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Adapting to a New Climate

An assessment of physical risk
management and climate adaptation in
banks and a proposal for accelerating
climate resilient banking

November 2022

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Contents

External review	iv
Executive summary	vi
Context	vi
About this report	vii
Next steps for developing an adaptation framework	vii
1. Introduction	1
2. Building climate-resilience in banks	3
2.1 Context	3
2.2 The need for finance & the role of banks	6
3. Concept of aligning portfolios with climate resilience	8
3.1 The concept of climate resilience from a banking perspective.....	8
3.2 Exploring adaptation frameworks.....	12
3.3 Aligning finance with climate resilience goals	20
3.4 Overview of resilience framing for banks.....	22
4. How banks are facing the growing threat of climate change—a survey	23
4.1 Methodology.....	23
4.2 Survey results	24
4.3 Discussion.....	27
5. Adaptation & banking in the Latin America and the Caribbean region	28
5.1 Review of the main physical impacts of climate change in the region.....	28
5.2 Main economic impacts in the region from physical climate risks	30
5.3 Adaptation and Banking Survey.....	33
5.4 Conclusion	37
6. Adaptation and banking in the Middle East & North Africa region	38
6.1 Introduction.....	38
6.2 The State of Adaptation Finance in the MENA Region	40
6.3 Adaptation and Banking Survey.....	46
6.4 Barriers and Recommendations to scaling up Adaptation Finance in the region	48
7. Conclusion & recommendations	51
7.1 Barriers to adaptation strategy.....	51
7.2 An outline framework.....	52
7.3 Next steps	53
Acronyms & abbreviations	54
Bibliography	56

Executive summary

This paper does not propose a comprehensive framework, but details the context of physical climate impacts, how banks are currently facing this challenge and sets out a framing for banks to tackle physical climate impacts. In order to deliver a target-setting framework, UNEP FI outlines a set of next steps to deliver an initial framework over the next two years.

Context

Finance is a primary constraint to implementing, driving and sustaining adaptation in human systems and ecosystems globally. Despite climate finance increasing over the past decade, flows to adaptation are significantly below the levels they need to be, limiting the implementation of adaptation options, particularly to the societies and in the regions most vulnerable to climate change. UNEP's Adaptation Gap Report 2022 estimates that adaptation needs in developing countries could be over US\$ 200 billion/year by 2030 in the absence of significant action to reduce emissions.¹ Indeed this may be an underestimation given that this figure builds on estimates from 2016. Furthermore, much of this finance for adaptation comes from public sources.

In the meantime, societies and economies are facing increasing losses from climate change. Insured losses from natural climate-related events have increased over the last decade, with extreme events such as heatwaves, extreme precipitation and droughts all expected to increase in a warming world. Tipping points such as the collapse of the Amazon rain forest and irreversible melting of the Greenland ice sheet are believed to be rapidly approaching. Increasing evidence of impacts from climate change is driving action on emissions reductions from governments, policy makers, companies and society, but climate impacts are with us now and adaptation to a changing climate requires as much attention as mitigating as far as possible those climate impacts. Action on adaptation is particularly salient for countries in many emerging markets and developing countries where the costs of climate impacts will far outweigh the costs of emissions reductions.

1 The 2022 Adaptation Gap Report estimates adaptation costs in developing countries from US\$ 79 billion/year to US\$ 612 billion/year for the period 2021-2030, based on an analysis of National Adaptation Plans (NAPs) and Nationally Determined Contributions (NDCs).

However, physical climate impacts are both highly location specific and affect multiple sectors as well as public infrastructure. Future climate impacts are also poorly understood at the local scale and estimating financial impacts is subject to considerable uncertainty. Furthermore, the economic benefits of climate adaptation are almost always systemic or public. Add to that the uncertainty around multiple or cascading climate impacts and it is unsurprising that private finance is finding it hard to develop a business case for adaptation financing at the institutional level. Indeed private flows may be counter-productive if other social and environmental aspects are not taken into account.

About this report

This is why member banks of UNEP FI are requesting a framework for action on climate adaptation to complement the net-zero alignment framework under the Principles for Responsible Banking. This report responds to that call for action by framing the climate adaptation problem and identifying possible next steps.

In Chapters 2 and 3, the report sets out the climate context and imperative for action on adaptation by banks. The report identifies the main drivers and sets out a theory of change for banks to drive impact in the real economy, building on the Principles for Responsible Banking's impact framework.

In Chapter 4, the report looks into the current context of physical climate risk identification and assessment in banks globally, whether managing climate impacts is part of their risk management framework and their awareness and action on climate adaptation. The development of an adaptation framework for banks should learn from existing adaptation frameworks and taxonomies most notably developed in the context of the EU's Sustainable Finance action plan, as well as by multilateral development banks and other voluntary frameworks. Some common elements underpin these frameworks for identifying and measuring adaptation finance.

In Chapter 7 the report proposes possible next steps and considerations for advancing adaptation in the banking sector. The proposal incorporates learnings from our survey of PRB member banks, as well as from our review of adaptation frameworks and research papers on adaptation financing.

Chapters 5 and 6 set the context of adaptation through in-depth assessments of current practices in two regions particularly vulnerable to climate impacts, Latin America and the Caribbean, and the Middle East and North Africa.

