



Climate Change Adaptation and Role of the Coalition of Finance Ministers for Climate Action

November 2022

Authors and Acknowledgements

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Foreword

The Coalition of Finance Ministers for Climate Action recognizes the need to deepen our understanding of adapting to climate change risks and impacts. The Coalition’s 2022 Work Programme addresses this need and focuses on the ways in which adaptation can be integrated into its work across the six Helsinki Principles.

The adaptation agenda is rising globally. The COP26 climate conference in Glasgow (2021) underlined the importance of measuring and financing adaptation efforts, and COP27 in Sharm el-Sheikh (2022) has often been referred to as “the Adaptation COP” as well as “the Africa COP”—a part of our world where adaptation needs are the most urgent. In this context, it is not surprising that many multilateral development banks and other global organizations have developed climate strategies that emphasize the critical macroeconomic risks posed by climate change, and put climate change adaptation at the center of development and growth priorities. These climate strategies align with the objectives of the Helsinki Principles.

Coalition Members identified a growing need to address adaptation in a way that would allow them to share and discuss their climate adaptation policies, financing strategies, and regional challenges in a comprehensive way. The Coalition decided to undertake this new cross-cutting work to support ministries of finance in assessing and managing climate risks, and builds on the Coalition’s earlier reports on that touch on this topic.

Cross-cutting activities on adaptation began in earnest with a workshop in April 2022 in Washington D.C., showcasing the experiences and analysis of Coalition Members and Institutional Partners. Since then, the Coalition has engaged in a number of high-level discussions on adaptation challenges, including in Cairo on 7-9 September at the Meeting of African Finance and Environment Ministers in preparation for COP27. As a follow-up to these discussions, and supported by the Finance Ministry of Egypt, the Coalition agreed to center its Ministerial discussion at COP27 on climate adaptation challenges from an economic, fiscal, and financial policy perspective.

This report is expected to serve as inspiration for the Ministerial discussion and as a key input for future Coalition work and activities on the adaptation agenda. We look forward to fruitful discussions amongst Members, Institutional Partners, and external stakeholders in Sharm El-Sheikh, and stand ready to take further steps in 2023 in supporting our joint efforts.

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1. Introduction

The Earth's climate is changing rapidly and will increasingly affect our economies. These economic impacts threaten economic growth and public welfare at all levels. At the macro-level, climate impacts can disrupt fiscal balances, create trade shocks, increase financial sector instability, and worsen debt sustainability. At the sector-level, it can hurt agricultural productivity, disrupt regional supply chains, and create water shortages or floods for entire cities or regions. At the local level, it can lead to sickness and death, and destroy both commercial and household assets and incomes. The negative effects of extreme events can last for months or even years, and the impacts of slow-onset climate impacts require even more fundamental economic transitions.

For these reasons, adaptation efforts needed to minimize losses from climate change are becoming increasingly important for Finance Ministries to understand and act on. Ministries of Finance have an essential role in facilitating the adaptation efforts needed, across the spectrum of governance and government domains, to adjust to the immediate impacts of climate change, as well to those that lie ahead. Finance ministries' roles will need to expand as climate change affects or threatens all sectors of the economy, in turn creating ever-growing demands for government responses, all of which will incur a financial cost. Designing sound adaptation policies will necessitate critical understanding not only of the magnitude of climate-change impacts, but the financial burden these have wrought throughout their national economies.

Members of the Coalition of Finance Ministers for Climate Action (the 'Coalition') recognize the relevance of climate adaptation policies as integral to economic and financial policies. Acknowledging that climate change adaptation is a critical factor in all economic policy concerns—macro-economic, fiscal, and financial systems—that affect sovereign access to finance and economic viability is a crucial step toward climate resilience.

The Helsinki Principle (HP) workstreams have independently touched on aspects of adaptation. Relevant areas include long-term strategies (HP1), training programs, research and governance issues (HP2), carbon pricing as a source of revenue and financing, together with other policies (HP3) modeling fiscal risk (HP4), financing resilience and understanding the climate-related risks (HP5), and embedding adaptation into NDCs (HP6). Combined, this work can help member countries understand the economic magnitude, costs, and impacts of climate change; explore approaches to improved adaptation and resilience; develop financing strategies; and build capacity. Streamlining and integrating these foci under Adaptation workstream will encourage better strategies and policies to meet adaptation goals.

This report contributes to the upcoming COP 27 in Sharm el-Sheikh, Egypt from 6–18 November 2022. As the Coalition moves forward with its Work Programmes, it will integrate adaptation as a cross-cutting factor within each of the Helsinki Principles workstreams.

The objectives of this report are to:

1. Underline the macro-critical economic factors of climate adaptation for ministries of finance.
2. Highlight significant policy issues related to adaptation for finance ministers.

3. Identify how the Coalition could best contribute to the adaptation efforts of finance ministries, and suggest a way forward.

The report is organized in three, thematic sections: section 2 presents the background and overview of climate adaptation as it pertains to adjusting economic policies and financing strategies; section 3 discusses the ways in which ministries of finance can integrate adaptation into the mainstream policy agenda; and section 4 proposes ways in which the Coalition’s work priorities can support adaptation efforts.

Drawing on several sources—including peer-produced publications; the information discussed in the Coalition’s first adaptation meeting (20 April 2022)¹; the member-country experiences shared in that meeting (Annex 1); responses to a member-country survey (Annex 2); and a survey of the adaptation capacities/roles of international financial development partners (Annex 3)—this paper is intended to inform and contribute to the COP 27 discussions in Egypt, while guiding further development of the Coalition’s adaptation Work Programme.

¹ This session built on the discussion that took place in the HP5 workshop hosted in October 2021, [The Role of Ministries of Finance in Driving Resilient Investment and Investment in Resilience](#)

2. Framing the Adaptation Challenge and Reshaping Public Finances

The critical risks and effects of climate change (whether through extreme shocks or slow changes) necessitate a variety of changes in the way governments govern, reshaping the landscape and the agenda. The economic impact of these risks include shocks to GDP, employment, public debt, inflation, fiscal balances, trade balance, industrial production, and retail sales. Ministries of finance respond to all of these by adjusting economic policies and financing strategies. New adaptation policies, programs, and actions that address climate change factors are needed within every department or ministry. Where these are already in place, they must be revised or redirected continually as the ripple effects of climate change spread.

Both climate impacts and adaptation measures directly and indirectly affect public finance. The public budget provides a good example of public policy responses to climate change. It is directly affected by higher expenditures caused by climate change (e.g., disaster relief or reconstruction of damaged public infrastructure from extreme climate events, relief payments for agriculturalists affected by drought or flooding, etc.); thus requiring fiscal space for contingency planning. Bangladesh and the Philippines, for example allocated from six to seven percent of their national budgets to climate adaptation. Indirectly the public budget is affected by changes in the tax base (via sectoral spillovers and macroeconomic feedback effects) and, thus, also tax revenues (Bachner, Bednar-Friedl, and Knittel 2019). Indirect effects also include those that result in deeper structural changes in the economy, such as greater social inequalities, which will occur (and intensify) over time and not be immediately visible, but will, nonetheless, have a profound impact on public finances.

By reducing the systemic, underlying risk in the economy, many adaptation actions generate higher rates of return than often thought. Adaptation actions generate triple dividends in terms of avoided losses and damages, economic benefits, and socio-environmental (non-market) benefits (GCA 2019). Economic benefits are the accrued dividends through investments in adaptations that decrease risk or improve outcomes, including reduced risk of flooding, lower costs of insurance, lower maintenance and repair costs, and increased income (WRI 2022). The economic benefits can be measured with some certainty while those accrued through avoiding losses are more difficult to quantify.

The socio-environmental benefits of adaptation policies are indirect. These occur, for example, through interventions affecting water or coastal-zone management or drought and desertification-prone areas. The same adaptation investments can lead to socio-environmental dividends to communities in the form of improved social and economic health; and to improvements in production, especially in employment-intensive sectors (e.g., agriculture), and hence positively impact GDP, employment, and income.

Analysis of various types of adaptation investments has shown that benefits across categories (e.g., forests, urban environments, drainage, flooding, drought, etc.) can arise, even if the climate risk events did not occur. Moreover, benefits that accrue, even when the anticipated disaster does not occur, are often *larger than* the “avoided losses” (made possible by the adaptation investment) that accrue when

disaster does strike. This implies that adaptation investments that reduce the perceived risk of climate change are as important as relying strictly on the probabilities of disaster risk.

