecosystem, its evolution, and the state of the adaptation investment landscape. The section "Barriers to Scaling up Adaptation Finance in Emerging Market and Developing Economies" highlights key insights from the IMF staff discussions across the adaptation finance landscape. The section "Policy Recommendations for Addressing the Adaptation Finance Gap" provides policy recommendations.

Adaptation Finance: Definitions, Measurements, and Uncertainty

While there is broad agreement that adaptation is an urgent priority, there is considerable variation in how adaptation is defined and how adaptation needs and financial flows across the adaptation investment value chain are measured. The 2023 Sixth Assessment Report by the Intergovernmental Panel on Climate Change defines adaptation as 'the capacity of interconnected social, economic, and ecological systems to cope with hazardous events, trends, or disturbances by responding or reorganizing in ways that maintain their essential function, identity, and structure.' While this definition is widely recognized, in practice, the terms 'adaptation' and 'adaptation finance' are interpreted and applied differently by various stakeholders, each reflecting their distinct institutional mandates, investment objectives, and approaches to climate change. A key challenge lies in the lack of universally accepted definitions for practical purposes, with different stakeholders often favoring definitions that align with their specific needs and perspectives. Annex 2 provides several examples of adaptation definitions across different stakeholders in the adaptation finance ecosystem.

Different motivations and distinct institutional realities drive contrasting perspectives of public and private financial sector on adaptation finance. Broadly speaking, adaptation finance from a public sector perspective is a part of a government's responsibility to address externalities and protect the vulnerable. Motivations for the financial sector are largely driven by the objective to manage financial risks and enhance financial performance. As a result, the public sector tends to define adaptation finance more broadly, encompassing a wide range of activities from infrastructure investments to social and community resilience programs. The financial sector's approach to adaptation focuses on investments that mitigate risks to physical and financial assets, emphasizing specific themes and financial products that align with institutional investment processes and fit within defined asset classes and strategies. Bridging this gap requires aligning these differing perspectives, leveraging the strengths of each sector, and fostering collaboration. Table 1 presents a non-exhaustive overview of adaptation activities across various themes, providing a broader perspective that extends beyond those suitable exclusively for public investments. It highlights a spectrum of investment opportunities that not only offer potential returns but could also be commercially viable.

Table 1. Overview of Adaptation Activities and Respective Expected Financial Returns

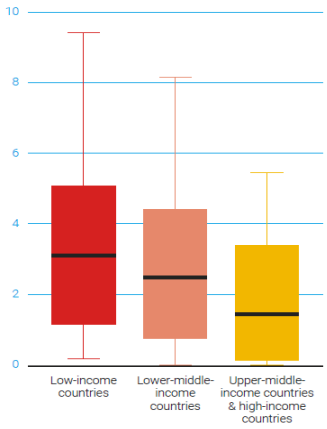
Adaptation Activity	Examples of Activities	Usually Publicly Funded	Mixed (below market)	Commercially Viable
Enabling environments	Development of national adaptation plans and strategies	■		
	Provision of climate-related data and risk maps	■		
	Implementing Early Warning Systems covering climate-related events	■		
	Development of new technologies and services for adaptation		■	
	Development of financial services to support adaptation (e.g. credit and insurance)		■	■
	Consultancy services for adaptation			■
Agriculture	Afforestation and reforestation			■
	Changing production towards betteradapted crops and varieties			■
	Installing water-efficient irrigation			■
Coastal zones	Restoration of coastal wetlands	■		■
	Relocation of properties from high-risk areas	■		
	Beach nourishment	■	■	
	Flood defences	■	■	
Infrastructure	Integrating climate resilience into the design of new infrastructure		■	■
	Increase backup systems in infrastructure networks	■	■	
	Making existing infrastructure resilient		■	
Water	Expanding water storage capacity	■	■	
	Desalination	■	■	
	Reducing leaks in existing infrastructure	■	■	
	Protecting watersheds	■	■	
	Improving water efficiency of major water users	■	■	

Source: OECD (2023).

Despite notable progress on nationally determined contributions and national adaptation plans, assessing and capturing countries' adaptation needs continue to present significant challenges. The multifaceted impacts of climate change pose significant methodological complexities resulting in the scarcity of comprehensive assessments of national adaptation needs on the global level and cross-country comparisons. Estimating adaptation finance needs across countries is challenging because of significant uncertainties about the trajectory of climate change and its varied impacts on economic, social, and ecological systems. The unpredictability of future greenhouse gas emissions creates a wide range of possible climate scenarios, each with different adaptation requirements. Regional differences in vulnerability and resilience further complicate precise financial estimations. Other challenges include uncertainties around adaptation outcomes and their causality, and the effectiveness of adaptation under different climate scenarios. As a result, differences in the definition of needs and in assumptions about future developments and climate change scenarios result in a wide range of adaptation estimates.

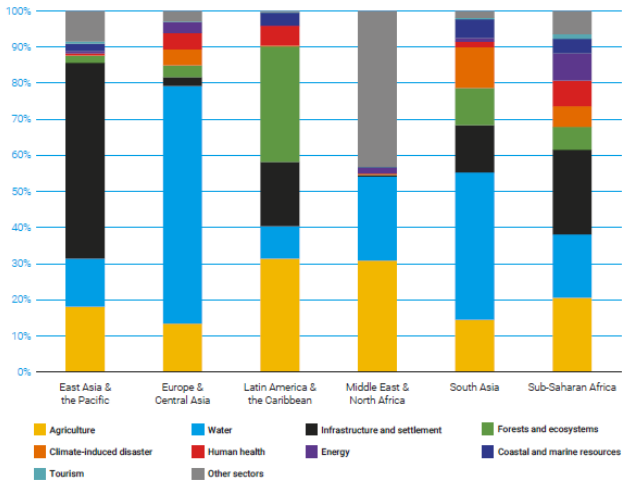
Many countries have highlighted methodological challenges and capacity gaps in quantifying adaptation finance needs (UNFCCC 2021). Of the submitted nationally determined contributions and national adaptation plans, 85 developing economies have specified their adaptation finance needs for the period 2021–30 in at least one of their submissions. According to the analysis by UNEP, among low-income countries, 89 percent have stated their finance needs, compared with 68 percent of lower-middle-income countries, 42 percent of upper-middle-income countries, and just 16 percent of high-income countries, with adaptation needs being higher as a share of GDPs for lower-income countries (Figure 1). Furthermore, 52 countries have detailed

Figure 1. Annual Adaptation Finance Needs as a Percentage of GDP by Income Level from Submitted NDCs and NAPs



Source: UNEP (2023).
Note: NDCs = nationally determined contributions; NAPs = national adaptation plans.

Figure 2 Sectoral Distribution of Adaptation Finance Needs by Regions from Submitted NDCs and NAPs as a Percent of Total Finance Needs for the Respective Region



Source: UNEP (2023).
Note: NDCs = nationally determined contributions; NAPs = national

their adaptation finance needs by sector, with water, agriculture, and infrastructure identified as priority areas, although sectoral priorities vary significantly across regions (Figure 2). In addition to country-specific documents, the recently introduced IMF Disaster Resilience Strategies, Climate Policy Diagnostics, Climate Public Investment Management Assessments, Climate Macroeconomic Assessment Program Reports, along with the joint IMF-World Bank Climate Change Policy Assessments, and the World Bank's Country Climate and Development Reports are offering deeper insights into country-focused climate resilience strategies. The IMF's Debt-Investment-Growth and Natural Disasters model provides a useful framework to integrate climate risks and adaptation costs into countries' development plans and macro-fiscal framework and illustrate the potential benefits of infrastructure (IMF, 2018).