Next steps for developing an adaptation framework

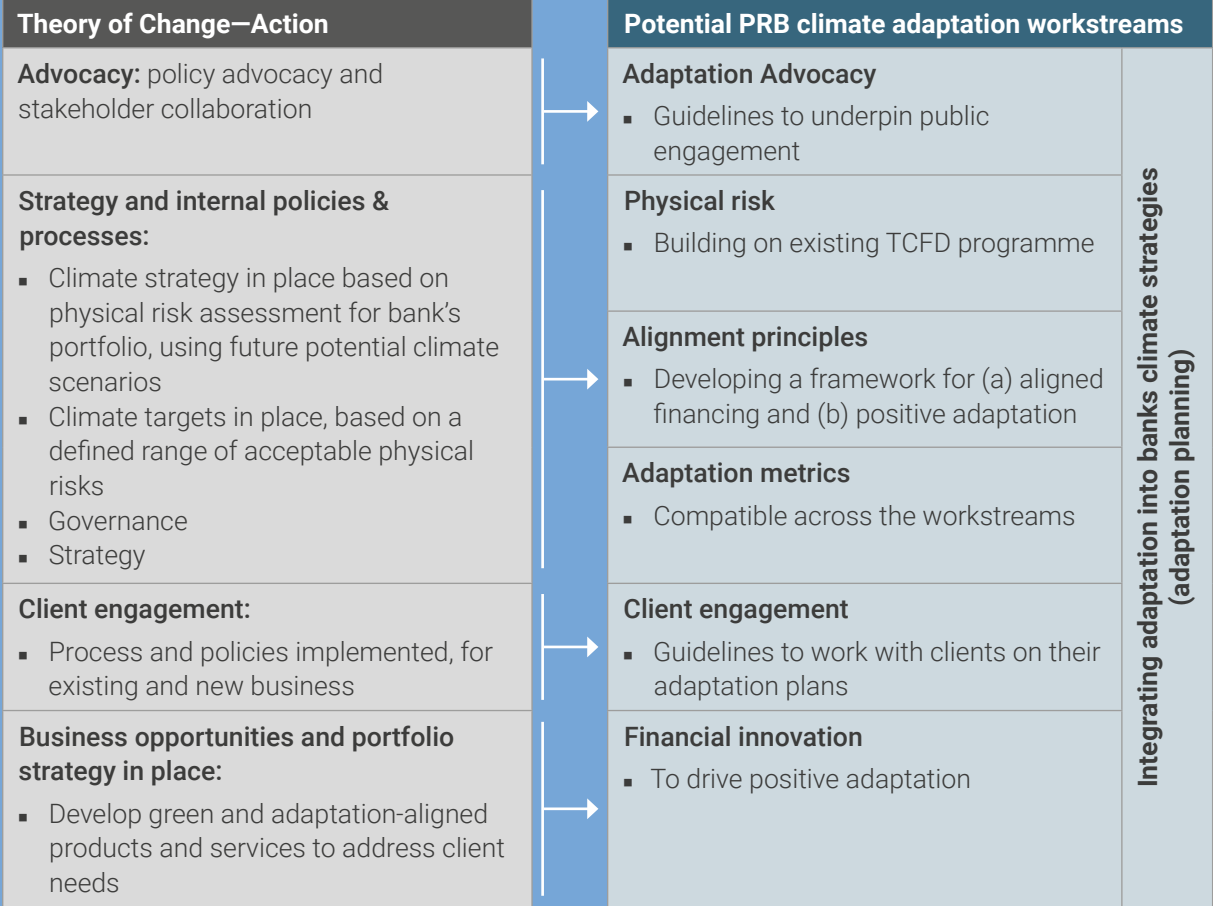
From the survey it is clear that banks are only starting to identify physical climate risks, while only a fifth of banks are assessing their exposure to those risks. Even fewer have a strategy to manage those risks. Banks do identify key sectors where they are offering financing for adaptation, particularly in climate-vulnerable sectors such as agriculture, but defining what adaptation is and how much financing is going towards adaptation is a major challenge.

Despite multiple constraints to financing for adaptation, a successful adaptation framework needs not only to assess and monitor physical climate risks, but also to ensure that financing decisions are aligned with national and regional adaptation plans and do not reduce systemic resilience. Moreover, banks should identify opportunities to invest in climate adaptation in sectors where potential climate impacts have been identified. To encourage uptake and implementation an adaptation framework should also be:

- **Compatible** with existing regulatory frameworks;
- **Practical** for use with existing data, methodologies and technologies;
- **Adaptable** to different institutions and contexts;
- **Measurable** to monitor progress;
- **Impactful** to deliver solutions in the real economy;
- Capable of **systemic** integration with adaptation planning of international, national and local stakeholders from the public and private sectors.

This report presents a first proposal for working with PRB members in 2023 on developing a framework that meets these criteria and goes beyond physical risk management to drive just and equitable climate adaptation in the real economy.

Figure ES-1: Mapping the draft theory of change for adaptation onto workstreams to deliver an adaptation framework



1. Introduction

Article 2.1c of the Paris Agreement places adaptation and mitigation on an even footing (UNFCCC, 2015):

“Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.”

While climate mitigation, or greenhouse gas emissions reduction, has received much attention in recent years, adaptation and resilience remain lower priorities for most banks. Adaptation is a critical challenge—almost half the world’s population lives in areas vulnerable to climate change (IPCC 2022). However, it remains difficult to measure and quantify future climate risks and adaptation, given the uncertainties in future scenarios, the number of physical hazards,² and the highly localised nature of climate hazards. Furthermore, the benefits of adaptation are also difficult for individual firms or businesses to capture reducing individual incentives to build resilience. Perhaps most importantly, climate change disproportionately affects the poorest and most vulnerable societies and nations. All of these reasons are a major challenge in building the case for private investment in adaptation.

The launch of the Principles for Responsible Banking (PRB) in 2019 provided the first platform for banks to set targets aligned with the Paris Agreement. This was followed by the launch of the Net-Zero Banking Alliance in 2021, which provides a dedicated forum for banks to align their activities with the +1.5°C ambition of the Paris Agreement and set intermediate and long-term decarbonisation targets for their portfolio aligned with 2050 net-zero emission pathways.

Despite widespread awareness of the current and accelerating impacts of climate change, adaptation remains ill-defined, both in the banking context and more broadly. Financing needs and the urgency to increase financial flows to adaptation and resilience are well understood, but there remain significant barriers to financial institutions measuring and tracking adaptation-aligned activities.

This report will look at the current context for banks to identify, assess and respond to a rapidly changing climate and to identify a framework for scaling climate adaptation in the banking sector. The report also explores how banks are responding to the physical impacts of climate change, including a deep dive into the context of two climate vulner-

2 The IPCC Sixth Assessment Report (AR6), Working Group I: Climate Change 2021: The Physical Science Basis lists 35 physical climate hazards (IPCC 2021).

able regions: Latin America and the Caribbean, and the Middle East and North Africa. The report proposes a framing of the problem linked to financing climate adaptation including systemic and social aspects, and proposes recommendations for banks to confront the physical impacts of climate change and accelerate financing for adaptation.

Key definitions, as per IPCC AR6 WGII (IPCC 2021)

Risk—the potential for adverse consequences for human or ecological systems. In the context of climate change, risk can arise from the dynamic interactions among **climate-related hazards**, the **exposure** and **vulnerability** of affected human and ecological systems.

Hazard—the potential occurrence of a natural or human-induced physical event or trend that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources.

Exposure—the presence of people; livelihoods; species or ecosystems; environmental functions, services and resources; infrastructure; or economic, social or cultural assets in places and settings that could be adversely affected

Vulnerability—propensity or predisposition to be adversely affected and encompasses a variety of concepts and elements, including sensitivity or susceptibility to harm and lack of capacity to cope and adapt.

Mitigation—a human intervention to reduce emissions or enhance the sinks of greenhouse gases.

Adaptation—in human systems, the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate and its effects.

Resilience—the capacity of social, economic and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganising in ways that maintain their essential function, identity and structure while also maintaining the capacity for adaptation, learning and transformation.