High-level reports such as the IPCC report on Adaptation (Pörtner et al. 2022) and by the [Global Commission on Adaptation \(GCA\)](#) increasingly stress the importance of adapting to the risks of climate change and the need for countries—and the global community—to step up action. This broad global concern is why COP27 in Sharm el-Sheikh is also often called “the Adaptation COP.” A key topic of discussion will be implementing the commitment made at COP26 to double the level of international adaptation finance from 2019 levels by 2025.

Adaptation is a critical macro-economic issue in many countries, but there is a range of financial, governance, institutional, and policy constraints limiting adaptation (GCA 2019). Responses from a survey of Members of the Coalition illustrate the wide range of adaptation challenges they are facing as they confront multiple types of climate risk (Annex 2). From droughts (particularly impacting agricultural production), floods (particularly impacting land assets and the built infrastructure), to the slow onset of rising sea levels and temperatures, each risk requires a detailed assessment. Hence, it is not surprising that methodological challenges—to assessing adaptation costs and benefits (needed for adaptation financing), accessing finance, and increasing capacity to address adaptation issues—clearly came through as key challenges in the survey response (Box 2). The uncertainty surrounding modeling and measurement of macroeconomic impacts of climate change makes public action in adaptation, especially in assessing, monitoring, and regulating risks, even more challenging.

Box 1: Projecting Fiscal Impacts

By 2030, without climate action, upto 132 million people will be pushed into poverty by climate change impacts, primarily in sub-Saharan Africa and South Asia (Jafino et al. 2020). Disasters triggered by weather- and climate-related hazards cost the global economy US\$320 billion in losses in 2017, alone (Low 2018).

According to the Climate Risk Index 2021, which focuses on extreme climate weather events, in the 2000–2019 period, Puerto Rico, Myanmar, and Haiti were the most affected places followed by the Philippines, Mozambique, the Bahamas, and Bangladesh with losses per unit of GDP ranging from 0.41 to as high as 3.81 percent. Sudden onset disasters like storms, floods, and wildfires are also taking a heightened toll in developed countries. In 2021 the [United States recorded 20 separate](#) billion-dollar disasters, and recorded the fourth warmest year in 127 years in the contiguous states.

Slow-onset issues, such as sea level rise, sea salinity, drought, and permafrost affect the economy in ways that are different from those of sudden onset disasters. Especially changes in rainfall threatens to affect hundreds of millions of farmers in Africa and Asia by affecting their livelihoods through long-term exposure. Consecutive years of below-average rainfall in parts of the Horn of Africa have created one of the worst climate-related emergencies of the past 40 years, the effects of which have been compounded by the COVID-19 pandemic, conflict, and now (2022) surges in food and commodity prices. More than 18.5 million people in Ethiopia, Kenya, Somalia, and Djibouti face humanitarian crisis including food insecurity, displacement, and depletion of assets due to lack of sustainable livelihoods.

The estimates of fiscal costs and adjustment needs, as reported by countries, are significant. For example, the government of Pakistan has estimated the potential costs of the recent (2022) unprecedented floods in the country could be as high as US\$40 billion, amounting to about 10% of GDP. Several developing countries are spending as much as six to seven percent of their national budget on climate adaptation. In the Philippines the tagged climate budget for 2021 was about 6.26 percent of the total national budget, 97 percent of which was allotted for adaptation. According to the [Climate Budget Report of Bangladesh](#), more than seven percent of the national budget was allocated to tackling climate change between 2021 and 2022. It currently spends US\$1 billion a year on climate-change adaptation. Three-quarters of the money spent on climate change in the country comes directly from the government, while the rest comes from international development partners. The Government of Bangladesh estimates that the National Adaptation Plan will cost US\$230 billion to implement over years.

Box 2: Adaptation Challenges: Survey Responses

In a survey conducted by the Coalition Secretariat, Members were asked to identify their country's main adaptation challenges. The responses can be grouped broadly into following areas of challenge and/or risks.

1. Indirect and direct economic impacts of climate risks:

- Biodiversity loss and ecosystem challenges
- Imbalances between energy supply and demand
- Spread of diseases, pests, and invasive species
- Irreversible landscape damages
- Infrastructure resilience including in transport sector
- Food security
- Health costs
- Displacement of people
- Water: surface and groundwater quality, water scarcity
- Agriculture and forestry: crop productivity, agricultural output, forest sector production value
- Tourism: maintaining attractions
- Financial institutions and economic regulations

2. Preparedness, residual risk management, and monitoring:

- Preparing the population to face climatic extremes
- Improving risk and vulnerability assessments, especially at local scale
- Integrating local-scale assessments into adaptation plans
- Strengthening national and sub-national coordination (vertical and horizontal)
- Creating awareness on synergies between development and adaptation
- Emergency management
- Local capacity building
- Improving monitoring and reporting systems, including assessing effectiveness, and tracking progress with indicators

3. Financing adaptation plans:

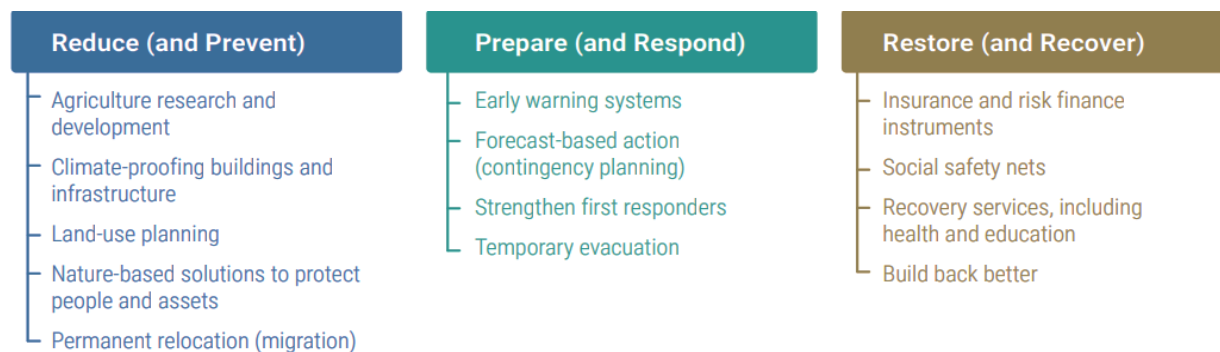
- Lack of financial resources to invest in adaptation strategies
- Engaging the private sector
- Improving financial flows
- Better data and methodologies for risk assessment, investment feasibility, and financing needs
- Developing financing strategies

2.1 Economic Policy Planning

Adaptation is integral to development and requires a whole-of-economy approach (GCA 2019, Hallegatte, Rentschler, and Rozenberg 2020). Adaptation is often described as climate-resilient development and there is evidence of strong synergies between climate resilience and development (Bellon and Massetti 2022a). More development and greater resilience create a virtuous circle where the two positively reinforce each other. Yet achieving these synergies requires a “whole-of-economy” approach: climate risk is integrated into all standard government and corporate processes, from strategy and policy development to budget formulation and investment decisions. Finance ministries, working in coordination with other ministries, particularly environment and economic planning, would be the best choice to oversee a whole-of-economy approach.

Managing climate risk will entail deploying the full spectrum of potential adaptation solutions, from those that reduce exposure and vulnerability to preparing for and recovering from climate impacts (Global Commission on Adaptation 2019). In Figure 2, the left side of the table outlines *a priori* investments for thinking ahead and designing better. These investments aim to reduce risk by making vulnerable sectors—such as agriculture, water, transport, cities, and energy—more climate resilient. The right side of the table outlines financial policies and mechanisms that could be deployed if extreme weather events or slow-moving climate change impacts occur. This includes insurance, contingency finance, social safety nets, and budgeting to cover liabilities. In the center of the table are policies that can help countries prepare for extreme events, including early warning systems and more-accurate weather forecasting.

Figure 2: Adaptation Policy Response Matrix



Source: Global Commission on Adaptation (2019)

Ministries of finance are the central agencies charged with creating budgets that allocate finite resources across all government spending agendas. They are responsible for working with all other ministries/departments to apportion funds to every sector for every policy or initiative (e.g., health, education, trade, housing, agriculture, industry, environment, etc.) including climate adaptation. Not only do ministries of finance face the fundamental challenge of balancing budget expenditures across sectors (e.g., reducing risk in agriculture vs infrastructure), they also face the fundamental challenge of balancing

budget expenditures between ex ante risk reduction and ex post risk management. Cost benefit analyses for many expenditures can help identify the best use of resources, including for adaptation programs, like any other development program. While such exercises have limitations (such as a shortage of data, unknown future variables, outcome biases, etc.), they can play an important role in helping decision-makers maximize the impact of their spending, while balancing efficiency and equity concerns according to government priorities.