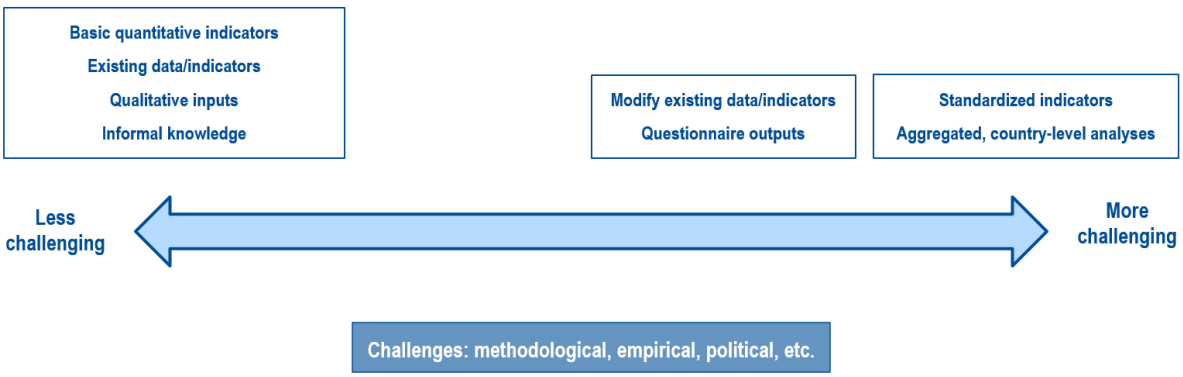
A recent IMF study estimated global public adaptation needs at around ¼ percent of world GDP per year on average (IMF 2022b). The study reviewed existing analyses of global adaptation investment needs for developing economies and found that they range from insignificant amounts to $300 billion annually in 2030 and between $50 billion and $500 billion annually in 2050. As a share of average annual global GDP, these estimates range from almost nothing to about 0.3 percent of projected 2030 global GDP per year. In 2050, investment needs increase in all studies, even after accounting for global economic growth. IMF's own analysis points to annual adaptation costs exceeding 1 percent of GDP for some developing economies, and above 10 percent of GDP for some island states.

The study highlights that countries' bottom-up needs self-assessments tend to be larger—even 100 or 250 times higher than global averages for some lower-income vulnerable countries. The collective adaptation costs for 46 countries that included adaptation cost estimates in their nationally determined contribution is estimated at $783 billion by 2030 (or about 1.5 percent of their GDP annually from 2015 on average). Small island states face some of the greatest challenges as climate change effects are projected to entail very large costs and sea-level rise threatens the very existence of some small low-lying islands. Specifically, estimates of cumulative resilience needs for Dominica, Fiji, Grenada, and Tonga range from 100 to 500 percent of GDP, although some of these needs might be defined very broadly (IMF 2022b).

Countries' adaptation costs are dynamic and influenced by various factors beyond climate change scenarios, including domestic policy environment, structural reforms, and the broader global landscape. A recent IMF modeling study on climate adaptation in developing economies facing trade and financing constraints highlights that trade openness and structural reforms could significantly reduce the costs associated with adaptation investments in the agricultural sector (IMF 2024). Fiscally constrained countries have to balance a variety of public investments needs and face fiscal trade-off between adapting to climate change and pursuing broader development goals. This trade-off is especially relevant in agriculture, where investing in adaptation is critical to ensure food security amidst climate change. Trade openness can help alleviate this challenge and reduce adaptation investment needs by offsetting agricultural production shortages. Conversely, trade fragmentation could increase food insecurity risks and drive adaptation costs up. Enhancing agricultural productivity, improving adaptation efficiency, and reducing labor market distortions could further lower adaptation investment needs.

Adapting to climate change spans human, environmental, economic, and financial dimensions and involves a diverse set of institutions with distinct objectives and motivations, making it difficult to establish a definitive set of metrics. In its 2021 assessment of the progress toward the Global Goal on Adaptation, the United Nations Framework Convention on Climate Change Adaptation Committee acknowledged the challenges in defining and assessing "adaptation." These challenges include methodological, empirical, political, and conceptual complexities (Figure 3) (IPAM 2021). The spectrum of approaches ranges from basic quantitative metrics to more complex, standardized indicators and analytics, depending on user needs. Although this flexibility is useful for individual projects, it complicates strategic comparisons across projects and monitoring of global adaptation progress.

Figure 3. Spectrum of Approaches to Assessing Adaptation and Magnitude of Challenges



Source: International Platform on Adaptation Metrics (2021).

A related challenge is to accurately measure adaptation finance flows, as tracking is currently hindered by methodological inconsistencies, data gaps, and inadequate reporting. Current approaches often emphasize incremental, project-by-project initiatives or project finance transactions. Market participants have noted that current headline figures for adaptation finance likely fail to capture the full range of investments in adaptation. The often-quoted low numbers may discourage financial institutions from viewing adaptation as a viable investment opportunity, as it may be perceived as a niche market. In addition, the narrow measurement focus results in policy discussions dominated by instrument-specific solutions, such as cross-border blended finance, which, while instrumental in addressing investment barriers, represents only a small fraction of the overall financial landscape. To attract a broader range of financial actors, it is essential to develop more comprehensive and scalable frameworks that integrate adaptation across various assets classes and investment strategies.

Coherent and consistent understanding of adaptation is essential to ensure that interventions aimed at mitigating climate risks do not inadvertently result in maladaptation—actions that increase vulnerabilities or introduce new risk. For financial stakeholders, this is particularly important as it directly affects the effectiveness, sustainability, and return on investment for adaptation projects. Without a well-defined framework, adaptation efforts may focus on superficial or short-term fixes that fail to address root causes. This can lead to resource misallocation, where significant funds are spent on projects that might initially seem beneficial but ultimately increase vulnerabilities or require costly corrections. Market clarity on what qualifies as an adaptation-aligned investment is essential to recognize the potential of adaptation and resilience as an investable asset class and unlock further private investments.

Adaptation Finance in Emerging Market and Developing Economies

Ecosystem

The adaptation finance ecosystem comprises a diverse range of institutions with distinct mandates and roles across the adaptation investment value chain. Financial institutions differ in their geographic and sectoral focus, risk tolerance, and appetite for investments in emerging market and developing economies (EMDEs), particularly in the context of climate adaptation. In addition to their climate investment needs, many EMDEs are grappling with challenging financial and macroeconomic environments, further exacerbated by the growing risk aversion within the investment community because of investors' views on EMDE country risk. Investors' appetite for investments in EMDEs has fluctuated over the past two decades (Box 2). Country-specific risk is seen as a primary driver of such investment flows, accounting for between 60 and 90 percent of investors' risk considerations in these countries. These risks are associated with the country's macroeconomic

fundamentals, political stability and institutional strength, quality of governance, policy certainty, general investment conditions (such as property rights and sanctity of contracts), and financial conditions. Investors typically see these risks as integral to the country's overall investability and crucially affect how they consider any individual projects in the country (NGFS 2023).

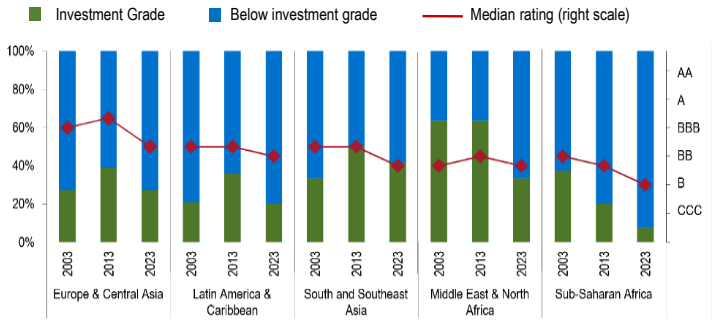
Box 2. Emerging Market and Developing Economies: Evolving Investment Context

As of 2022, advanced economies are home to 80 percent of global financial assets held by financial institutions (of total $489 trillion). Emerging market and developing economies (EMDEs), excluding China, hold domestic financial assets that represent less than 5 percent of global financial assets. Advanced economy investors make their allocation decisions to EMDEs based on their institutional mandates, specific investment objectives, and desired risk/return profile. Although EMDEs accounted for about 40 percent of the world population and contributed about 66 percent of global GDP growth over the past decade, investment funds currently allocate only about 10 percent of their assets to EMDEs, down from 12 percent just a couple of years ago, and EMDEs allocation in environmental, social and governance (ESG) funds is even lower at 6 percent (IMF GFSR 2022). Many large institutional investors avoid EMDEs altogether.

As demonstrated in Figure 2.1 over the past 20 years, the average credit quality of EMDEs—a proxy for a country investability, as measured by credit rating agencies—deteriorated across all regions, with the large majority of EMDEs currently below investment grade, especially in sub-Saharan Africa and Latin America and Caribbean regions. The distinction between instruments rated "investment grade" versus those rated "below investment grade" is of utmost significance in financial markets, because it effectively determines the potential investor base, and a number of institutions are limited to investment-grade investments.