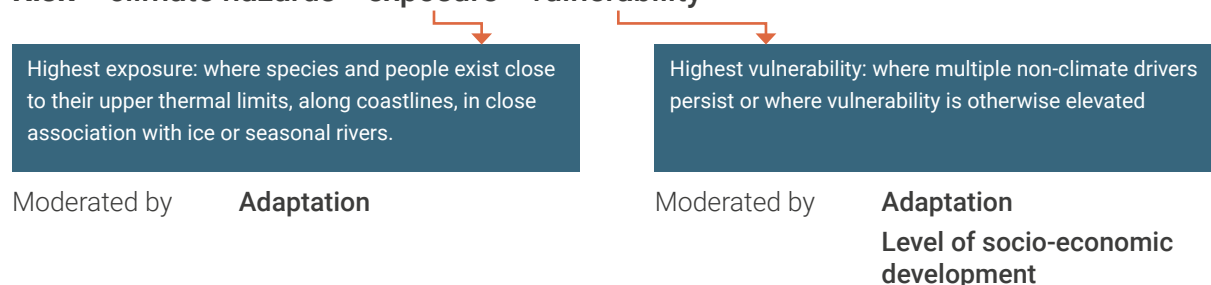
2. Building climate-resilience in banks

2.1 Context

Anthropogenic greenhouse gas emissions lead to changes in the climate, both long-term or chronic changes, such as rising temperature, sea level rise or changes in precipitation, and sudden onset or acute risks, such as droughts, heatwaves, extreme weather, wild-fires.³ These hazards may interact with each other or exacerbate non-climate-related risks, multiplying socio-economic shocks and increasing uncertainty. Physical risks arise from interactions between hazards, exposure, and vulnerability (see Figure 2-1). Hazards are often highly location- and sector-specific, while vulnerability also depends greatly on location, asset and adaptive capacity. Exposure combines the exposure of an asset, firm or sector to hazards and, when applied to financial institutions, their exposure to the financial impacts of these physical climate shocks. Future climate risks are often unpredictable. While it has been shown that, for example, extreme rain events are likely to occur more frequently as the Earth warms, it is impossible to predict when, where, and how. In addition, research expects many tipping points, which are defined as abrupt and often irreversible changes. The increase in climate hazards can only be reduced through mitigation efforts.

Figure 2-1: This figure explains the variables contributing to physical climate risk and how they can be addressed.

Risk = climate hazards * exposure * vulnerability



Source: Building on IPCC definitions from AR6 WGII

Responding to these risks involves measures that reduce the potential impact of the effects of climate change on people and nature through adaptive interventions under uncertainty. While it continues to be imperative to reduce greenhouse gas emissions,

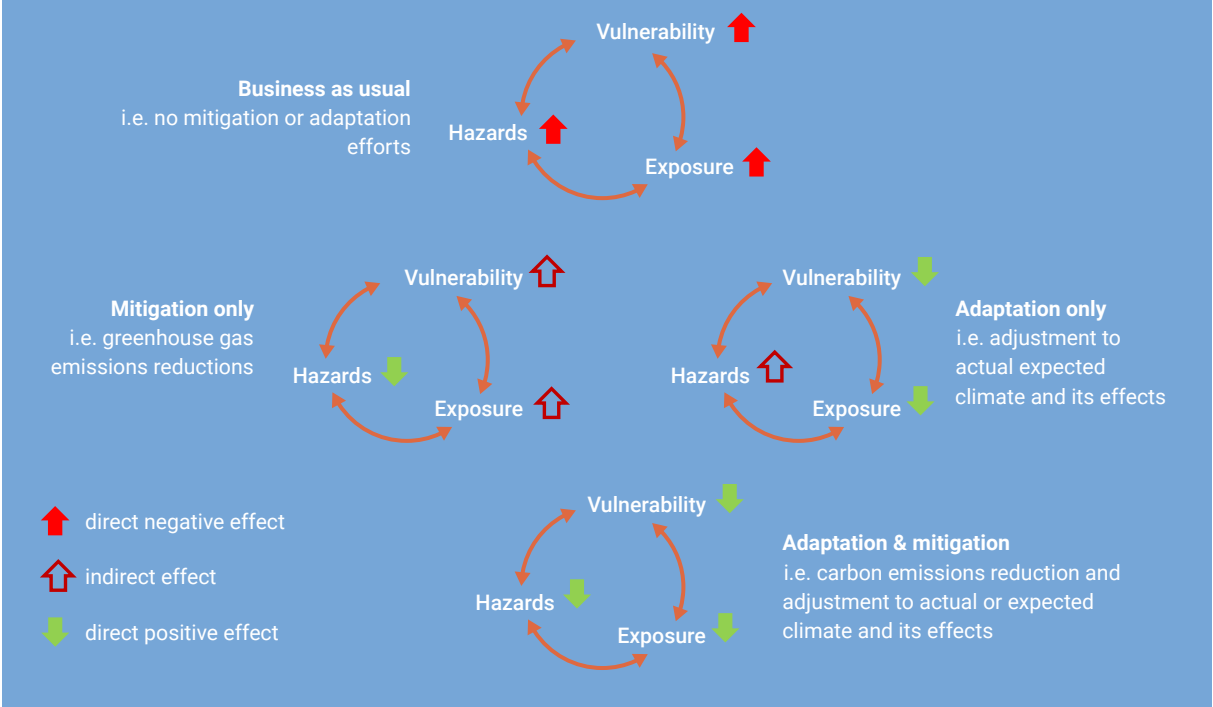
³ A comprehensive list of physical climate hazards can be found in the Summary for Policymakers of Working Group 1 of the 6th Assessment Report (IPCC 2021).

it is also important to understand that climate change is already underway. Even if all greenhouse gas emissions ceased today, we are still likely to see warming of 1.5°C, which would have significant impacts on health, livelihoods, food security, water supply, human security, and economic growth (IPCC 2021). In the short term, the impacts of climate change can no longer be avoided. Thus, we also need to increase the resilience of communities and ecosystems to such impacts.

Figure 2-2 illustrates the need for both mitigation and adaptation. Insufficient mitigation leads to increased adaptation needs; insufficient adaptation leads to significant damages to human systems, particularly in vulnerable and exposed regions. Crucially, tackling adaptation and mitigation separately may lead to negative effects on the other effort (Grafakos et al 2019). From a more regional perspective, developing countries are often both more vulnerable and exposed to climate impacts. Adaptation needs thus tend to be higher in developing countries.

In a business-as-usual scenario, all three dynamic components are negatively affected and reinforce each other. In a mitigation-only scenario, while hazards may be slowed or even decreased, vulnerability and exposure will continue to increase in the medium term as the effects of even rapid mitigation will not be felt until much later due to global climate inertia. In an adaptation only scenario, vulnerability and exposure may be decreased due to interventions, but hazards will continue to increase as the planet continues to warm. This will undo a lot of the interventions. Only simultaneous and coordinated adaptation and mitigation efforts will effectively reduce all three risk variables.