2.2 Adaptation Financing

Despite increased acknowledgement of the importance of adaptation, the high benefit-cost ratios of investment² and some recent positive trends in adaptation financing, the scale of adaptation financing is far below estimated existing and future needs. According to the [Climate Policy Initiative \(December 2021\)](#), total adaptation financing amounted to around US\$45 billion (annual average over 2019 and 2020). Although this represents an increase of over 53 percent from US\$30 billion in 2017/18, it remains a tenth of the level of mitigation financing, which amounted to over US\$550 billion over the same period. To put these figures into perspective, the UNEP 2016 Adaptation Gap Report estimated that annual costs of adaptation in developing countries alone could range from US\$140 billion to US\$300 billion annually by 2030 and rise from US\$280 billion to US\$500 billion by 2050. [The IMF estimates](#) that adaptation financial needs exceed 1% of GDP per year in about 50 low-income and developing economies, rising up to 20% of GDP for small, island nations exposed to tropical cyclones and rising seas (IMF [2022](#)).

Current adaptation investment projects are mainly financed by the public sector, with development finance institutions accounting for almost 80 percent of total adaptation financing (CPI 2021). Given the cross-cutting nature of adaptation, tracking of public domestic spending on adaptation is limited and private sector financing of adaptation is largely missing.³ The current limitations in adaptation-finance tracking also hinder tracking progress in increasing support for emerging and developing countries, which is a critical aspect of the Glasgow Climate Pact.

Private sector investments in adaptation have been constrained by many factors including lack of country-level climate risk and vulnerability data, limited clarity on governments' capital investment gaps to achieve adaptation goals, and low perceived and actual returns on investment (Tall et al. 2021). There is also a large insurance gap—in 2020 the costs or “stated damage” from natural disasters was reported to be around US\$210 billion. ([Munich Re 2021](#)) of which 60 percent was uninsured.

² Based on a review by the GCA (2019), the overall rate of return on investments in improved resilience is very high, with benefit-cost ratios ranging from 2:1 to 10:1, and in some cases even higher. The Commission also estimated that investing US\$1.8 trillion globally in five areas (early warning systems, climate-resilient infrastructure, improved dryland agriculture, global mangrove protection, and investments in making water resources more resilient) from 2020 to 2030 could generate US\$7.1 trillion in total net benefits.

³ The WB/IFC report: “[Enabling Private Investment in Climate Adaptation and Resilience : Current Status, Barriers to Investment and Blueprint for Action](#)” (Tall et al. 2021) states that for the period of 2018, only 1.6% of the global adaptation flows were sourced from private financing. The minimal amount of tracked adaptation finance is a result of barriers in both mobilizing and tracking private sector investment. Challenges associated with tracking private sector adaptation investments which context dependency, confidentiality restrictions, uncertain causality, and lack of agreed upon metrics (CPI 2021).

The costs of climate change impacts are rising and estimates of adaptation costs and benefits are still uncertain, which makes assessing returns on adaptation investments difficult. Adaptation investments need not only to respond to today’s climate, but to the climate in 2030, 2050, and beyond. As such, even if mitigation efforts are, to an extent, making progress in the short term, adaptation investment costs will mount over time. To take one example, adapting to a 30-centimeter versus a 3-meter sea level rise will have vastly different investment costs. In addition to extreme weather events becoming more frequent and severe, other economic factors and social trends are contributing to rising damage. For example, the value of exposed assets and incomes is increasing, the exposed population is growing and aging, vulnerable areas are increasing in size, and environmental degradation is decreasing resilience, all of which add significantly to the financial and social costs to societies.

Responses to the Coalition’s adaptation survey revealed a wide divergence in the expected impacts and costs of adaptation actions (Annex 2).

Box 3: Adaptation in the COP26 and COP27 Agendas

The Egyptian COP27 President Designate identified adaptation as a key focus area. This builds on the [IPCC report on adaptation](#) (March 2022) and the outcomes of COP26. Specifically, the [Glasgow Climate Pact](#) made the unprecedented call for developed countries “to at least double their collective provision of climate finance for adaptation to developing countries from 2019 levels by 2025...” (UNFCCC 2022). OECD (2021) estimates that this commitment will raise the annual figure to around US\$40 billion. In addition, over US\$450 million was [announced](#) for “locally-led adaptation approaches”, and the Adaptation Fund raised a [record US\\$356 million](#) in new pledges. The UN Secretary General has called for a 50/50 balance between mitigation and adaptation financing.

For COP27, the world is expecting stronger adaptation finance commitments, from both developed and developing economies. A creative and inclusive approach will be needed to meet the adaptation finance goals. The COP27 Presidency will be working on several tracks to highlight the importance of adaptation and resilience issues. Most developing countries have either provided their adaptation plans or have made clear the need for support to deal with loss and damage.

It was proposed that, for the adaptation agenda to achieve substantive outcomes, there is a need to:

1. Create quantification platforms or facilities for targeted adaptation support.
2. Showcase success stories in adaptation and determine the mechanisms to support their replicability and scalability (including support from financial institutions and development partners).
3. Promote innovative solutions to finance resilience in developing countries (e.g., debt for resilience and adaptations swaps and/or dedicated additional funding earmarked for adaptation and resilience).
4. Encourage private investors to undergo a transformative change in the way they do business by quantifying climate and environment benefits as part of assessing the cost-benefit analysis of projects.
5. Dedicate allocations for adaptation.

3. The Role of Finance Ministries in Prioritizing Climate Adaptation

Finance ministries have a critical role in integrating adaptation into the mainstream policy agendas of their countries. Achieving this will involve formulating a whole-of-government approach to adaptation, integrating adaptation policies into macro-fiscal policies, ensuring country's access to finance, and creating an enabling environment for private sector financing. Based on analytical work and recommendations of the IMF⁴, the World Bank⁵ and the WRI, the Coalition has identified key adaptation strategies and policy issues for finance ministries. These strategies make a distinction between what needs to be done within line ministries and how the MoF should do to integrate climate risk into its responsibilities. Such a “whole-of government” approach can be driven by the MoF, given its overall view of the economy and its unique convening role, but may require a specific mandate. This approach applies across ministries, but also applies to the MoF's relations with territorial and sectoral public and private bodies. By drawing in private investors with the offer of support from the public sector, MoFs can widen the toolkit for adaptation measures.

- 1) ***Strengthen planning and in-house capacity for formulating a whole-of-government approach to managing climate risks as part of economic policy across sectors.*** Mainstreaming climate adaptation across the whole of government means collaborating, not just with line ministries, but with all relevant departments and agencies to implement a coordinated response for robust adaptation policies. Ministries of finance can spearhead the engagement needed to promote understanding of the need to plan for climate risks in their policies, programs, and projects. Only then can finance ministries design the overall public financial management plan according to the financing needs of different sectors. Climate concerns need to be addressed at the project design, implementation, and evaluation stages.

Since some climate risks are cross-sectoral, such as flooding, adaptation strategies must be coordinated across sectors (such as transport, water, energy, health, and agriculture). Fostering coordination across all public sector stakeholders, including public corporations and subnational governments, which might play extensive roles in achieving adaptation objectives, will strengthen the planning and actionable components of adaptation policies.

⁴ The IMF has developed principles to integrate adaptation to climate change into fiscal policy through three recently published staff climate notes. The first one, [“Economic Principles for Integrating Adaptation to Climate Change into Fiscal Policy”](#) (Bellon and Massetti, 2022a) sets the stage by examining the economic principles that can guide the integration of climate change adaptation into fiscal policy. The second one, [“Macro-Fiscal Implications of Adaptation to Climate Change”](#) (Aligishiev et al. 2022) reviews and presents evidence on the macro fiscal implications of climate change adaptation with a goal of guiding fiscal policy. The third, [“Planning and Mainstreaming Adaptation to Climate Change in Fiscal Policy”](#) (Bellon and Massetti, 2022b) discusses how to translate adaptation principles and estimates of climate impacts into effective policies.

⁵ The World Bank's [“The Adaptation Principles: A Guide for Designing Strategies for Climate Change Adaptation and Resilience”](#) (2020) lays out six principles—as well as 26 actions, 12 toolboxes and 111 indicators—that can help ministries of finance approach adaptation challenges

Embedded external advisors within government ministries can also help strengthen adaptation planning, particularly in helping ministries prepare projects that are well-suited to international sources of climate finance. Improving in-house expertise within ministries, such as through the World Bank Program of Economic Advisors, can increase awareness of adaptation finance and build capacity to coordinate actions across sectors.