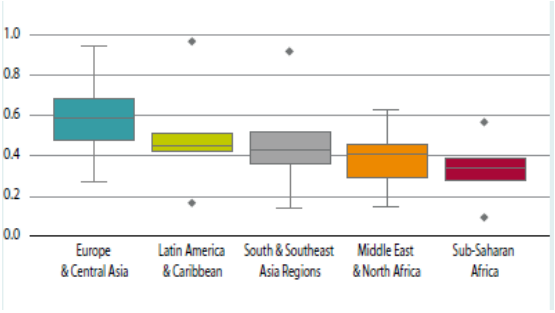
Investors' view of EMDEs investability has also been evolving to include nonfinancial factors because of increasing sustainability and climate regulations, broadening market perspective (Mobilist 2023b). As a result, investors are seeking to assess a sovereign's sustainability profile, as it is seen to pose substantial fiscal risks for the government, including, inter alia, the country's quality of governance and policy execution, as well as how a country's long-term competitiveness is affected by its ability to manage climate and other environmental risks. Figure 2.2 provides insights into how EMDEs are measured by commercial ESG providers on their governance, environmental, and social factors, which have increasingly been influencing investors' broad view of EMDEs and often factored into their capital allocation and investment decisions, heightening risk perception of EMDEs in the industry. Based on commercially provided sovereign ESG scores, the sub-Saharan African region is in the bottom quartile of all EMDEs and with the Middle East and North Africa faring not much better.

Figure 2.1. Evolution of Credit Quality of EMDEs over the Past 20 Years across Regions



Source: IMF staff calculations.
Note: EMDEs = emerging market and developing economies.

Figure 2.2. Market Assessment of EMDEs Performance on Governance, Environmental, and Social Factors



Source: IMF staff calculations from sovereign environmental, social and governance (ESG)scores by ESG providers (Gratcheva and Gurhy 2024).
Note: EMDEs = emerging market and developing economies.

EMDEs are a very heterogeneous group, with great variations in levels of economic and financial development.[2] Large emerging markets such as China are in a better position to mobilize domestic resources for climate investments. In contrast, smaller- and lower-income countries are limited in their ability to do so and rely on international markets, MDBs, and official (concessional) funds. The ability of these countries to attract a specific mix of private and official finance will depend on a range of structural characteristics (such as financial

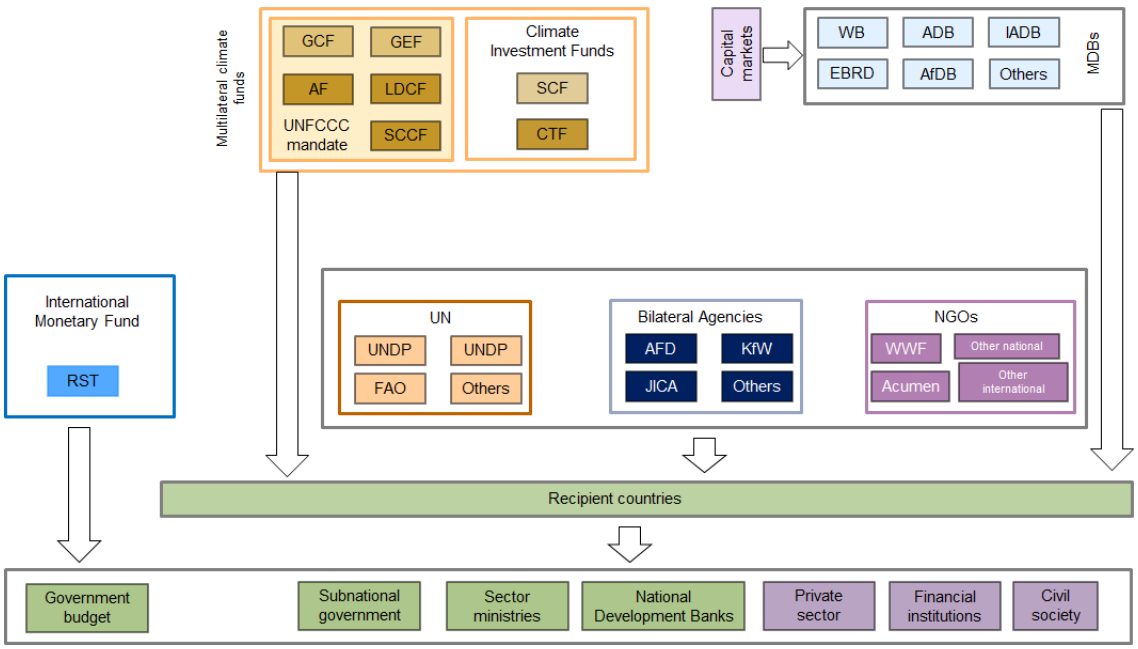
[2] IMF Financial Sector Development database, Financial Development—Story—IMF Data.

markets depth), policy mix (including capital flow management or tax measures that may discourage foreign investors), as well as other factors that are discussed in greater detail in the next section.

Key Constituents

It is important in this context to understand the diverse stakeholders involved in designing and delivering adaptation finance solutions, and their specific roles. As discussed earlier, the adaptation finance landscape has been dominated by the public sector, with its evolution driven by international climate agreements and multilateral initiatives. The public sector's focus has been on creating the necessary institutional frameworks, securing public sources of funding (Figure 4), and addressing the adaptation needs of the most vulnerable countries, as summarized in Annex 3. As a result, the public sector shaped the framing for broader engagement on adaptation, developed early technical guidance, and set up several multilateral concessional funds for vulnerable developing economies, which are yet to translate into significant private sector participation.

Figure 4. Public Climate Finance Architecture: Schematic Overview



Source: adapted from OECD (2023), IMF (2021).

Notes: AFD = Agence Française de Développement; CTF = Clean Technology Fund; EBRD = European Bank for Reconstruction and Development; FAO = Food and Agriculture Organization; JICA = Japan International Cooperation Agency; KfW = KfW Development Bank; LDCF = Least Developed Countries Fund; MDB = Multilateral development banks; SCCF = Special Climate Change Fund; SCF = Strategic Climate Fund; UN = United Nations; WB = World Bank; WWF = World Wildlife Fund.

The financial sector's interest in adaptation finance has been shaped by a mix of risk management concerns, an evolving policy and regulatory environment, and increasing technical guidance throughout the adaptation investment value chain. The period following the 2015 Paris Agreement saw a significant shift in the financial sector's approach to climate finance, moving the narrative from a moral imperative to a financial necessity that started to resonate with the financial sector, especially in light of growing climate-related losses. This shift has led to emergence of private sector–focused and private sector–led initiatives aimed at developing technical guidance to support private sector's participation in adaptation investments at various stages. Figure 5 presents a nonexhaustive summary of institutions, initiatives, and alliances, as well as key milestones highlighted by market participants engaged in adaptation finance during the IMF team's outreach.

Figure 5. Key Institutions and Milestones Affecting Private Sector Involvement in Adaptation Finance Based on Market Feedback

Source: IMF staff

Note: MDBs comprise of a group of international financial institutions and development banks including the World Bank Group, African Development Bank, Asian Development Bank, Asian Infrastructure Development Bank, European Bank for Reconstruction and Development, European Investment Bank, Inter-American Development Bank, Islamic Development Bank, New Development Bank, and Council of Economic Development Bank. CARP = Climate Adaptation and Resilience Principles; COP = Conference of the Parties; CPI = Climate Policy Initiative; DFI = development financial institutions; FSB = Financial Stability Board; GARI = Global Adaptation and Resilience Investment Working Group; IFI = International Financial Institutions; IFRS = International Financial Reporting Standards; IOSCO = International Organization of Securities Commissions; IPCC = Intergovernmental Panel on Climate Change; ISSB = International Sustainability Standards Board; MDB = multilateral development banks; RST = Resilience and Sustainability Trust; TCFD = Task Force on Climate-Related Financial Disclosures; UNFCCC = United Nations Framework Convention on Climate Change; WEF = World Economic Forum. This is not an exhaustive table. The institutions and specific developments are presented based on the feedback of stakeholders' consultation on the state of adaptation finance over the period of May–July 2024.

Over the past five years, a number of initiatives have examined the challenges in scaling up adaptation finance and discussed how best to incentivize increased investment in adaptation. Among other efforts, works are under way to develop technical guidance across adaptation taxonomies, adaptation flow tracking methodologies, and topology of adaptation projects, including risk/return profiles. Figure 6 presents key technical documents that have already been released or are currently under development across adaptation finance ecosystem addressing various aspects of adaptation finance value chain.