Figure 2-2: Addressing climate-related adaptation and mitigation (Source: authors)

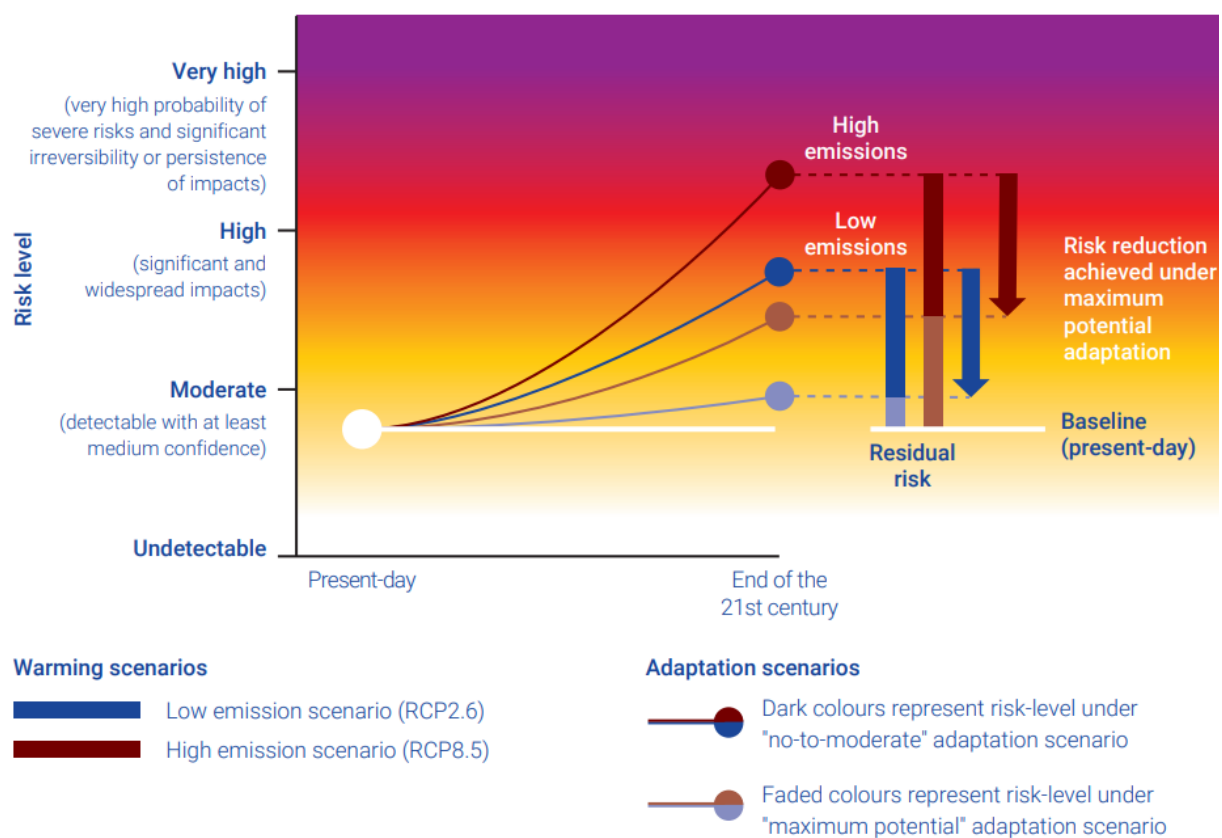


The International Panel on Climate Change's (IPCC) Sixth Assessment Report (AR6) Working Group II concludes that "climate risks are appearing faster and will get more severe sooner" (IPCC 2022). It finds that mitigation pledges in the form of countries' Nationally Determined Contributions (NDCs) are unlikely to limit global warming to 1.5°C (IPCC 2022). Worse, the policies implemented thus far are not yet in line with the reductions implied by the NDCs. In a world with insufficient mitigation, adaptation costs will rise far beyond the costs of combined mitigation and adaptation. Some regions will become uninhabitable, regardless of the scale of adaptation activities.

On the flipside, even in a world where emissions are rapidly reduced, climate change will continue to impact people and nature. Warming and its consequences have been locked in for at least the next twenty years. Mitigation is essential to limit future costs, but adaptation is needed to limit the damages in the interim as warming impacts exacerbate already existing inequalities and will disproportionately affect Low Income Countries and those communities most at risk. Embedding climate adaptation within countries' transition plans is crucial to pursue sustainable development. Figure 2-3 below highlights this relationship between climate adaptation and mitigation.

These needs are reflected in the Paris Agreement, which in addition to "making finance flows consistent with a pathway towards low greenhouse gas emissions" also calls for making these consistent with "climate-resilient development" (UNFCCC 2015).

Figure 2-3: Residual risk for various mitigation and adaptation scenarios (UNEP 2021)



A key challenge for adaptation efforts is that adaptation remains poorly defined. There is growing evidence that not all efforts labelled as adaptation are effective; some even lead to maladaptation (Eriksen et al 2021). The context may not be sufficiently considered, 'adaptation success' is often not well understood, and adaptation measures may be ineffectively retrofitted into development projects.

2.2 The need for finance and the role of banks

Financing is an essential enabler of climate mitigation and adaptation. The Climate Policy Initiative (CPI) estimates US\$ 4.5 trillion are needed by 2030 to meet climate objectives (CPI 2021), while other estimates put energy transition financing needs alone at over US\$ 4 trillion per year by 2026 (BNEF 2022). If the emissions reduction goals of the Paris Agreement are not met, adaptation financing needs will be substantially higher. Recent estimates by UNEP have concluded that the costs of adaptation, and thus adaptation financing needs, are higher than previous estimates, even if warming were limited to below 1.5°C. These costs could be as much as US\$ 340 billion per year by 2030 in developing countries alone (UNEP 2022). Current adaptation financing falls far short of that, totalling only about US\$ 46 billion in 2019/20. This is just 7% of tracked climate finance, with over 90% flowing to mitigation and 3% to cross-cutting themes (CPI 2021). UN Environment's Adaptation Gap Report (2021) highlights the widening financing gap for adaptation. Cost estimates for adaptation are increasing due to insufficient mitigation efforts while adaptation finance flows remain stable or may even be decreasing, despite major international climate funds increasing their share of adaptation financing (GCF 2019).