- 2) ***Integrating climate risks and adaptation into macro-fiscal policies.*** Finance ministries should better integrate climate risk adaptation into their core economy-wide functions. These include how they prepare macroeconomic projections and modeling; national revenue and expenditure projections; structural policy reforms; trade policy; debt management; and financial sector supervision (often together with the Central Bank). They can also actively engage in setting Nationally Determined Contribution (NDC) and National Adaptation Plan (NAP) priorities, help evaluate the cost of NDC and NAP investment plans, and support efforts to access international climate finance. Analyzing adaptation impacts as part of ex ante assessments of new government policies, setting up sound fiscal risk management frameworks, and integrating adaptation into the budget process and public investment cycles are part of “green” public financial management (PFM).⁶
- 3) ***Enabling efficient private adaptation and mobilizing private financing.*** Market failures can lead to inefficient private investment in all development projects, including those associated with climate change adaptation. Reducing barriers such as reducing imperfections in credit markets, reducing tariffs on disaster management tools and goods, and removing inefficiencies in insurance markets and in risk pricing, including implicit and explicit subsidies, can foster private investment.

One critical step in enabling private adaptation responses is estimating adaptation financing needs, which, in turn, can inform the private sector—both investors and private financial instrument providers—of adaptation opportunities. However, since many adaptation investments generate little cash flow, adaptation investments often require blended finance instruments where risks are shared with the public sector to reduce costs. Governments, financial regulators, and supervisory bodies including development banks can create an enabling environment characterized by thorough risk management—with better access to credit, knowledge, and services—and improved understanding of the investment landscape by private actors.

The need for comparable and trustworthy data related to companies’ climate-associated physical risks⁷ are not only important for corporate and financial-industry investors but are also an

⁶ For an overview of entry points for the integration of adaptation objectives into PFM and PIM processes, see Gonguet, Fabien, Claude Wendling, Ozlem Aydin, and Bryn Battersby. 2021. *Climate-Sensitive Management of Public Finances—Green PFM*. IMF Staff Climate Note 2021/002, International Monetary Fund, Washington, DC.; and IMF, 2021. *Strengthening Infrastructure Governance for Climate-Responsive Public Investment*. IMF Policy Paper, December 2021. International Monetary Fund, Washington DC.

⁷ The international community has developed several reporting standards to measure sustainability aspects (starting with climate). In order to streamline these efforts, the IFRS-Foundation has set up the International Sustainability Standards Board (ISSB) in Frankfurt and Montreal. It will build on existing reporting frameworks, consolidate them in order to develop a global

essential element for well-targeted policy responses in the field of climate adaptation. Publicly accessible data on climate hazards, uncertainty, and future risks, for no cost or an affordable fee, is also required for efficient private adaptation. Ministries of finance can work towards ensuring that national climate-data producing agencies (e.g., meteorological bureaus, environmental information centers) are well funded and well endowed. Ministries of finance also have a responsibility for communicating and mitigating climate risk exposure of the private sector.

While the Coalition Members are actively addressing the adaptation *finance* agenda, it is also clear that the broader challenges and complexities of adaptation require more attention. Current actions for adaptation finance include the Glasgow Commitments by countries and Multilateral Development Bank (MDB) partners to increase their financial allocations to adaptation, but ways to crowd-in private finance, including for nature-based solutions, are also being explored by Members. For example, financial regulation tools—risk management guidance, stress testing, reporting requirements (e.g. ISSB global baseline)—and innovative instruments such as green bonds and debt swaps, have been identified as possible options. The need to spend not just more, but more effectively, was stressed in survey responses.

The importance of planning and coordination also came through as key messages, with Members starting to build adaptation into their mainstream policy analyses and tools, with National Adaptation Plans at the core. The need for better data and more standardized methodologies was also pointed out consistently. Several Members are leading coordination efforts not just across federal Ministries, but also across levels of local government (and with civil society), reflecting the localized nature of adaptation challenges. Experience-sharing and lessons learned on such complex intergovernmental coordination is welcome (see Annex 1 and 2).

The review of recent reports, feedback from Members, initial survey results, and the advice from Institutional Partners presented above provides a valuable basis for deepening discussion of the role of finance ministries in adaptation, which may include the following action areas:

- Laying out a **whole-of-government approach** to managing climate and sustainability risks as part of economic policy and planning and coordinating adaptation efforts across government bodies.
- **Raising awareness** of climate- and nature-related risks across government domains, the financial industry, and more broadly within society.
- **Strengthening PFM** by factoring climate risks and adaptation plans into budgets and macro-frameworks, and in the management of public investment, assets, and liabilities.
- **Strengthening in-house capacity and expertise** for climate finance and project cost-benefit as part of a whole-of-government approach for climate risk management.
- **Developing monitoring and impact assessment tools** to assess climate adaptation risks and costs to public finance.
- **Supporting the development and sharing of data needed** for climate risk assessments.

baseline reporting standard that can be used in financial decision making across the globe. The baseline will be useful to make data more available, comparable, and trustworthy on the global level. Thus, the global baseline is an important enabler for mobilizing private financial flows – both mitigation and adaptation (according to Art 2.1 Paris Agreement). The ISSB inauguration was announced at the COP 26. The ISSB was supported by the G7 and G20 in 2021. In June 2022, the G7 endorsed, in its Leaders communiqué, the inauguration of the ISSB.

- **Establishing contingency plans and preparedness** strategies to finance climate change-related losses and damage.
- **Developing financial instruments** such as green/adaptation bonds, blended finance, adaptation funds/institutions, etc.
- **Mobilizing private sector financing** for stand-alone or cost-sharing adaptation projects.
- **Ensuring maximum utilization of the financing and expertise** provided by national and international financing partners (NDIs, MDBs, IFIs) are utilized to their maximum extent.

4. The Role of the Coalition in Supporting Adaptation Efforts

The Coalition can support national and global adaptation efforts by encouraging members to pursue actions within and across government to strengthen capacity and share knowledge, mobilize climate finance for adaptation, and support the development of assessment tools with reliable and regular data.

The Coalition's involvement in **capacity development and knowledge sharing** starts with raising awareness about the impact of climate change adaptation on public finances and the economy, identifying key roles for Members in participating in relevant policy formulation. The Coalition can use its wide and varied membership to share best practices and experience on addressing challenges raised by adaptation and provide peer support to Members on specific issues. The specialized skills found in ministries of finance can contribute to regional and global discussions among Members to enrich their collective skills and enhance their contribution to an all-of-government approach to dealing with climate change adaptation.

With its diversity and wide knowledge base, the Coalition can support Members in **mobilizing financial markets** in support of climate change adaptation policies globally. It can identify existing tools and, in cooperation with international financial institutions, including the MDBs, it can identify new ones that can be specifically adapted to channeling adaptation finance. While offering to guide Members in their search for adaptation finance, the Coalition can also bring them together in a spirit of horizontal cooperation, the better to access and rationalize funds provided under climate-adaptation-linked official development assistance.

By pooling resources under the umbrella of the Coalition and sharing methods and tools, Members can refine and adapt their regular procedures to producing **adaptation-related data to feed into whole-of-government policy making** through green budgeting, climate risk incorporated economic modeling etc. The Coalition can also gather technical expertise from its institutional partners on adaptation measurements (on cost, benefits, financing needs), and promote development and use of analytical tools for adaptation measurements. Members have extensive experience over, in some cases, many decades that can be shared to reveal the most appropriate data collection and analysis to contribute to internal and inter-ministerial discussions of meeting the challenges of climate change adaptation. Indeed, sharing expertise and human resources between Members is an efficient and flexible means of enhancing technical capacities and ensuring the production of highest-quality data for policymakers and partners.

With these core benefits of the Coalition in mind, Institutional Partners and Members recommended focusing on several specific issues:

1. Deepening adaptation work through the creation of working groups for strengthening expertise, especially on modelling and measurements, and adaptation finance.
2. Creating roadmaps for mainstreaming adaptation across the Helsinki Principles in time for the UNFCCC COP28. Some initial ideas could include:
 - Experience sharing (integrate with HP2) on
 - Modalities and scope of adaptation financing.