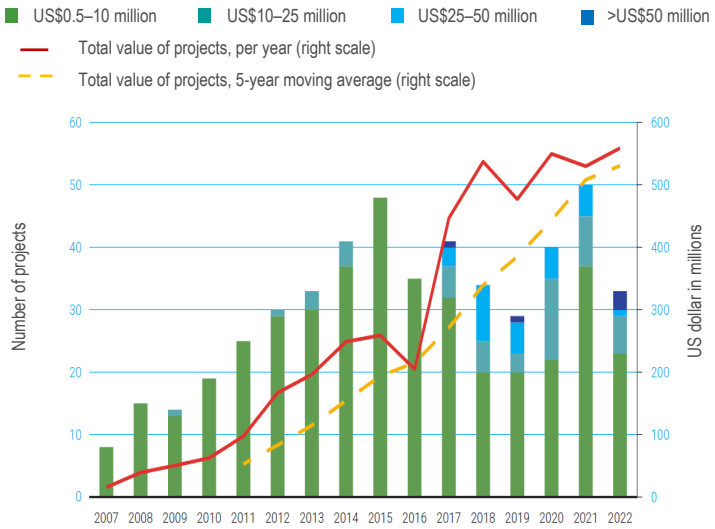
Figure 6. Key Technical Guidance Released and under Development for Adaptation Finance

Source: IMF staff.

Note: Please note this is not an exhaustive list. The institutions and technical guidance documents presented are based on the feedback of stakeholders' consultation on the state of adaptation finance over the period of May–July 2024. IDB = Inter-American Development Bank, ADB = Asian Development Bank, GARI = Global Adaptation & Resilience Investment Working Group, UNDRR = UN office for Disaster Risk Reduction, MSCI = Morgan Stanley Capital International, ICMA = International Capital Markets Association, IIGCC = The Institutional Investors Group on Climate Change, IDB = Inter-American Development Bank, and OECD = Organisation of Economic Co-operation and Development. The following list maps some of the related documents/resources from the institutions/organization cited above. However, some of these documents are more comprehensive and serve multiple functions like addressing barriers to private sector investments while also proposing strategies to integrate adaptation efforts into business strategies.
For 1 – under the heading "Adaptation taxonomy and classification frameworks" in the Bibliography.
For 2 – under the headings "Adaptation taxonomy and classification frameworks" and "Adaptation Metrics and Measurement" in the Bibliography.
For 3 – under the headings "Adaptation taxonomy and classification frameworks" in the Bibliography.
For 4 – under the headings "Adaptation taxonomy and classification frameworks" and "Investment Frameworks and Guidance" in the Bibliography.
For 5 – under the headings "Adaptation Policy Issues", "Investment Frameworks and Guidance" and "Investment Frameworks and Guidance" in the Bibliography.

Growing awareness and technical guidance on adaptation is yet to result in material progress in incorporating adaptation and resilience considerations across the financial instrument landscape. Over the past decade, the number of adaptation actions supported by the four main climate funds—United Nations Framework Convention on Climate Change's Adaptation Fund and Green Climate Fund; and Global Environment Facility's Least Developed Countries Fund and Special Climate Change Fund—has stagnated, although their size has grown (Figure 7).[3] The Green Climate Fund in particular is a significant source of concessional funding for blended finance transactions, with two of the most recent adaptation-focused

Figure 7. Number and Volume of Adaptation Investments Financed by UNFCCC Climate Funds



Source: UNEP (2023).
Note: UNFCCC = United Nations Framework Convention on Climate Change

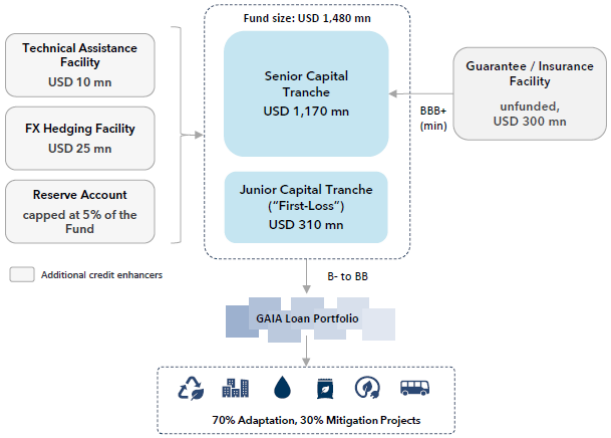
transactions supported by the Green Climate Fund featured in Box 3.

Box 3. Recent Private Sector Adaptation Finance Platforms

GAIA Climate Investment Fund

Nearly $1.5 billion GAIA is a large-scale blended finance platform underwritten by MUFG Bank (see Figure 3.1) that offers long-term loans for climate adaptation (70 percent) and mitigation (30 percent) investments in 19 of the most climate vulnerable countries in the world (25 percent to low-income countries and small island developing states) to unlock private sector support for climate-resilient infrastructure, ecosystems, health, agriculture, and water systems. The paradigm shift underpinning GAIA is to become a lasting and scalable platform for climate adaptation and mitigation projects in emerging markets. By providing specific and innovative responses to each hurdle faced by institutional investors wishing to finance climate projects, GAIA effectively connects recipient countries' national priorities (nationally determined contributions and national adaptation plans) with the commercial capital from financial institution, helping pave a path for other institutions to follow. It is a country-led platform designed to provide longer tenors and reduce currency volatility through a decentralized network of public and nongovernmental institutions.

Figure 3.1. GAIA Architecture.



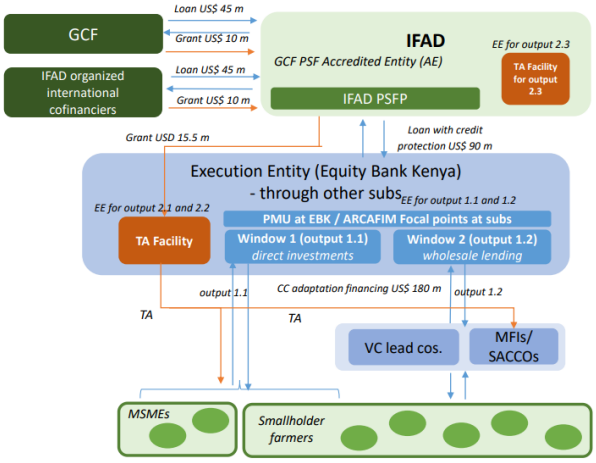
Sources: GCF Funding Proposal, November 2023, Sustainable Market Initiative, 2024.

Note: LDCs = least developed countries; MUFJ = Mitsubishi UFJ Financial Group; SDG = Sustainable Development Goal; SIDS = small island developing states.

Africa Rural Climate Adaptation Finance Mechanism (ARCAFIM)

Agricultural practices in Africa must undergo a rapid transformation by 2030–40 as changing climate is expected to affect crop production and livestock management, requiring new innovative agricultural systems. Although some public sector efforts exist, they are often grant-based and lack the capacity to drive sustainable, long-term market-driven financing. The $600-million Africa Rural Climate Adaptation Finance Mechanism (ARCAFIM) is a large-scale model of tailored finance for small- and medium-scale agrobusinesses and rural microenterprises. ARCAFIM integrates blended finance and incentivizes regional private banks through a risk-sharing mechanism (diagram below). ARCAFIM will be structured into four separate facilities, each serving an African region: East, South, West, and North. The first $180-million facility for Eastern Africa was approved in December 2023 by the Green Climate Fund with Equity Bank Kenya, providing $90 million in commercial funding along with International Fund for Agricultural Development's $90 million. Other regions are expected to be rolled out by 2026.

Figure 3.2. ARCAFIM Architecture.



Source: GCF Funding Proposal, November 2023.