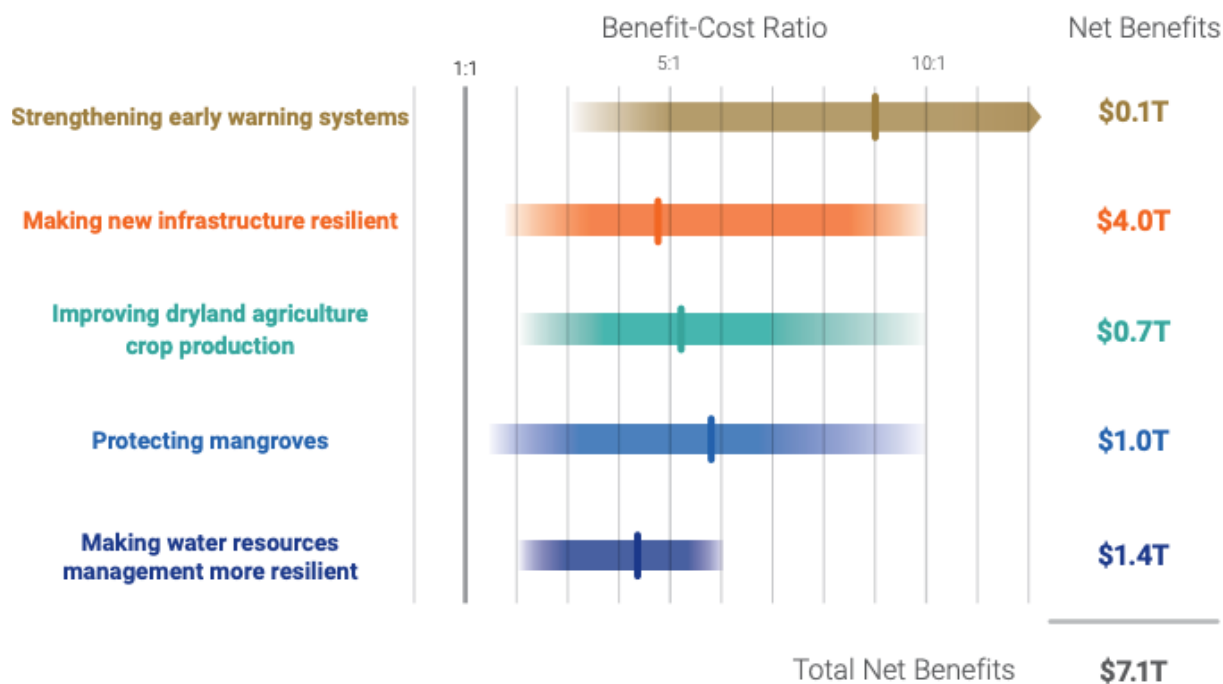
The UNFCCC (2021) analysed the needs of developing country parties in relation to their implementation of the Paris Agreement. They find that developing country parties identify more adaptation than mitigation needs. While cumulatively costed mitigation needs were found to be larger than cumulatively costed adaptation needs, the authors hypothesise this may be due to data gaps, and not reflect actual needs. Current data indicates that likely adaptation financing needs in developing countries are five to ten times greater than current finance flows (UNEP 2021). Failure to provide sufficient adaptation financing exacerbates existing vulnerabilities and exposure to physical climate risks, compounding existing risks.

Physical risks, and thus adaptation needs, are difficult to quantify. There is strong evidence that climate hazards are becoming a lived reality. The Swiss Re Institute estimates that the rise in insured losses from natural catastrophes is increasing by 5-7% annually⁴ (Bevere & Romondi 2022). Different types of portfolios may be affected differently, but most financed activities will be vulnerable to physical climate risks in the long term. How much so, and when, is near impossible to predict, and thus poses a major barrier to structured adaptation work within banks. However, it is in banks' best interests to estimate these risks now, despite the limitations of current physical risk assessment methodologies and data, as effective adaptation measures will reduce a bank's exposure to material physical risks.

4 Based on 10-year moving averages. It should also be noted that in 2021 only ¼ of all economic losses from natural catastrophes were insured.

Private sector investment tends to flow to activities where revenues are projected to be highest, and risks lowest (Pauw, 2015; UNEP, 2021b). For example, a coastal development may yield short-term revenues, but the risk exposure of those assets will increase in the long-term. On the other hand, the [Global Commission on Adaptation](#) estimates that US\$ 1.8 trillion in investment across five key areas of climate adaptation measures could generate US\$ 7.1 trillion in benefits up to 2030 (GCA 2019).

Figure 2-4: Benefits and costs of illustrative investments in adaptation (GCA, 2019).⁵



Nonetheless, when considered in isolation, private sector adaptation finance may be counter-productive for a variety of reasons. Firstly, when social aspects are not considered, they could shift vulnerability to others (Pauw, 2021). When other environmental impacts, and especially climate change mitigation, are not considered, the variables contributing to physical risk could all increase. Climate risk disclosure (Dale et al., 2021) and sustainable finance system policies are essential developments in this context. This paper proposes a way of framing adaptation alignment, building on risk management identification, assessment and management as a starting point for understanding the interlinked physical climate impacts and how to manage these through a positive adaptation framework.

5 This graph is meant to illustrate the broad economic case for investment in a range of adaptation approaches. The net benefits illustrate the approximate global net benefits to be gained by 2030 from an illustrative investment of US\$ 1.8 trillion in five areas (the total does not equal the sum of the rows due to rounding). Actual returns depend on many factors, such as economic growth and demand, policy context, institutional capacities, and condition of assets. Also, these investments neither address all that may be needed within sectors (for example, adaptation in the agricultural sector will consist of much more than dryland crop production) nor include all sectors (as health, education, and industry sectors are not included). Due to data and methodological limitations, this graph does not imply full comparability of investments across sectors or countries.



3. Concept of aligning portfolios with climate resilience

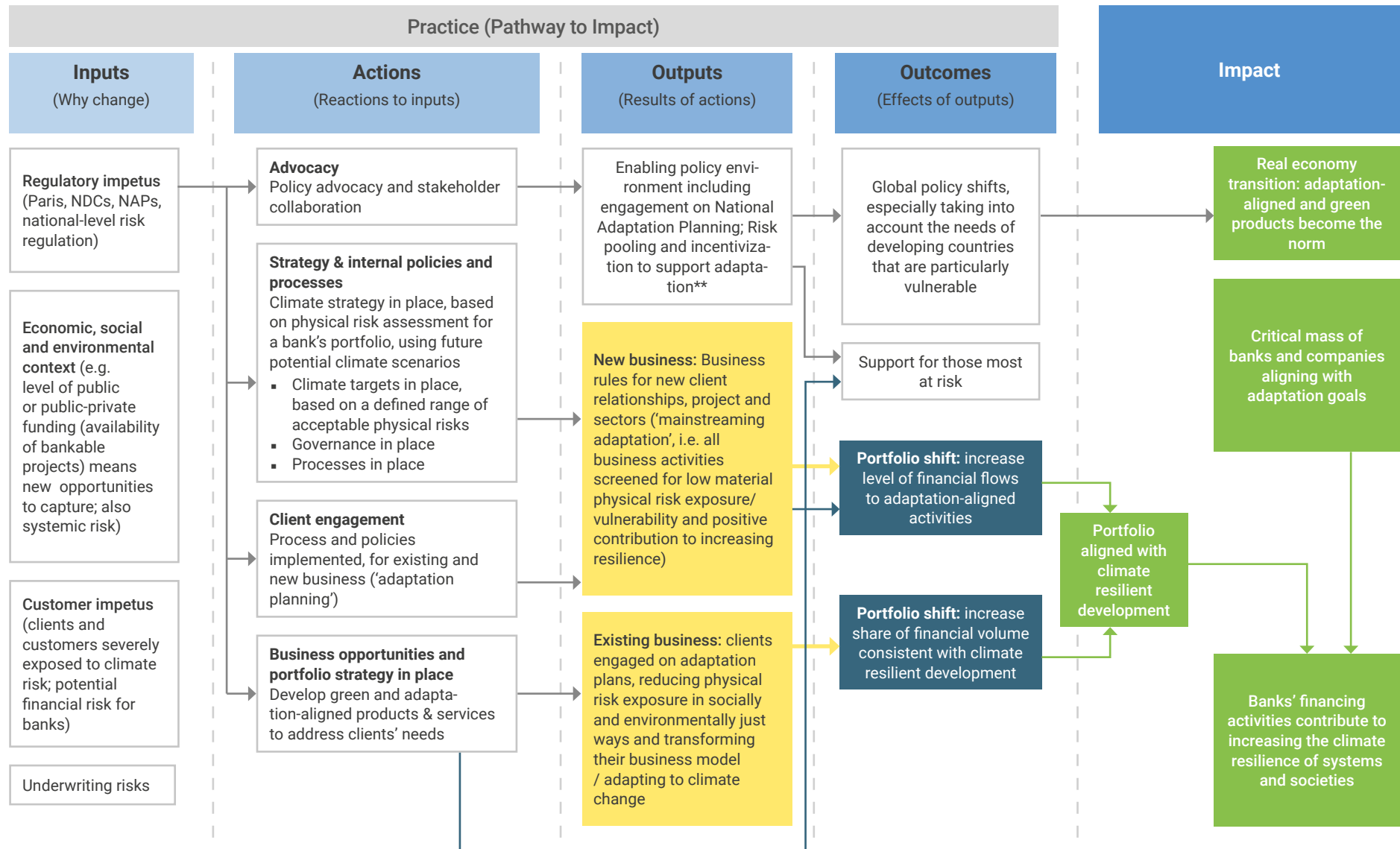
The Principles for Responsible Banking aim to drive more responsible sustainable lending to deliver positive impacts in society and the wider economy and to align portfolios with the goals of the Paris agreement, including climate resilient development. Theories of change provide a framework for establishing linkages between actions driven by banks, outputs delivered, and impacts in society, the wider economy and ecosystems. In the case of climate adaptation, the desired impact of financial institutions is to contribute to the increased (climate) resilience of human systems. This chapter proposes a framework for climate resilient banking, identifying a series of broad actions for banks to deliver wider resilience. Several frameworks are also reviewed, including the TCFD, the EU taxonomy, or the concept of ‘adaptation alignment’ (Mullan & Ranger), which can be taken into account when developing an adaptation impact framework for banks.