- Implementation: horizontal and vertical coordination of ministries.
 - Monitoring the impacts of adaptation actions, tracking progress of implementing policies and enhancing effectiveness of adaptation measures; and
 - Managing the exposure of the economy and public finances to the risks of climate change and to the budgetary burden of adaptation measures.
 - Coalition access to sovereign disaster-risk training programs (HP2).
 - Guidance and training on integrating adaptation into PFM (HP4).
 - Including adaptation in the core toolbox for macroeconomic modeling and fiscal risk management, green budgeting, and public investment for finance ministries under HP4. Common concepts, terminology, analysis, and methods for assessing the needs and impacts for adaptation should be included in this work.
 - Workshop/roundtable discussion with the private sector on adaptation finance, including risk insurance (HP5).
 - Embedding adaptation into NDCs and long term strategies (LTSs) (HP1/6).
3. Accessing and catalyzing financing:
- Mapping of adaptation-related funds, their guidelines, and how to access financing for adaptation projects, etc.
 - Workshop (with GEF and GCF) on accessing and advancing adaptation financing including presentation by GCF on the role of ministries of finance in successful funded projects (lessons learned and challenges).
 - Workshop on efficient adaptation spending (with IMF/WB IPs).
 - Workshop with The Network of Central Banks and Supervisors for Greening the Financial System (NGFS) on integrating adaptation (including nature risk assessments) into financial sector policies (scenario analysis, stress testing, regulation).
4. Methodologies for adaptation cost and benefits and assessments of financing needs:
- Discuss with IPs who have technical expertise on ways forward for understanding and improving methodologies for more accurate assessment of the financial needs for adaptation, learning from mitigation where methods are more standardized, estimating the benefits of adaptation projects.
 - Discuss with IPs the feasibility of a comparison of methods for integrating the costs of climate change into climate stress tests would help to identify the difficulties that models are currently facing, particularly regarding the exposure of ecosystem services.
 - Training on cost/benefit modeling (partnering with Coalition for Climate Resilient Investment).
5. Specific Coalition outputs on adaptation:
- A paper on adaptation challenges, adaptation impact on public finances, and possibly a guide for finance ministries.
 - A paper on the role of public and private finance for adaptation, and the different financial instruments (with HP5).
 - Documentation of country experience sharing on the role of finance ministries and governance-related issues (with HP2).

Adaptation to the effects of climate change is difficult to achieve, partly because there are so many unknowns and uncertainties. Adaptation is preferably pro-active and an attempt to foresee future effects or – better – forestall them through appropriate policies and actions. Much of the expertise needed to cope with future events already exists within the ministries of finance, since their entire activity is directed towards forecasting future needs for the economy. The Coalition is, thus, a natural source for information, advice and expertise from and for its Members, as they seek to contribute to national policymaking to deal with the economic impacts of climate change now – mitigation – and in the future – adaptation.

This document identifies concrete ways in which ministries of finance can reinforce their governments' responses to the economic and financial challenges raised by the need to adapt to the effects of climate change. To reinforce this contribution, the Coalition could develop its own adaptation workstream and some suggestions about how this might be achieved are offered in the preceding pages of this report.

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Annex 1) Member Country Examples

During the Coalition’s adaptation meeting, the following Members shared their experience with adaptation policies and put forth suggestions for the Coalition’s role in the adaptation agenda.

- **Canada:** In 2021 Canada announced the renewal of its International Climate Finance strategy with a doubling of its envelope to CAD\$ 5.3 billion. The strategy also increases the share of finance devoted to adaptation. Canada is warming twice as fast as the global average, with Northern Canada warming at three times the global pace. Canadians are increasingly exposed to climate-related disasters such as wildfires, floods, storms, and droughts along with other climate change impacts such as the thawing of permafrost and coastal erosion that threatens public safety and economic development. The Canadian government is actively working on multiple levels to address this, as well as developing and sharing knowledge and science to help Canadians better adapt to climate change. The Government of Canada is also committed to releasing its first national adaptation strategy by the end of 2022. The Canadian Net Zero Emissions Accountability Act, which commits the Government of Canada to greater transparency and accountability in achieving net zero emissions, will require the Minister of Finance, in cooperation with the Minister of Environment and Climate Change, to publish an annual report on key measures taken by the federal public administration to manage its financial risks and opportunities related to climate change. The government is developing an approach to implement this report. On the need to work with sector ministries and the ecosystem, the federal government is working with the 10 Provinces and 3 Territories (which means that departments of finance need to work together), as well as with thousands of municipalities to cope with adaptation. This poses a challenge of coordination.
 - The Coalition can provide learning and best practices on coordination and measurement, as well as advice on how to speed up implementation.
- **Denmark:** the [Danish strategy for adaptation to a changing climate](#), published in 2008, first outlined the country’s adaptation vision and plan.⁸ To ensure that efforts were inclusive, well-planned, sustainable, and timely, the initiative included inputs from state and municipal governments as well as citizens, businesses, city planners, and the construction sector. In 2019, the country committed 60 percent of climate financial aid to adaptation measures. At COP 26, Denmark committed itself to the target of US\$500 million annual grant financing, targeting the poorest and most vulnerable countries. The Sherpa from Denmark reiterated the need not only to increase the amount of

⁸ See also new EU adaptation strategy. 24 February 2021, the European Commission adopted the Communication [‘Forging a climate-resilient Europe – the new EU Strategy on Adaptation to Climate Change’](#). The Strategy outlines a long-term vision for the EU to become a climate-resilient society, fully adapted to the unavoidable impacts of climate change by 2050. This strategy aims to reinforce the adaptive capacity of the EU and the world and minimize vulnerability to the impacts of climate change, in line with the [Paris Agreement](#) and the [proposal for a European Climate Law](#) - <https://climate-adapt.eea.europa.eu/eu-adaptation-policy/strategy>

financing, but also to ensure efficiency of spending and maximum results from every dollar committed. Under the Helsinki Principle 4 (HP4) workstream, for which Denmark is one of the Country Leads, a core toolbox for finance ministries on macroeconomic modeling and fiscal risk management, green budgeting, and public investment is being developed. Common concepts, terminology, analysis, and methods for assessing the needs and impacts for adaptation should be included in this work.

- **Mexico:** As a country highly vulnerable to climate change, Mexico is aware of the need to direct more resources toward adaptation. The Sherpa from Mexico provided three ideas for the Coalition:
 - **Adaptation cost assessment:** Improve the methodologies to more accurately assess the financial needs for adaptation (learning from mitigation, where methodologies are more standardized and proven, and financial support is consequently more forthcoming).
 - **Highlight the role of public and private financing:** Commitments from the public sector on adaptation are not enough. Mexico has been encouraging asset owners, pension funds, and insurance companies to develop a framework that allows them to build more sustainable investment portfolios. More work could also be done to overcome domestic bias for investment in developed countries. Mexico has been a pioneer in developing innovative frameworks to promote sustainable financial instruments, as seen from the issuance of two sovereign bonds linked to sustainable development goals that prioritize investment in health, education, water, and other public services, while taking adaptation needs into consideration.
Further international engagement from the Coalition: The engagement of the Coalition in the G20 Sustainable Finance Working Group has had a positive impact. There is still a need to promote further engagement from the Coalition in the UNFCCC’s work, especially in the Standing Committee on Finance. More specifically, the Coalition can actively contribute to the improvement of financial mechanisms in the UNFCCC like GAV GCF, Adaptation Funds, and so forth.
- **Netherlands:** As a country with half its territory below sea level, the Netherlands has a long history of climate adaptation. Ahead of COP 26, the Netherlands submitted its first Adaptation Communication, committing over 50 percent of its public climate finance to adaptation. The country’s own budget also confers special treatment to adaptation investments. The “Delta Plan”, which protects from flooding, is financed through a separate fund, implemented beyond the four-year election cycle to ensure stable funding. In addition to sharing its national experience, the Dutch Sherpa suggested four areas the Coalition could focus on:
 - Mainstreaming climate in all decision making and policymaking through economic modeling, green budgeting, etc.
 - Addressing the synergies between climate change adaptation and economic development, as vulnerability to climate risks will have a significant impact on economic development.
 - Encouraging financial markets to address and invest in adaptation—as the financial sector integrates climate risk in their decision making, countries that take the right measures to become more resilient may benefit from more investments and lower bond yields.