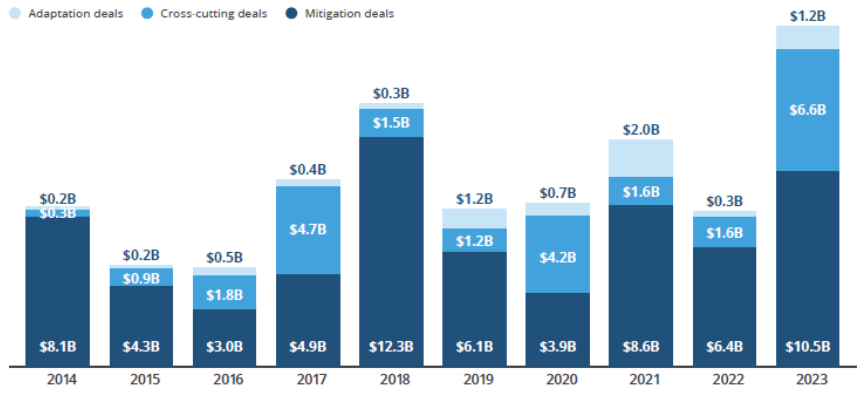
Note: ARCAFIM = Africa Rural Climate Adaptation Finance Mechanism; GCF = Green Climate Fund; IFAD = International Fund for Agricultural Development, MSMEs = medium and small enterprises; TA = technical assisstance; .

State of Adaptation Investments

Blended Finance: Underused in Adaptation to Date with Significant Potential

While blended finance cannot by itself close the adaptation financing gap, it has an important role in demonstrating investability of emerging market and developing economies (**EMDEs) and help align financial and sustainability objectives of various stakeholders.** As a result of increasing focus on scaling up blended finance in EMDEs by the international community and the financial sector, blended finance initiatives and platforms in the fundraising stage have increased significantly across a wide set of EMDEs. Based on Convergence data, on average, only approximately six adaptation deals per year have been recorded up to 2020 with 10-11 annual deals in 2021- 2023 although smaller in size compared to earlier years. Thirty three percent of blended adaptation financing from 2021 to 2023 came from private sources (Convergence, State of Blended Finance 2024).

Figure 8. Level of Blended Finance for Climate Mitigation and Adaptation, 2013–23 (October), Billions USD



Source: Convergence, State of Blended Finance (2024).

Hybrid opportunities addressing both mitigation and adaptation offer investors a unique chance to tap into adaptive and resilient solutions while leveraging the commercial viability of mitigation, bridging the two areas of climate finance. For example, sustainable agriculture can benefit climate mitigation by improving soil health and increasing carbon sequestration through organic material, and climate adaptation by increasing food security in vulnerable populations. Hybrid-blended finance transactions have averaged about ten transactions annually since 2013. Convergence found that 45 percent of institutional investments into climate finance are in hybrid solutions, compared to 35 percent in mitigation and 20 percent in adaptation. Overall, hybrid transactions amounted to $18.5 billion since 2014. Twenty-seven percent of hybrid transactions focus on agricultural inputs and farm productivity, since the characteristics of this sector tend to be well positioned to produce dual mitigation-adaptation benefits. The Africa Rural Climate Adaptation Finance Mechanism is an example of a hybrid transaction (see Box 3). Other hybrid sectors include infrastructure, financial services, housing, and real estate (Convergence, State of Blended Finance 2023).

Green, Sustainable, and Sustainability-Linked Bonds: Limited Coverage of Adaptation and Resilience

Green and sustainability-linked bonds have become a popular choice for investors aiming to align their portfolios with environmental objectives. For example, in 2019, the City of Amsterdam issued €200 million in green bonds to finance sustainable infrastructure projects, including flood defenses and energy-efficient buildings. New Zealand has had a calendar of green sovereign bond issuances since 2021 to fund climate adaptation initiatives. In 2020, the Government of Fiji issued a $50-million green bond to finance climate-resilient infrastructure projects, including improvements to roads and bridges affected by rising sea levels.

Data indicates that most issuers still prioritize climate mitigation, with few bonds explicitly allocating proceeds to climate adaptation. In addition, a significant portion of proceeds is directed toward existing projects rather than new initiatives, limiting their potential impact (Climate Bonds Initiative, Sustainable Fitch

2024). Based on Climate Bonds Initiative analysis,[5] as of 2023, only 1,222 out of 48,103 green, social, sustainability, and sustainability-linked instruments had earmarked proceeds for adaptation and resilience activities. Sovereign issuers led in adaptation and resilience-related deals, with 31 percent of their instruments addressing some aspects adaptation, followed by nonfinancial corporations (19 percent), financial corporations (18 percent), and government-backed entities (17 percent). Despite the need for capital to address physical climate risks, 2023 saw a 21-percent year-over-year decline in adaptation and resilience-referenced deals, with issuances from 86 countries remaining constant (CBI 2024). CPI is developing an adaptation and resilience taxonomy for green and sustainable bonds. Market participants in sustainability-linked bonds specifically highlight that a major challenge in designing these instruments for adaptation benefits as the primary focus is the absence of coherent, comprehensive key performance indicators that are comparable across regions, issuers, or sectors because of adaptation's varying definitions and measurement challenges. Furthermore, various reports analyzing the impact of green and sustainable bonds primarily emphasize the CO_2 emissions avoided through investments in mitigation activities like clean energy and energy efficiency, further highlighting the challenge of developing consistent metrics to measure the impact of adaptation investments.

Multilateral Development Banks: Growing Focus on Adaptation and Innovation with Potential Trade-Offs across Other Areas

In 2023, MDBs adaptation finance portfolio grew to over $25 billion across all economies, which accounted for roughly 33 percent of MDBs' financial commitment. Of this, 89 percent was committed toward low- and middle-income countries. The largest proportion of adaptation finance was in sub-Saharan Africa, South and East Asia, and the Pacific. Most adaptation finance for low- and middle-income countries was committed through investment loans (65 percent), followed by project-based financing and grants (MDBs, 2023).

MDBs are developing new instruments targeted to adaptation and resilience. In July 2024, the Inter-American Development Bank and the European Investment Bank jointly approved $300 million in guarantees to enable Barbados to pursue a debt-for-climate initiative aimed at fostering climate resilience while maintaining essential social spending on health and education. Each institution will contribute $150 million, marking their first collaborative guarantee for a Caribbean project. This funding will facilitate critical investments in climate adaptation, including the South Coast Water Reclamation Project, enhancing water security and sanitation, and aligning with Barbados' Updated nationally determined contributions under the Paris Agreement. The initiative represents a significant step in innovative climate financing. It reflects a broader commitment from international development organizations to deliver impactful climate-resilient investments and addresses urgent climate vulnerabilities in the Caribbean region, particularly in light of increasing hurricane activity in the region (IDB, EIB, 2024).

International bodies are urging MDBs to reform their lending practices and enhance their support for climate adaptation, particularly in regions with pressing needs but limited capacity to secure financing. Recent Moody's analysis finds that increasing adaptation finance at past growth rates would not substantially affect MDBs' credit metrics, with adaptation financing potentially reaching $90 billion annually by 2030. This scenario would affect the capital adequacy scores of smaller MDBs without considering potential capital increases. Moody's analysis finds that under a maximum leverage scenario, it would be possible to increase adaptation lending to meet global needs by providing around $380 billion by 2026 but would entail trade-offs with other critical development needs. A balanced approach suggests that even with a significant increase in lending, MDBs climate adaptation financing would only reach about $50 billion per year by 2030 (Moody's 2024).

Public Equity Investments in Climate Resilience: An Emerging Theme

In March 2024, a consortium of leading financial and philanthropic organizations—including private sector–led Global Adaptation and Resilience Investment working group, MSCI, The Lightsmith Group, the Bezos Earth Fund, and ClimateWorks Foundation—launched an investor toolkit and report titled "The Unavoidable Opportunity: Investing in the Growing Market for Climate Resilience Solutions." The report introduces an artificial

intelligence–powered framework to identify over 800 publicly traded companies involved in climate resilience for investment opportunities in sectors like grid resilience, stormwater management, insurance, and vaccines. Almost a third of the companies covered are domiciled in EMDEs. The report also introduces the Climate Resilience Investments in Solutions Principles to help investors incorporate climate resilience into diverse investment strategies. Analysis from the MSCI Sustainability Institute reveals that 42 percent of the identified companies are in the industrial sector, with a significant portion based in emerging markets. By positioning climate adaptation as a growth industry, the approach challenges the traditional view that resilience is solely a government responsibility and highlights the increasing demand for resilience technologies and services in response to climate change. It also challenges the view that adaptation-focused investments cannot generate commercial returns or require blended finance structures (Global Adaptation and Resilience Investment Working Group 2024).