3.1 The concept of climate resilience from a banking perspective

The aim of the Theory of Change set out below is to identify the pathways for the integration of climate adaptation across the economy, including the financial sector, in order to increase and maintain the climate resilience of systems and societies (= impact). The steps on that pathway to impact are described below. This draft framework is a basis for discussion with banks as we develop our work on climate adaptation over the coming year, but could potentially be applied to other areas of the finance sector.

Figure 3-1: Theory of Change for climate adaptation.

* This Theory of Change was developed from a banking perspective and therefore does not necessarily address all relevant stakeholders, but is also applicable to many financial institutions.



Linked to client engagement targets
 Linked to portfolio composition & financial targets
 Linked to impact targets

**where feasible and managed divestment otherwise

Drivers/inputs

What might drive banks to consider physical climate risks in their business and operations and consequently climate adaptation? There are four distinct drivers:

- 1. Customer impetus:** As activities and assets are increasingly exposed and vulnerable to physical climate risks, banks may be themselves exposed to increased probabilities of default as clients are unable to generate income or lose asset value. Banks require a risk mitigation strategy to address these.
- 2. Regulatory impetus:** Emerging regulation aims to increase the disclosure of physical climate risks and, in some jurisdictions, track climate adaptation financing, meaning that this information will increasingly be demanded by regulators.
- 3. Business opportunity impetus:** Risk assessments, national adaptation plans and client engagement may reveal market and systemic risks driven by environmental, social and economic factors, which may drive banks to take action. This may also create new opportunities as public finance for adaptation increases.
- 4. Underwriting impetus:** Insurers are heavily impacted by changes in physical climate-related impacts, particularly acute risks such as extreme weather, flooding, wildfires, landslides, etc., while long-term changes in temperature, sea level and precipitation will increase uncertainty around risk models in the medium to long term. These changes may increase underwriting exposure and uncertainty for lenders.

Actions

Four types of action to achieve desired outputs, outcomes and ultimately impact emerge in **Figure 3-1**: (i) Advocacy, (ii) Strategy and internal policies & processes, (iii) Client engagement, and (iv) Business opportunities & portfolio strategy.

Physical climate shocks impact at the geographical and sector level, rather than on specific assets and technologies as is the case for transition risks. Therefore, physical risks are far harder for firms, and by extension financial institutions, to tackle independently.

Advocacy is therefore essential, to drive public policy engagement and collaboration with external stakeholders across business lines and across society. Collaborative approaches more efficiently share risks and increase societal and economic resilience.

Banks can play a role in ensuring that hotspots of physical climate risks can be addressed by building a coalition across businesses, financial institutions, insurance, civil society and government through public engagement and advocacy. While it may be financially unviable for banks to serve all customers, banks could advocate for incentives, risk pooling, public planning and investment and, as a last resort, managed retreat, including divestment in response to increasing physical climate risks.

Adaptation strategy and internal policies & processes: A good starting point for understanding adaptation and resilience needs in a bank's portfolio is physical risk assessment and management in line with the TCFD framework. Banks need to have strategies in place to manage and reduce their risks to an acceptable level, i.e. their customers and clients need to improve their risk ratings to remain bankable. Understanding its

physical risk exposure, i.e. how affected its clients and projects will be by the physical impacts of climate change, will help a bank identify where to focus its adaptation efforts. If the company or project then adapts to climate change, it will also decrease the banks' exposure to physical risks. Banks can leverage the TCFD framework to structure their assessments, thus promoting responsibility for risk management from the Board down (Governance), identifying risks and their impact on business and financial planning (Strategy), managing those risks (Risk Management) and measuring those risks with a view to setting targets (Metrics & Targets). Banks should aspire to build collaboration internally across business lines to effectively implement the climate strategy.

Thirdly, **client engagement** is essential, firstly to obtain more granular quantitative and qualitative data on climate impacts and on assets to better inform risk models. Once physical risk hotspots have been identified, client engagement will help them to develop adaptation plans, mitigate risks and identify potential opportunities—all three of these actions will feed back into better climate adaptation outcomes at the loan book level.

Finally, identifying **business opportunities** through client engagement may also drive financial innovation, when aligned with public policy advocacy and third-party engagement. This will enable the creation of a regulatory and business environment that allows financial institutions to develop innovative products and services. Going back to collaboration, working across industries with investors, insurers, public financing institutions and climate specialists will also help to develop the financial innovation that can drive more financing to effective climate adaptation outcomes.