- Estimating the benefits of adaptation projects (which is difficult) and building recognition among Members that the benefits, which should be quantified and made more visible, of such projects can be large.
- **Philippines:** The country regularly incurs losses due to typhoons and earthquakes, hence the Ministry of Finance is used to looking at financing for adaptation and mitigation across a spectrum, balancing investments for disaster risk finance and insurance with adaptation investments. Here the Ministry of Finance can play a greater role than in some countries in mobilizing financial tools and policies to mainstream climate change in monetary and fiscal policies, public investment management, and procurement. It was the Minister of Finance who led the Philippines' delegation to COP 26 and presented a package of policies, stressing that climate finance should mainly consist of three things: *grants*, *investments*, and *subsidies*, taking not just a public but a blended finance approach. As noted, there is a need for private international finance, public international finance, as well as local support to mobilize at the national and international level. The Philippines has created different structures to respond to this need:
 - The interagency task force on sustainable finance, headed by the Ministry of Finance and the Climate Change Commission, together with the central bank (which is also a member of the Network for Greening the Financial System [NGFS]), was established.
 - The sustainable finance roadmap and its guiding principles were established. This provides guidance for the private sector and a “taxonomy”, outlining what each agency considers as private or sustainable finance.
 - Carbon policies: moving beyond carbon taxes to carbon trading (with credits generated by mitigation and adaptation investments), with the Ministry of Finance leading and supporting its creation.
- **Uganda:** As a country deeply impacted by climate change but characterized by very low emissions, Uganda represents Coalition Members whose chief climate focus is on adaptation. As the livelihood of Uganda's population is highly dependent on natural-resource extraction, there is a need to address vulnerability and adaptation in the agriculture, energy, health, forestry, fisheries, environment, urban devolvement, and transportation sectors, among others. However, Uganda's ability to implement its high-priority adaptation and mitigation strategies fully, as with other developing countries, is conditional on access to external financial support. Specifically, Uganda's implementation plans are contingent on 70 percent external and 30 percent in-country financing. As a result, the Ministry of Finance has established a climate change financing unit to explore financing possibilities. The doubling of adaptation financing agreed at COP 26 marks a significant step. However, accessing this financing could still be a challenge, and should be considered in planning for COP 27.
 - The Coalition can play a key role in prompting and helping Members to access this financing.
 - While access to external financing is critical for the adaptation agenda, developing countries can also take some steps domestically so that adaptation is reflected in national plans and in national budgets. Specifically, ministries of finance can bring adaptation strategies to the forefront of their work.

- **United Kingdom:** The [Glasgow Adaptation Imperative](#) sets out the UK’s actions to date and the progress required on the pathway to COP 27 to build a climate-resilient future for all. In January 2021, the UK co-developed the [Adaptation Action Coalition](#) in partnership with Egypt, Bangladesh, Malawi, the Netherlands, Saint Lucia, and the United Nations Development Programme, which aims to bring countries together to find solutions to some of the most challenging adaptation issues. The UK’s finance ministry has organized its adaptation work around three main initiatives:
 - [Green Bond Issuance](#): The first “Green Gilt” offering in September 2021 raised £10 billion for projects aimed at helping the UK meet its net zero and other environmental goals—the largest-ever inaugural sovereign green bond issuance.
 - [Green Finance Institute](#): Demonstrating nature-related, private finance initiatives.
 - [UK Infrastructure Bank](#): Providing infrastructure finance to tackle climate change and support regional and local economic growth across the UK.

As Country Lead on the Helsinki Principle 5 (HP5) workstream, the UK facilitated a stakeholder dialogue in April 2021 with the Convention of Biological Diversity Secretariat that provided an update on the economic and financial challenges associated with meeting global biodiversity goals, including mobilizing public and private resources. In addition, HP5 recently published a paper on nature-related risks for ministries of finance and is working on a *financing nature* publication that will highlight the role ministries of finance can play in this important work.

Annex 2) Survey Highlights

A selection of Member survey responses, in alphabetical order.

Country	Main Adaptation Challenges	Potential Impact	MOF Action Taken/ Planned	Future Actions
Andorra	<ul style="list-style-type: none"> Water (scarcity/ droughts + quality) Population preparedness 		<ul style="list-style-type: none"> International cooperation, including with neighbors. 	<ul style="list-style-type: none"> Technical Assistance (TA) request.
Chile	<ul style="list-style-type: none"> Strengthen national and sub-national coordination (vertical and horizontal). Improve risk and vulnerability assessments, especially at a local level, and effectively integrate into decision-making for adaptation. Build capacity to tackle climate change, especially at the local level. Build an improved monitoring and reporting system for adaptation, including effectiveness and progress indicators. Develop financial strategies for 	<ul style="list-style-type: none"> 1926-2019, losses from droughts and floods amounted to more than US\$4 billion and US\$5 billion, respectively, impacting more than 7 million people. Detailed est. cost of inaction for agriculture, fisheries, ports, beaches all prepared. Studies on non-economic costs for biodiversity and health prepared. 	<p>MOF worked with Ministry Environment on:</p> <ul style="list-style-type: none"> Climate Change Framework Law - mandates climate change management instruments at the national and sub-national levels + expected more financial resources from the national budget will be allocated to climate change adaptation and mitigation. Several studies and assessments have been done to develop adaptation indicators and indices. Risk Atlas (ARClim) was built as a first step in the elaboration of adaptation indicators at national and local scales. 1st National Adaptation Plan (NAP)2014 – update underway. 2020 NDC includes several important commitments on adaptation (policy at national and sub-national levels; disaster risk reduction; water security; costs of inaction and loss and damage assessments). Integration component (commitments that contribute both to mitigation and adaptation) that comprises actions on circular economy, land use, land use change and forestry and the ocean. 	<ul style="list-style-type: none">

	adaptation (plans), effectively engage the private sector, and improve financial flows to drive resilient investment.		<ul style="list-style-type: none"> • 2021 LTS includes adaptation and long-term goals for the prioritized sectors for adaptation: agriculture and forestry; fisheries and aquaculture; biodiversity; health; infrastructure; cities; energy; tourism; water resources; mining; coastal areas; the ocean. • Committee established to devise national taxonomy. 	
Denmark	<ul style="list-style-type: none"> • Flood (storm surges, cloudbursts, high groundwater, and overflow from streams) 	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • Adaptation issues have been given less focus, compared to climate mitigation, and has traditionally been managed at the municipal level. As a result,, the Ministry of Finance has been less directly involved in domestic efforts. • The Ministry of Finance is working on getting an overview of the investment levels - and need to understand if Denmark is investing enough or too little. <p>The Ministry of Finance is more involved when it comes to adaptation issues in relation to international climate finance and the needs of developing and vulnerable countries, where the adaptation challenge is more directly felt.</p>	<ul style="list-style-type: none"> •
Eswatini	<ul style="list-style-type: none"> • Drought impact on agriculture (pest attacks on crop yields, livestock size reduction, soil quality) • Water quality (health risks) • Temperature risk impact infrastructure • Support (financing, capacity building, technology) 	<ul style="list-style-type: none"> • Est. mitigation and adaptation costs US\$950 million to US\$1.5 billion. 	<ul style="list-style-type: none"> • CPEIR study and IBFCC contextualization to facilitate policy and institutional mechanism for integrating climate concerns within the national budget allocations. • Next implement the NDC Strategy (devise investment plan) + Inclusive Budgeting and Financing for Climate Change. 	<ul style="list-style-type: none"> • Inclusive Budgeting / Climate Financing knowledge exchange/ benchmark with regional peers. • Technical Assistance on green bonds/ climate swaps.
Finland	<ul style="list-style-type: none"> • Flood risks • Electricity distribution • Agricultural output 	<ul style="list-style-type: none"> • Climate change impacts on gross domestic product (GDP) between 	<ul style="list-style-type: none"> • Climate risk management and adaptation have been integrated into normal planning and operations in different industries. For this reason, 	<ul style="list-style-type: none"> •

	<ul style="list-style-type: none"> Forest sector production value. 	<p>2040 and 2070 will range from 0 to -0.3 percent of GDP (based on available information – not taking social impacts such as health, etc. into account or global externalities).</p>	<p>tracing the (public) resources allocated to adaptation measures is challenging.</p> <ul style="list-style-type: none"> There are currently no direct sources or data - KUITTI project highlights the role of municipalities and cities. 	
France	<ul style="list-style-type: none"> Agriculture and Forestry (risk from extreme events) 	<ul style="list-style-type: none"> Additional investments for prevention + repair of infrastructure (energy, electricity, road, rail networks, etc.) estimated ~€2 bn/year by 2050. 2003 heat wave reduced productivity by 25%. Klaus storm reduced the standing volume of trees in the affected area by 14%. 	<ul style="list-style-type: none"> Framework to assess the economic relevance and socio-economic and environmental impacts of investment projects, to prevent future stranded costs (2nd National Climate Change Adaptation Plan or PNACC-2). Sharing of climate expertise within the financial sector, increasing adaptation capacity. Next Climate Energy Strategy (SFEC) will establish new adaptation objectives for the 2024-2029 period (PNACC-3 TO) specifying the global warming scenario, including the intensity of extreme phenomena, impacts by region, based on the IPCC assessment work. Est. adaptation costs vs. avoided loss. 	<ul style="list-style-type: none"> Experience managing exposure of economy and public finances to the risks of climate change and to the budgetary burden of adaptation measures. Comparison of methods for integrating the costs of climate change into climate stress tests (help assess exposure ecosystem services). Sensitivity studies include est. investments in the prevention and repair.
Germany	<ul style="list-style-type: none"> 1) Gradual increases of temperature (heat exposure especially in cities) 2) Extreme weather events (e.g., floods, droughts) 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> Risk assessment discussion (e.g., compulsory insurance for natural hazards), financing arrangements. Support other ministries responsible for adaptation 	Still planned
Indonesia	<ul style="list-style-type: none"> Food security Under the CRD document, GOI has highlighted / prioritized four major 	<ul style="list-style-type: none"> Indonesia 16-17% total economy by 2048 if 2°C target not met 	<ul style="list-style-type: none"> NDC roadmap, Rp 40.3 trillion per year to finance climate change adaptation, specifically in the water sector, food security, ecosystem resilience, human health, disaster management, and energy and transportation. International and private 	