Barriers to Scaling up Adaptation Finance in EMDEs

The wide range of investable sectors involved in adaptation, combined with frequent scarcity of direct revenue and the lack of standard metrics, creates significant challenges for the financial industry in evaluating, pricing, and scaling adaptation investments. This complexity, along with the perception of adaptation as a fragmented and niche area, makes it harder for investors to commit capital to adaptation compared with mitigation, where the pathways are better established and more predictable. Engaging private sector investors in adaptation efforts will require strong collaboration and risk sharing between the public and private sectors. Almost seven in ten firms surveyed by SCB say that government intervention is needed to translate the economy-wide benefits of adaptation into commercial returns for investors (69 percent), and that public-private partnerships will be critical for unlocking adaptation investment in emerging markets (67 percent). Banks, investors, and asset managers also call for innovation in the financial sector: three-quarters believe entirely new products such as adaptation bonds will need to be created for climate adaptation to attract the capital required (SCB 2024).

Existing analysis points to both real and perceived barriers to private sector adaptation investments and has resulted in a number of recommendations. Key challenges include insufficient incentives or support, market barriers, operational inefficiencies at the institutional level, and limited technical capacity for managing climate risks. Despite the vast potential for adaptation investments, perceived low private benefits and underdeveloped business models hinder progress. Additionally, legal, regulatory, and risk-sharing obstacles can complicate private sector participation (CPI, Global Center on Adaptation, Network for Greening of the Financial Sector, Organisation for Economic Co-operation and Development, SCB, United Nations Environment Program Finance Initiative, and others). Relevant materials on various barriers are listed in the Bibliography.

In discussions with IMF staff, various stakeholders shared views on a number of common challenges across the adaptation finance ecosystem (Table 2).

- *Structural issues and challenges specific to EMDEs (prior to any climate considerations):* Although many EMDEs have strengthened their macroeconomic fundamentals and further deepened financial and capital markets, the degree of progress varies across EMDEs.
- *Limited investment opportunities and lack of viable climate projects in EMDEs:* One of the consistent issues being raised in the context of EMDEs is the lack of viable climate projects in general and in adaptation in particular. A widely held view is that that there are too few investable adaptation projects suitable to private sector investment, especially in smaller countries, and there are significant challenges with developing a project pipeline. Viable projects in lower-income countries are driven primarily by MDB financing. Lack of access to MDB's deal pipeline on the part of private investors has also been emphasized as a factor reducing investment opportunities.
- *Data gaps, inconsistencies in tracking and measurement methodologies, and insufficient disclosures*: As in many other areas of climate finance, climate data gaps in terms of data quality, including consistency and

comparability across countries, is a significant barrier. Lack of consensus on defining and measuring adaptation interventions and comparability across sectors and geographies adds to the challenges.

- *Knowledge gaps*: Adaptation requires different and, in certain cases, more technical skills across the adaptation value chain, which is a challenge when skilled resources and are scarce expertise. Capacity development efforts across the adaptation finance value chain hence become critical.

Table 2. Summary of Key Issues Highlighted by Stakeholders during IMF Outreach

Financial Sector	Business Sector
Adaptation is considered intangible and complex, as it involves spending on future threats that are highly uncertain. Investors face challenges in integrating adaptation investments in their investment processes as they span a wide range of sectors and often require new technologies and business models. As results, investors are lacking clarity on portfolio diversification, aggregation, risk sharing/derisking when considering investment in adaptation. There is also a prevailing perception that adaptation should be a government responsibility, though resilience is gaining recognition as a market opportunity. The financial industry seeks adaptation related information and guidance that is specifically targeted to its realities, and calls for better-defined taxonomies, and adaptation project archetypes to simplify and clarify investment opportunities.	Many businesses struggle to make a strong business case for large-scale adaptation investments because of a lack of accurate data and methodologies, as well as difficulties in accessing the skills and partnerships needed to design and execute projects. Although some businesses are taking steps to improve efficiencies and create value within their business interests, most are not significantly investing in adaptation initiatives beyond their own operations. Governments, when engaging with businesses, often envision a large role for the private sector, particularly in financing, product innovation, and managing climate risks in supply chains. There is a gap between what businesses are willing or able to do and the roles that governments expect them to play in adaptation.
Public Institutions	**NGOs/Think Tanks**
The public sector sees adaptation as a systemic issue that must be integrated into broader policies, beyond project-level interventions, through a “top-down” approach. Structural investments and fiscal resilience are key areas of focus. Public institutions emphasize the need to educate investors on adaptation and to structure funds to attract private capital. Blended finance is considered essential but not a replacement for good policy. The scarcity of public capital and the demand for more efficient and effective public investments necessitate strong justification for using public funds to support adaptation projects. This is particularly challenging when balancing these investments against other high-priority expenditure needs.	NGOs and Think Tanks were early players in advocating for adaptation and integrating it into polices and strategies. They work with communities on the ground focusing on “bottom-up” approaches to adaptation, developing frameworks and methodologies, such as adaptation taxonomies, and focus on aligning adaptation finance with economic development strategies. NGOs emphasize the need for local-level adaptation finance and focus on the challenges of measuring adaptation impacts. They call for better integrating top-down and bottom-up approaches and enhancing cooperation between public and private sectors to make adaptation finance more effective and scalable.

Source: IMF staff.

Note: NGOs = nongovernmental organizations.

Policy Recommendations for Addressing the Adaptation Finance Gap

To bridge the substantial gap in adaptation finance, it is crucial to significantly scale up investments and bring in private sector sources of finance. The estimated $63 billion in adaptation finance in 2022 falls short of the UN’s estimated $194–$366 billion needed annually by 2030 to meet developing economies’ needs alone. Policymakers should prioritize mobilizing additional resources through a combination of public funding, private sector investments, and innovative financing mechanisms. Increased funding is essential to ensure that vulnerable countries can implement effective adaptation measures and build resilience against climate impacts. Although there is broad agreement on the importance of adaptation and the criticality of both private and public sectors involvement in financing it, significant hurdles remain in aligning objectives, defining clear metrics, and creating investment opportunities that appeal to private investors. For the financial industry, this evolution

represents both a challenge and an opportunity to align with global climate goals while securing long-term financial returns.

Closing the adaptation gap will require comprehensive policy reforms, enhanced incentives, and partnerships involving policymakers, financial institutions, businesses, and local communities. Progress in the following key areas is essential.

Defining Adaptation

A clear definition of adaptation is necessary to address challenges in distinguishing it from mitigation. Unlike mitigation, which focuses on standardized investments in emissions reductions and energy efficiency, adaptation encompasses a broad range of sectors and strategies, each with unique characteristics and challenges. Efforts should continue to standardize adaptation definitions and develop metrics that are comprehensive and cover a diverse set of activities and flows. This includes developing frameworks that can capture the diverse nature of adaptation projects while also recognizing their direct or indirect financial benefits. Clear definitions and understanding of adaptation are crucial in ensuring that interventions designed to mitigate climate risks do not unintentionally lead to maladaptation—actions that exacerbate vulnerabilities or create new risks. For financial stakeholders, this is particularly important as it directly affects the effectiveness, sustainability, and return on investment of adaptation projects. Clarifying these definitions will help investors better understand and assess adaptation opportunities, making it easier to commit capital to this essential area.

Improving Adaptation Data and Measurement Methodologies

Enhancing the tracking and measurement of climate finance flows is critical for assessing progress and directing capital effectively. Improved data collection and reporting mechanisms will enable a more accurate evaluation of adaptation finance and its impact. This can be achieved by developing standardized reporting requirements for climate finance, integrating advanced analytics to monitor investments, and ensuring transparency in how funds are allocated and utilized. Better data will not only help identify gaps and inefficiencies but also build trust among investors by providing clear evidence of the impact of adaptation investments. To ensure that adaptation receives a fair share of funding, there needs to be enhanced transparency and accountability in climate finance flows. This involves improving the tracking of adaptation finance, establishing robust monitoring and reporting frameworks, and ensuring that funds are used to meet the intended adaptation objectives. To gain a comprehensive understanding of the adaptation finance landscape and current flows of financing, it is essential to track adaptation activities beyond stand-alone projects. This includes capturing multiple projects under larger programs, as well as individual components, subcomponents, or elements within these projects, especially those that are bank financed. Activities outside of traditional project-based finance should also be considered, including asset classes such as bonds and equities.