Moving from actions to outputs and outcomes

Transition plans provide a framework for businesses and financial institutions to align with emissions reductions goals in line with the Paris Agreement, and have been promoted by the TCFD secretariat (2021), while mandatory transition planning for listed companies is being implemented in the UK and in the EU. 'Adaptation planning' could perform a similar role in helping a bank and its clients to identify, measure and manage climate risks, transition to a climate-resilient lending model and identify climate-adapted financing opportunities. Building an effective adaptation plan would also require effective client engagement on climate adaptation planning:

- the existing client base is engaged on adaptation plans and will start to assess, measure, manage and monitor its physical risk exposure in socially and environmentally just ways, thus adapting to the physical impact of climate change. Risk assessment would identify the most vulnerable elements of a loan book and allow the bank to focus on risk—and opportunity—hotspots;
- moving beyond risk management, an adaptation plan would set out how adaptation alignment and financing could be rolled out across a bank starting with the most vulnerable sectors and geographies, based on prior risk assessment. Establishing the most viable and relevant adaptation metrics and setting targets would reinforce the credibility of the plan and drive incentives for change.
- rules for new client relationships (incl. new projects and sectors) ensure that an adapted client base becomes the rule ('mainstreaming adaptation), meaning that all

business activities are screened for a low physical risk exposure or an adaptation plan to gradually decrease the risk exposure and vulnerability as well as contributing positively to increasing resilience.

- setting out policy engagement and stakeholder collaboration strategies would also be essential to adaptation planning and feed back up into sectoral, regional and national adaptation planning.

Ideally, policy advocacy would also allow banks to communicate the enabling actions that policy makers can take to accelerate private capital to support adaptation goals and align with national adaptation planning. As a consequence, the portfolio of a bank becomes aligned with national and global goals of climate resilient development, by increasing the level of financial flows to adaptation-aligned activities and by increasing the proportion of the portfolio that is consistent with climate resilient development.

3.2 Exploring adaptation frameworks

Several frameworks have been developed over the past few years or are in the process of development to guide financial institutions in identifying and measuring climate adaptation or to support the development of products that finance climate resilience. Each of them is tailored to meet the needs of a particular type of financial institution or product. Given the short history of these adaptation frameworks there is little conclusive evidence so far as to whether and how they have helped commercial financial institutions to identify adaptation actions and scale their financing for positive adaptation. However, each of these frameworks provide useful framings of adaptation and resilience for financial institutions and investment products that could contribute to an adaptation framework for banks. One exception is the Taskforce for Climate-related Financial Disclosures, which is included here as a globally accepted framework for identifying, assessing, measuring and managing climate-related risks including physical risks, widely used as a first stage in adaptation framing for both financial institutions and corporate entities.

3.2.1 The recommendations of the Taskforce on Climate-related Financial Disclosures (TCFD)

The TCFD was developed to help companies disclose their climate-related risks. The TCFD framework distinguishes between physical and transition risks. Physical risks are the consequence of climate-induced hazards, while transition risks arise from policy actions, technological development or market shifts as economies transition away from carbon.

While not strictly a framework for adaptation, the TCFD does provide a framework for firms, including banks, to identify, assess, manage and disclose their climate-related risks. Physical risk assessments are fundamental to understanding exposure to climate-related risks and therefore financing adaptation. Nevertheless, the interdependencies of physical and transition risk should not be underestimated.

Despite the recommendations of the TCFD being launched in 2017, delivering comprehensive and decision-useful physical risk assessment remains a challenge for banks and

other financial institutions. UNEP FI's 2022 report, "Physically Fit?"⁶ highlights the current challenges and provides guidance on more effective disclosures, while UNEP FI continues to provide guidance on physical risk assessments through its TCFD programme.⁷

3.2.2 EU Taxonomy for sustainable activities⁸

In 2018, the European Commission adopted the High-Level Expert Group's recommendations to launch the action plan on sustainable finance. One of the key recommendations, which became a pillar of the action plan, was to establish a classification system for sustainable activities, now known as the EU Taxonomy for sustainable activities. The Taxonomy is intended to cover six areas of sustainable activities including climate adaptation. The Taxonomy regulation came into force in 2020, while a Delegated Act covering climate mitigation and adaptation activities was adopted in 2021.

The Taxonomy establishes what activities can be considered 'green' and, in order to do so, an activity must meet the four following criteria:

- Make a 'substantial contribution' to at least one of the six environmental objectives covered by the Taxonomy, one of which is climate adaptation. A 'substantial contribution' to climate adaptation is defined under Annex 2 of the Taxonomy.
- Do no significant harm (DNSH) to any of the other environmental objectives of the Taxonomy. Aside from climate adaptation, this includes:
 - climate mitigation,
 - sustainable use and protection of marine and water resources,
 - transition to a circular economy,
 - pollution prevention and control,
 - protection and restoration of biodiversity and ecosystems.
- Comply with minimal social safeguards.
- Comply with technical screening criteria as defined in the annexes to the taxonomy—annex 2 in the case of climate adaptation.

The technical screening criteria for climate adaptation recognises the location and sector-specificity of climate hazards and uses a process-based approach to screen adaptation activities. The criteria require a physical climate risk assessment of the activity to:

- a. identify and assess existing risks, and
- b. the reduction in risk that the activity will generate, "consistent with the lifetime of the activity".

6 To be released in December 2022.

7 See unepfi.org/climate-change/tcfd/tcfd-for-banks/.

8 See [Taxonomy Report: Technical Annex](#) (EU Technical Expert Group on Sustainable Finance, 2020).

The Taxonomy covers 68 economic activities, originally selected because of their potential to contribute to climate mitigation though, using the process-based approach, it could be applied more widely. The Taxonomy recognises two types of activities where adaptation is the primary aim, i.e. “substantially contributes to climate adaptation”. These are:

1. Adapted activities, and
2. Activities contributing to adaptation.

For ‘adapted activities’, whereby an activity is adapted to all material physical climate risks to the extent possible, it must:

1. **Reduce material physical climate risks**—integrating physical and non-physical measures to reduce all material physical risks to the activity to the extent possible and on a best effort basis.
2. **Support system adaptation**—the activity does not increase the risks of adverse climate impacts on other people, nature and assets, and the activity is consistent with sectoral, regional and national adaptation plans.
3. **Monitor adaptation results**—adaptation can be measured and monitored against defined indicators.

For ‘activities contributing to climate adaptation’, the activity must demonstrate how it supports the adaptation of others through a climate risk assessment and an assessment of the contribution of that activity to reducing those risks.

Given that adaptation is rarely the primary aim of a commercially financed activity, the technical screening criteria for climate adaptation will largely be used in their DNSH capacity. A 2022 UNEP FI and European Banking Federation (EBF) joint report looked at twenty-six case studies, none of which contributed substantially to climate adaptation, while for the DNSH criterion, several case studies were unable to provide sufficient data. This may limit the EU Taxonomy’s capacity to provide a framework for accelerating adaptation finance, though it does provide a framework for assessing whether climate mitigation projects are climate-resilient.

3.2.3 Climate Bonds Initiative (CBI)⁹

The Climate Bonds Initiative is an international organisation aiming to develop green and climate bonds markets, which will drive down the cost of capital for climate projects in both developed and emerging markets. Key to this objective is the development of a labelling scheme for bonds to prioritise investments, known as the Climate Bonds Standard and Certification Scheme. The Climate Bonds Taxonomy forms the backbone of the standard, defining activities and asset types that are compatible with climate mitigating activities.