	<p>sectors that will be impacted by the climate hazards:</p> <ul style="list-style-type: none"> ○ Agriculture ○ Coastal-marine/ fisheries ○ Water ○ Health 	<ul style="list-style-type: none"> ● LTS / NDC Roadmap est. 0.66%-3.45% GDP climate impact ● Climate Resilience Development Policy (CRD) economic losses will reach Rp 112.2 trillion or 0.5% of GDP in 2024. ● Est. 25% reduction in rice production more than 2020-2024 period certain provinces - Java and Sumatera islands (production centers) - 10-17.5%, 	<p>sector support needed. GoI develops an enabling environment.</p> <ul style="list-style-type: none"> ● Since 2012 Mitigation Fiscal Framework ● 2018 on Climate Budget Tagging (CBT), national and regional level + series of Sovereign Green Sukuk and SDG Bonds. ● APBN in national green projects is carried out, increasing the involvement of the private sector ● Mobilizing funding from bilateral and multilateral sources such as the GFC, GEF, MDBs etc. ● Carbon pricing - carbon tax and carbon cap and trade. Strengthen fiscal policy strategy ● Look for creative financing instruments/ risk transfer mechanisms. ● Preparing Climate Change Fiscal Framework (CCFF). ● Exploring business cases for energy transition. ● Development of Indonesia Environmental Fund to finance activities to tackle climate issues including mitigation and adaptation 	
Italy	<ul style="list-style-type: none"> ● Increased temperatures and heatwaves ● Intense precipitations ● Drought ● Sea level rise 	<ul style="list-style-type: none"> ● Under 2 degrees costs ~0.5% GDP - with greater increases in temperatures costs will increase exponentially . ● Also, inequalities between regions will grow. ● All economic sectors are seen to be impacted negatively, but major losses are predicted for networks and infrastructures, agriculture, and tourism. 	<ul style="list-style-type: none"> ● National and EU regulations provide for the possibility of public financial support of up to 70% of insurance premiums for agricultural risks. ● Law 205/2017 provides for a tax deduction of 19% on the price of insurance policies protecting homes against natural disasters. ● The Italian Presidency of the G20 gave a strong impetus to international initiatives for the creation of a consistent and comparable data pool for monitoring climate-related risks at global level. ● 1st National Ecological Transition Plan which was published in March 2022. ● Strengthened National Plan for the Water Resource Sector. ● National Recovery and Resilience Plan reform to improve the governance framework for the prevention and contrast of hydro-geological 	<p>Learning from other countries' experiences on:</p> <ul style="list-style-type: none"> ● monitoring impacts of adaptation actions ● tracking implementation progress national level ● enhancing effectiveness of adaptation measures

			<p>damage at the local level (data collected through improved monitoring systems will be the basis for the development and updating of adaptation plans and for preventive actions)</p> <ul style="list-style-type: none"> National priority actions on adaptation are not yet defined since the National Adaptation Plan, due to implement the National Adaptation Strategy, is under strategic environmental assessment (VAS) and it has not yet been adopted. 	
Netherlands	<ul style="list-style-type: none"> Safeguarding infrastructure resilience against rising sea-level + adjusting to extreme weather (waterlogging, heat, drought, floods). Risk of stranded assets 	<ul style="list-style-type: none"> Estimated government fiscal expenses for climate adaptation ~0,2% of GDP per year. 	<ul style="list-style-type: none"> Delta Fund: minimize flooding risks for flood-prone regions to enable water security (long-term planning). Green Bonds: Climate adaptation is mentioned as one of the two core pillars of Dutch Climate policy in the Green Bond Framework (reporting on the impact of climate adaptation financing through indicators such as the number of kilometers of reinforced dikes and the percentage of safe flood defenses) 	<ul style="list-style-type: none"> Coalition can play a valuable role in collecting and exchanging information about the modalities and scope of adaptation financing.
Uganda	<ul style="list-style-type: none"> Drought—including surface water—impacting agriculture sector (poverty/famine risks). Flooding (rivers, lakes level rise, landslides). Lack resources for adaptation strategies. 	<ul style="list-style-type: none"> 2015/16 GDP growth dropped from 6.5% to 3.8% due to the drought. Increase water levels 2019/20 and 2020/21 - impact but hard to attribute due to COVID. 	<ul style="list-style-type: none"> Investment in irrigation schemes Funding to settle displaced people (increased public debt) Ensuring impacts of CC are reflected in economic reports and tools (e.g., budget risk statements, adjusted macroeconomic indicators report) Climate change unit to be introduced to MOF to ensure CC issues part of fiscal policy via macro modeling, rapid disaster risk assessment and budget tagging Introducing green procurement plan and guidelines Plan to access funding through climate change funds Plan to make high-level policy makers understand and appreciate allocation of funds for adaptation 	<ul style="list-style-type: none"> Technical Assistance on how to access funds to invest in well prepared actions part of NDC/ development plans.

Annex 3) Development Finance Institutions in Adaptation

Development Finance Institutions (DFIs) provide most of the public finance for development, contributing 68 percent in 2019/2020 worth US\$ 219 bn. Almost a third of DFI climate finance comes from multilateral DFIs or multilateral development banks MDBs. The [2021 MDB joint report](#) on climate finance notes an increase of 24 percent over 2020, which had seen a slump because of the COVID-19 pandemic. In 2021, US\$ 51 billion of MDB climate finance was for low-income and middle-income economies, of which 35 percent was for climate change adaptation finance. Another, US\$31 billion was for high-income economies, 5 percent of which was for climate adaptation.

The 2021 MDB joint report, coordinated by the EIB, combined data from the African Development Bank (AfDB), the Asian Development Bank (ADB), the Asian Infrastructure Investment Bank (AIIB), the European Bank for Reconstruction and Development (EBRD), the European Investment Bank (EIB), the Inter-American Development Bank Group (IADB), the Islamic Development Bank (IsDB) and the World Bank Group (WBG). Only a few of the institutions active in adaptation are presented herein to provide examples of sources the ministries of finance can approach for partnerships, as well as salient and credible information for creating sound economic analyses regarding cost or finance challenges in the types of adaptation avenues being explored.

The European Investment Bank (EIB)

The EIB launched its new adaptation-financing plan at COP 26. Supporting adaptation efforts for over a decade, the EIB has been mainstreaming adaptation in all its direct lending operations through the application of a climate risk screening tool launched in 2019, as well as by supporting projects, in various sectors, which address adaptation challenges. Its new adaptation plan has three goals:

- **Faster adaptation:** Mirroring the EU Climate Adaptation strategy, the EIB aims for adaptation financing to reach 15 percent of all its climate action financing by 2025, which would be almost triple that of 2015–2020. The emphasis is on quality as well as on quantity, with focus areas that include flood management, resilient cities, supporting nature-based solutions for adaptation, and protecting critical infrastructure such as energy and transport. The EIB aims to play a larger role in supporting climate-resilience innovation and technology with a particular focus on ramping up support for private sector-led innovation.
- **Supporting smarter and more systemic adaptation:** The EIB will promote the use of robust climate data in the operations it finances. For example, the partnership with the European Centre for Medium Range Weather to access forecasts from the Copernicus Climate Change Service will help the EIB and its clients overcome data-access challenges. The EIB will also strengthen upstream engagement—getting involved earlier with clients in the project preparation stage—and targeting advisory services to member countries on adaptation and

resilience. This involves helping clients translate national and local adaptation priorities into pipelines of bankable projects. It also involves being able to address the gap that still exists between adaptation plans and their implementation on the ground, as well as the capacity to prepare projects and adaptation investments. There is also a key role here for finance ministries through supporting the development of national adaptation investment plans, which are informed by national adaptation strategies and plans.