Balancing Mitigation and Adaptation

It is crucial to leverage the synergies between mitigation and adaptation actions and strike a balance between funding for climate mitigation and adaptation efforts. Successful mitigation can reduce the need for adaptation in the future, while effective adaptation can help communities cope with changes that are already inevitable, while preventing further emissions through measures like sustainable agriculture and forest management. Policymakers should advocate for a more equitable distribution of climate finance, ensuring that adaptation receives attention alongside mitigation. This can be accomplished by setting clear objectives for adaptation as a primary focus, promoting policies that support a balanced approach, and incentivizing investments in both areas through targeted financial instruments. Blended finance models, green bonds, and climate risk insurance are examples of instruments that must continue evolving to better integrate adaptation and resilience as important channels of private capital mobilization for adaptation projects.

Integrating Adaptation into National and Sectoral Planning

Countries should be encouraged to integrate climate adaptation into their national and sectoral planning processes. A holistic approach to climate resilience involves incorporating adaptation strategies into broader development plans, infrastructure projects, and sectoral policies. This integration ensures that adaptation measures are not isolated but complement and enhance overall development objectives. National authorities can facilitate this by creating guidelines for integrating adaptation into planning and fostering collaboration between different sectors and stakeholders. The IMF can play a role in this context by illustrating the macroeconomic implications of climate risks and the benefits of investment in adaptation, thereby helping ensure that adaptation finance is not only a tool for risk mitigation but also a catalyst for sustainable development.

Expanding Integration of Adaptation across All Asset Classes and Climate Projects

Blended finance is necessary but not sufficient to scale up private sectors investments in adaptation. Beyond blended finance approaches, there is a need to integrate adaptation activities across all asset classes and climate projects, both public and private. This will broaden the appeal of adaptation investments across various sectors and markets. Project preparation facilities are crucial for adaptation as they provide the necessary framework and resources to effectively plan and implement adaptative strategies. Financial institutions should be encouraged to incorporate adaptation considerations into their investment portfolios, and policymakers should support the development of financial products that address adaptation needs. By mainstreaming adaptation into all asset classes, the financial industry can achieve a more comprehensive approach to climate resilience and attract a wider range of investors.

Supporting Vulnerable Countries

Ensuring that developing economies have easier access to climate finance is a priority. To address the adaptation finance gap, it is essential to provide targeted support to countries that are most vulnerable to climate impacts. This includes simplifying access to climate finance, providing capacity-building support, and ensuring that funding mechanisms are accessible to smaller and less-resourced countries. International cooperation and support mechanisms should be designed to address the specific needs of these countries and facilitate their participation in adaptation efforts.

Building Capacity

Building expertise should be a priority, as adaptation requires different and, in some cases, more technical skills. Financial firms cite a lack of knowledge and uncertainty as key barriers to allocating more capital to climate adaptation projects, both generally and in emerging markets specifically. Firms struggle to make a solid business case for adaptation projects, given the difficulty of articulating business and financial impacts. Capacity-building initiatives should focus on enhancing the skills and knowledge needed to develop, implement, and manage adaptation projects. By strengthening the capacity of all actors involved, the adaptation finance ecosystem can become more robust and better equipped to address climate challenges. This involves providing technical assistance, facilitating knowledge sharing among countries, and supporting the development of local expertise in adaptation planning and financing. Increased investment in capacity building for countries is paramount, especially low-income and vulnerable ones, to better understand and manage adaptation finance.

Role of the Resilience and Sustainability Trust

IMF's Resilience and Sustainability Trust (RST) can play a catalytic role in the adaptation finance landscape. The RST's focus on providing longer-term, affordable financing to address structural challenges, including climate change, exemplifies how targeted financial instruments can support adaptation and resilience. In particular, the Resilience and Sustainability Facility has provided the opportunity for authorities convene climate finance country roundtables in close partnership with the IMF and other major stakeholders—the World Bank, regional MDBs, and other public and private actors. The roundtables serve as platforms for discussion

and collaboration among policymakers, international organizations, and the private sector, aimed at developing solutions that link climate goals with macroeconomic policies. These discussions provided a unifying umbrella for the identifying (1) key barriers to increased climate financing; (2) complementary reforms, capacity development needs, and comparative expertise; and (3) programmatic approaches (for example, frameworks for developing financing vehicles) for crowding in additional financing. The IMF's macroeconomic perspective allows these types of discussions to be embedded in the broader macroeconomic framework.

Annex 1. Overview of the Market Participants Perspective on Mitigation versus Adaptation

While mitigation offers clear and standardized investment opportunities focused on emissions reductions and energy efficiency, adaptation requires navigating a far more diverse landscape. The wide range of sectors involved in adaptation, combined with the often-absent direct revenue streams and the lack of standard metrics, creates significant challenges for the financial industry in evaluating, pricing, and scaling adaptation investments. This complexity, along with the perception of adaptation as a fragmented and niche area, makes it harder for investors to commit capital to adaptation compared with mitigation, where the pathways are well established and more predictable.

Mitigation investments are focused on reducing or preventing greenhouse gas emissions. The narrow focus of mitigation is concentrated in sectors with well-established technologies, standardized metrics, and clear financial returns. Across mitigation sectors, the availability of standardized metrics (like CO_2 emissions reductions), established technologies, and proven business models gives the financial industry confidence in evaluating, pricing, and scaling mitigation investments. This results in a more predictable risk-reward dynamic and clearer returns on investment.

The key sectors include:

- **Energy:** Investments in renewable energy sources like wind, solar, and hydropower are the cornerstone of mitigation finance.
- **Transport**: Mitigation investments here focus on reducing emissions through electrification (for example, electric vehicles), improving fuel efficiency, or supporting public transit projects.
- **Industry:** Mitigation strategies in the industrial sector include carbon capture and storage, cleaner production techniques, and energy-efficient technologies.
- **Forestry and Land Use:** Reforestation, afforestation, and sustainable land use practices are part of mitigation strategies because they sequester carbon. These are increasingly supported by carbon markets, giving investors the ability to monetize their impact through carbon credits, further incentivizing finance.

By contrast, adaptation investments aim to make societies more resilient to the impacts of climate change, and they cover a much broader spectrum of sectors, each with its own complexities:

- **Agriculture:** Adaptation in agriculture includes efforts like improving crop resilience to droughts, pests, and floods, developing climate-resistant seed varieties, and introducing water-efficient irrigation systems. These projects must be highly localized, as climate impacts vary drastically by region. The outcomes of adaptation investments in agriculture can be difficult to quantify, as they focus more on reducing future risks (for example, crop failure) rather than generating immediate returns.
- **Water Resources:** Adaptation in water management involves investments in infrastructure for water storage, flood prevention, irrigation, and sanitation systems. Projects like building seawalls, improving drainage systems, and ensuring clean water access are critical for communities facing increased risks of floods, droughts, and rising sea levels. The financial returns on these investments are often indirect, such as reduced disaster recovery costs, making it harder for investors to quantify potential payoffs.
- **Health:** Adaptation in the health sector might focus on strengthening public health systems to deal with climate-related diseases, improving access to clean water, and enhancing healthcare infrastructure to withstand extreme weather events. The benefits, such as reduced health care costs or improved public health outcomes, are harder to measure in financial terms, especially over shorter investment horizons.
- **Infrastructure:** Building climate-resilient infrastructure (for example, roads, bridges, urban systems) is another core area of adaptation. This includes designing infrastructure that can withstand floods, extreme temperatures, and other climate impacts. Although these projects often provide societal benefits, they may

not immediately offer the financial returns that private investors expect, as they are more focused on long-term risk reduction and resilience-building.

- **Ecosystems:** Protecting and restoring ecosystems like wetlands, mangroves, and forests can help mitigate climate impacts (for example, acting as buffers for storms or floods), but adaptation investments in these areas are often viewed as yielding public goods—benefits that society as a whole enjoys, but which are difficult for investors to monetize directly.
- **Urban Development:** Adaptation investments in urban areas might involve improving housing, transportation, and public services to be more resilient to climate change. These projects often require large-scale public and private collaboration, and the financial returns depend on local contexts and long-term urban planning, making it difficult to assess short-term profitability.