- **Accelerating global action on adaptation:** The EIB aims to provide tailored support to vulnerable regions worldwide, recognizing the disproportionate impact of climate change on them and on their communities. Partnerships, such as that with the African Adaptation Acceleration Program, which aims to mobilize greater adaptation finance on the African continent by 2025, will contribute to targeting finance. To increase the impact of its operations worldwide, the EIB has established a specialized development finance arm: EIB Global. Through increased presence on the ground, and greater cooperation with partners, EIB Global will support solutions to protect people, businesses, and ecosystems in vulnerable regions. This will include projects aimed at reducing the impact of climate change on forced displacement, and accelerating adaptation in least developed countries and small island developing states.

The World Bank Group (WBG)

In 2021, the World Bank announced its Climate Change Action Plan (CCAP) 2021-2025, committing the Bank to providing an average of US\$25 billion in annual financing over FY21–25, for initiatives that lower GHG emissions and foster adaptation, while reducing poverty and inequality and improving development outcomes (World Bank Group 2021). It is also committed to increasing its climate finance target to 35 percent of total commitments over the same period. As part of its commitment to align the Group's financial flows to the goals of Paris Agreement, all new operations from July 1, 2023 (FY24) onwards will be matched to the goals. For the International Finance Corporation (IFC) and the Multilateral Investment Guarantee Agency (MIGA), 85 percent of Board-approved real-sector operations will be aligned with Paris goals starting July 1, 2023, rising to 100 percent from July 1, 2025. For adaptation, this alignment means ensuring physical risk mitigation measures are fully embedded in project design.

Adaptation and resilience are critical elements of the Action Plan. In 2020, the WBG accounted for over half of all multilateral climate finance to developing countries and over two-thirds of adaptation finance. The World Bank boosted climate adaptation support from 40 percent of its climate finance in 2016 to 52 percent in 2020. To advance adaptation and resilience, the WBG will give priority to supporting investments in: disaster risk management, coastal resilience, water security, human development, financial protection, and forests and integrated landscape management.

The World Bank's, [*The Adaptation Principles: A Guide for Designing Strategies for Climate Change Adaptation and Resilience*](#) (Hallegatte et al. 2020), offers a guide to effective climate change adaptation, containing hands-on guidance to the design, implementation, and monitoring of

national adaptation strategies. It lays out six principles—as well as 26 actions, 12 toolboxes and 111 indicators—that can help ministries of finance approach adaptation challenges. The six guiding principles correspond to common policy domains:

- 1) Ensuring resilient foundations through rapid and inclusive development;
- 2) Facilitating the adaptation of firms and people;
- 3) Adapting land use and protecting critical public assets and services;
- 4) Increasing people’s capacity to cope with and recover from shocks;
- 5) Anticipating and managing macroeconomic and fiscal risks; and
- 6) Ensuring effective implementation through prioritization and continuous monitoring.

While outlining these universal principles, the publication shows that each country needs to tailor these actions to its specific needs and priorities. To guide this process, *Adaptation Principles* offers concrete and practical tools: Screening questions to identify the most urgent and effective actions, toolboxes illustrating common datasets and methodologies to support decisions, indicators to monitor and evaluate progress, and case studies on how the COVID-19 pandemic has influenced priorities in taking effective adaptation action.

The International Monetary Fund (IMF)

While not a DFI, *per se*, the IMF provides guidance on building financial and institutional resilience to natural disasters and extreme weather events, and on coping with the effects of climate change, more generally. The IMF has developed principles to integrate adaptation to climate change into fiscal policy through three recently published *Staff Climate Notes*. The first, [Economic Principles for Integrating Adaptation to Climate Change into Fiscal Policy](#) sets the stage by examining the economic principles that can guide the integration of climate change adaptation into fiscal policy. The second *Note*, [Macro-Fiscal Implications of Adaptation to Climate Change](#), reviews and presents evidence of the macro-fiscal implications of climate change adaptation to contribute to guiding fiscal policy. The third *Note*, [Planning and Mainstreaming Adaptation to Climate Change in Fiscal Policy](#), discusses how to translate adaptation principles and estimates of climate impacts into effective policies.

The IMF is mainstreaming climate change adaptation work into its three major mandates:

Surveillance: For Article IV consultations, Fund staff collaborate with national authorities to identify key threats from climate change and natural disasters, as well as the major channels of impact on the economy. In addition, staff help assess the policies and institutional readiness to respond to these threats and evaluate the costs and financing needed.

Capacity Development: Fund staff have developed capacity development tools to guide member countries' adaptation policies and investments. Through the pilot, Climate Macroeconomic Assessment Program (CMAP), staff provide advice to member countries on how to build resilience and adjust fiscal policy to respond to climate change risks by assessing the coherence of climate change policies and financing plans with debt levels and fiscal positions. The Green Public Finance Management (Green PFM) tool helps countries integrate an environment- and climate-friendly perspective into PFM practices, systems, and frameworks, especially the budget process. The Climate Public Investment Management Assessment (C-PIMA) tool helps governments identify potential improvements in public investment institutions and processes to build low-carbon and climate-resilient infrastructure.

Lending: The Resilience and Sustainability Trust (RST), approved by the Fund's Executive Board in April 2022, is being set up to help member countries build resilience to external shocks, including climate change impacts. The RST complements existing lending instruments by preparing countries for longer-term structural challenges. About three quarters of the member countries will be eligible for longer-term affordable financing from the RST.

Annex 4) Climate Funds

International sources of climate finance provide funds to support a variety of climate risk vehicles and adaptation programs. The broadly focused funds provide finance to advance a range of climate change goals of the UNFCCC Agreements (e.g., the Global Environment Facility (GEF), the Adaptation Fund, the Least Developed Countries Fund (LDCF), the Global Climate Change Alliance (GCCA+), Climate Investment Funds (CIF), and the Green Climate Fund). Two other climate fund sources have a narrower focus yet are worth noting as they are dominant in their respective focus areas for climate funds. These are the Adaptation for Smallholder Agriculture Programme (ASAP), which is the largest adaptation program for small-holder farmers in developing nations; and the UN-REDD Programme Fund/REDD+ (Reducing Emissions from Deforestation and Forest Degradation), created as a results-based climate finance fund for the forest sector to reduce emissions from deforestation and degradation. To exemplify the scope of how climate funds support adaptation, the Green Climate Fund (GCF), which is the main global vehicle for disbursing climate finance from developed countries to lesser developed ones, is featured below.

Green Climate Fund

The GCF is the world's largest global climate finance fund. Committed to goals of a 50/50 split of funding between two themes: adaptation and mitigation, which is directed to eight "results areas": (i) ecosystems and ecosystem services; (ii) food, health, and water security; (iii) infrastructure and built environment; (iv) livelihoods of people and communities; (v) buildings, cities, industries, and appliances (vi) forests and land use; (vii) energy generation and access; and (viii) transport. Adaptation initiatives, as of summer 2022, received 50 percent of grant equivalent funding. As of October 2022, the total disbursed for both thematic areas was US\$11.3 billion in GCF resources and US\$42.4 billion with co-financing.

Support is provided for a range of programs and projects, and can be for national, regional, or international assistance. The bullets below highlight the ways in which GCF funds are addressing climate risks through adaptation initiatives, such as:

- **Readiness grants and other support facilities for transformational planning**, including integrated adaptation strategies, planning, and policy making have received funds through the GCF with 74 national adaptation plans supported. Assistance is also provided to help countries convert these into a bankable pipeline of projects to attract other climate finance funds.
- **Projects improving the availability and reliability of climate data and analytic tools.** The fund has provided funding for 52 projects that support hydrometeorological data support systems and information systems, including early warning systems. Together, these projects

are helping to provide countries with the data and knowledge required to better manage their infrastructure and to analyze more effectively potential adaptation investments.

- **Catalyzing innovation.** GCF finances new technologies, business models, and financial instruments, as well as practices that establish proof of concept, which can then be either scaled up by GCF or by other finance- institutions, including commercial ones.
- **Making blended finance work for adaptation at scale** by providing de-risking capital to reprice the market and create new projects and new asset classes with commercial track records for new climate-resilient solutions. One example is the Global Fund for Coral Reefs, where GCF financed the first at-scale private sector program for the blue economy.
- **Project preparation facility (PPF)**, for example supporting the development of the first African Climate Resilient Infrastructure Fund. A PPF facility will also design a green guarantee program that will enable the flow of capital, which is risk averse, into both mitigation and adaptation projects, especially from developed to vulnerable developing countries.
- **Helping domestic financial institutions mainstream climate into investment decision making and originate and appraise climate-resilient projects.** GCF is supporting developing countries to issue green bonds, develop new financial instruments such as climate-resilient bonds, and readying their stock exchanges for the issuance of green bonds. For example, in Jamaica, GCF supported the government to set up the Caribbean Green Bond listing on the Jamaica Stock Exchange.