Key Challenges in Adaptation versus Mitigation for Investors

- **Broader Scope:** As discussed previously, adaptation spans a wide array of sectors, each with different metrics, strategies, and timelines. The financial industry struggles to apply a uniform approach to such diverse and complex sectors. Mitigation investments, on the other hand, have narrower, more clearly defined pathways, allowing investors to specialize in a particular area (like renewable energy or energy efficiency).
- **Indirect Benefits:** Many adaptation projects focus on reducing future risks (for example, disaster preparedness, resilience to extreme weather) rather than delivering immediate financial returns. Investors prefer sectors where outcomes like energy savings or carbon credits can be directly monetized, as in mitigation projects. Adaptation's benefits often come in the form of avoided costs or long-term resilience, which are harder to measure and quantify in financial terms.
- **Lack of Standardization:** In mitigation, metrics like tons of CO_2 reduced or energy savings are widely accepted and allow for comparisons across projects. Adaptation lacks standardized metrics to track success across different sectors. The financial industry is reluctant to invest in projects where success cannot be easily measured, compared, or reported.

Localized Nature: Adaptation investments must be tailored to specific local conditions, making it difficult to scale solutions. For instance, flood prevention strategies in coastal cities will differ significantly from those needed in drought-prone regions. This localization complicates the financial industry's efforts to standardize investment models and assess risks. Mitigation, by contrast, can often be applied globally (for example, a solar project in one country can use a similar business model elsewhere).

Annex 2. Definition of Adaptation across Adaptation Finance Ecosystem

One of the most widely adopted definitions of adaptation comes from the Intergovernmental Panel on Climate Change which defines it as the "adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities." The Intergovernmental Panel on Climate Change further refines this by distinguishing between different forms of adaptation, such as anticipatory versus reactive adaptation, private versus public adaptation, and autonomous versus planned adaptation.

Since the Paris Agreement established the framework for signatories to develop national adaptation plans, over 50 member countries have submitted their plans. While the adaptation definitions within these national adaptation plans generally align with that of the United Nations Framework Convention on Climate Change, they differ in their level of specificity, reflecting the unique climate risks each country faces. For instance, the United States adopts a broader definition: "climate change adaptation or climate adaptation means taking action to prepare for and adjust to both the current and projected impacts of climate change," with a primary goal of "protecting human health and the environment as climate changes and disruptive events increase." On the other hand, the Philippines, ranked highest on the World Risk Index, takes a more nuanced approach akin to the Intergovernmental Panel on Climate Change. It defines adaptation in human systems as "the process of adjustment to actual or expected climate and its effects, to moderate harm or exploit beneficial opportunities," while in natural systems, "it is the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate and its effects."

A joint report by multilateral development banks defines adaptation as activities that "aim to reduce the risks or vulnerabilities posed by climate change and to increase climate resilience," while outlining principles for identifying and tracking adaptation finance investments. However, public institutions have adopted a broader interpretation of resilience, taking a more forward-looking and holistic view. This broader approach suggests that when adaptation is conducted in isolation, it may even undermine long-term sustainability. Resilience is framed as a combination of coping, evolving, adapting, and transforming, in that order. In this context, adaptation occurs when a society has reached its limit in coping with climate risks.

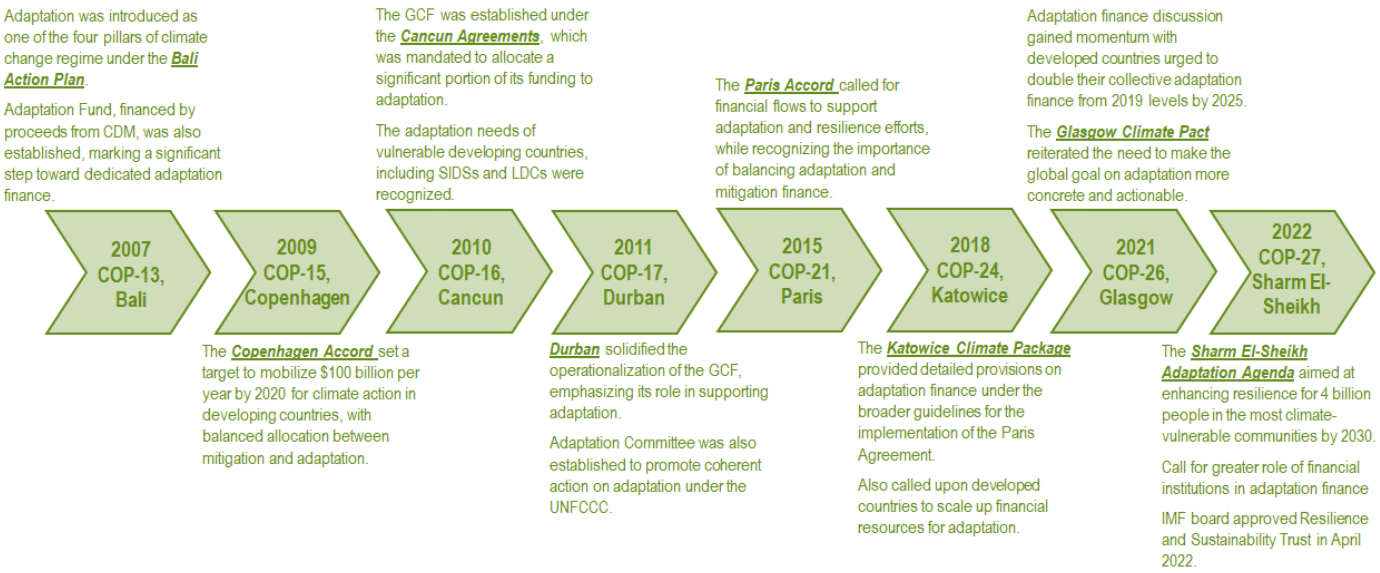
In the private sector, adaptation and resilience are often conflated or used interchangeably. Adaptation is generally seen as the process leading to resilience against natural hazards. For example, a Standard Chartered Bank's report identifies adaptation as "the process of adjusting practices, systems, and structures to moderate potential damage and cope with the consequences of natural and climate-related hazards, including adjusting socio-economic and environmental practices to limit damage." The report further groups adaptation with resilience, defining resilience as "the ability of a system, community, or society exposed to hazards to resist, absorb, accommodate, adapt to, transform, and recover from the effects of a hazard in a timely and efficient manner, including the preservation and restoration of its essential basic structures and functions through risk management."

This lack of clarity between adaptation and resilience highlights a challenge for private investors, especially because of the absence of globally standardized metrics for adaptation success, given the localized nature of adaptation. It also underscores the importance of credible labeling and taxonomies within the investor community to ensure effective adaptation investments.

Annex 3. Evolution of "Adaptation Finance" in Global Climate Negotiations

In the early 2000s, the international community began to recognize the need for dedicated financial resources for climate adaptation. The Marrakesh Accords of 2001 at the 7th Conference of the Parties (COP7) established the first institutional frameworks for adaptation finance, highlighting the importance of funding to cover adaptation costs setting the stage for future discussions on mobilizing and allocating resources to help developing economies cope with climate change. Subsequent COPs focused on formalizing adaptation finance within the global climate policy framework progressively setting up various bodies (such Adaptation Committee in 2010) and mechanisms under the United Nations Framework Convention on Climate Change mandate (such as Adaptation Fund in 2007, the Green Climate Fund in 2010, and so on) for the distribution of climate finance, specifically adaptation finance, laying the foundation of the adaptation finance ecosystem. Annex Figure 3.1 provides the timeline of the evolution of the adaptation finance in global climate negotiations and agreements at COP.

Annex Figure 3.1. Timeline of the Evolution of "Adaptation Finance" in Global Climate Negotiations



Source: IMF staff.

Note: CDM = clean development mechanism; COP = Conference of the Parties; GCF = Green Climate Fund; IMF = International Monetary Fund; LDCs = least developed countries; RST = Resilience and Sustainability Trust; SIDS = small island developing states; UNFCCC = United Nations Framework Convention on Climate Change.

In the latter part of 2010s, adaptation finance gained increasing prominence in international climate policy discussions, expanding its stakeholder base beyond the public sector. Subsequent COPs emphasized the importance of improving access to finance for developing economies, enhancing the effectiveness of adaptation actions, and focusing on loss and damage associated with climate change impacts. IPCC AR5 (2014) significantly advanced the treatment of adaptation in its guidance, emphasizing the importance of early planning and the role of financial institutions in supporting adaptation efforts, highlighting the need for increased investment to build resilience, especially in developing economies (IPCC 2014). Established in 2018, the Global Commission on Adaptation aimed to accelerate adaptation efforts globally and to mobilize governments, businesses, and international organizations. It led to the establishment of the Global Center for Adaptation in 2019 to support adaptation solutions at the international and the local levels by partnering with the public and the private sectors (GCA 2019).

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