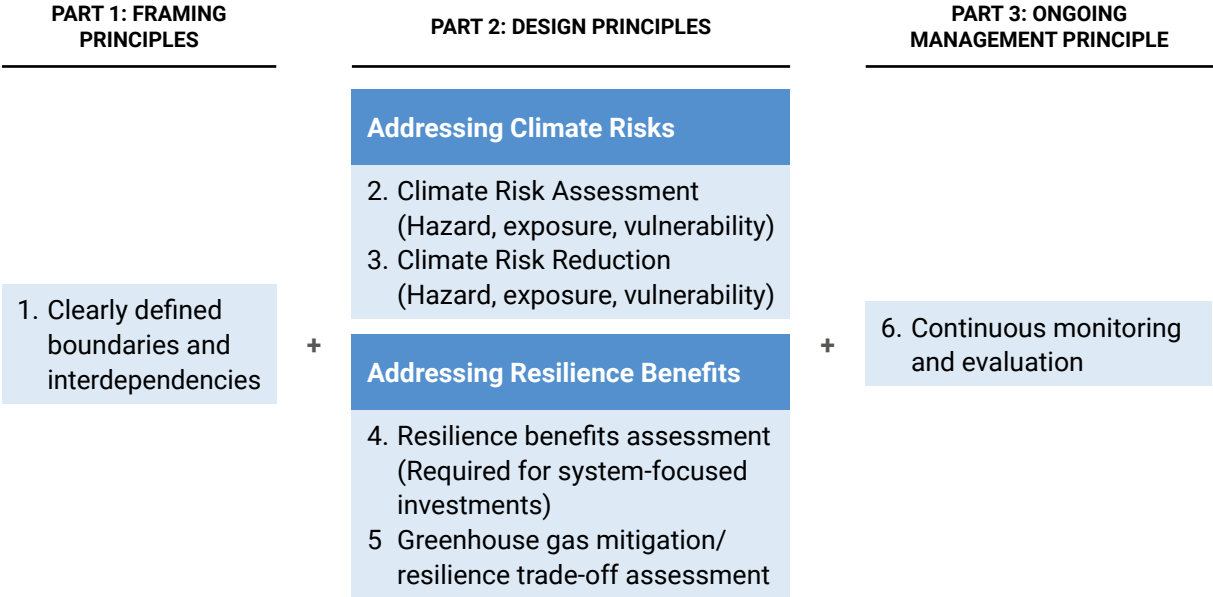
9 [Climate Resilience Principles](#) (CBI, 2020).

In order to scale climate resilience investments, the CBI convened the Adaptation and Resilience Expert Group (AREG) in October 2018 to develop the Climate Resilience Principles, which provide guidance on when an activity can be considered compatible with a climate resilient economy. The Criteria defined by the Principles require bond issuers to go beyond assessing climate risks and demonstrate that for the financed assets and activities, issuers:

- Understand the risks faced by the asset, activity or system;
- Manage those risks through risk-reduction measures and management plans, ensuring that the asset, activity or system is robust, flexible and fit-for-purpose in the face of climate uncertainties;
- Deliver resilience benefits over and above addressing the identified risks; and
- Evaluate and re-evaluate the asset, activity or system’s climate resilience, adjusting to performance over time.

The Principles therefore aim to address both climate risks and define a framework for assessing the positive benefits of a resilient investment. The below diagram describes the balance between risks and positive adaptation ‘benefits’.

Figure 3-2: CBI Climate Resilience Principles (2019)



The Principles also identify two types of investments, those that are *asset-focused* and those that are *system-focused*. Roughly speaking, the resilience benefits of an asset-focused investment will only increase the resilience of an asset, while a system-focused investment will increase the resilience of both an asset and the broader system.

3.2.4 The Joint MDB Framework on adaptation¹⁰

A joint working group of Multilateral Development Banks (MDBs),¹¹ along with members of the International Development Finance Club (IDFC),¹² published the Common Principles for Climate Change Adaptation Finance Tracking in July 2015. Since 2021, a working group has been developing of a set of climate resilience metrics, while 2022 sees the redrafting of a joint methodology for tracking climate change adaptation. The aim behind this approach is to mainstream the financing of resilient pathways by expanding the scope of the Common Principles across a wider range of sectors and financing types, as well as incorporating learnings from the EU Taxonomy and International Capital Market Association (ICMA) Green Bond Principles, as well as incorporating resilience into MDBs' commitments to align with the goals of the Paris Agreement.

The draft framework considers three types of activities for adaptation finance:

1. **Activities that are adapted**—adaptation is not the main goal of the activity.
2. **Activities that have shared goals of development and adaptation**—activities that reduce “physical climate risk and build the adaptive capacity of the system within which the activity takes place”.
3. **Activities that enable adaptation**—“activities that contribute to reducing underlying causes of vulnerability to climate change at the systemic level” and contribute to adaptation knowledge, capacity and technologies.

The first category could be considered analogous to the CBI's asset-focused investments and the second and third categories to system-focused investments, though addressing different levels of systemic adaptation.

The framework takes a three-step process-based approach to assessing the integration of climate adaptation in investments, which must:

1. Establish the climate change vulnerability context
2. Set out to reduce the identified climate change vulnerability, and
3. Establish the link between project activities and identified climate change vulnerabilities.

These questions aim to establish the climate adaptation credentials of an investment, at which point the adaptation activities or of the financing can be disaggregated and measured or estimated using an incremental or proportional approach. These latter methodologies estimate the adaptation financing in a project with respect to either a non-adapted baseline or to a proportion of the project estimated from a range of sources including analysis of similar projects and expert opinion.

¹⁰ Based on the draft updated MDB methodology for tracking adaptation finance (2022—available to authors).

¹¹ The members of the Joint MDB Climate Finance Group are the African Development Bank (AfDB), the Asian Infrastructure Investment Bank (AIIB), the Asian Development Bank (ADB), the European Bank for Reconstruction and Development (EBRD), the European Investment Bank (EIB), the Inter-American Development Bank Group (IDB and IDB Invest), the Islamic Development Bank (IsDB), and the World Bank Group (WBG).

¹² A complete list of members of the IDFC can be found at: idfc.org/members/.

The above methodology applies to project financing, but similar approaches have been introduced to assess the adaptation financing of loans, working capital, and intermediated lending. These latter approaches may have some lessons for commercial lenders.

3.2.5 ASAP Adaptation Solutions Taxonomy¹³

The Adaptation SME Accelerator Project (ASAP) is an initiative intended to accelerate the availability and uptake of adaptation solutions by small and medium-sized enterprises (SMEs) in the developing world. The project aims to targets SMEs in Latin America, Africa and Asia, operating in water, agriculture or health sectors, by providing support through either:

- Intelligence: enhancing a user's knowledge and understanding about specific climate risks and the impacts of climate change, or
- Products and services: enhancing a user's ability to adapt or build resilience to climate variability or change.

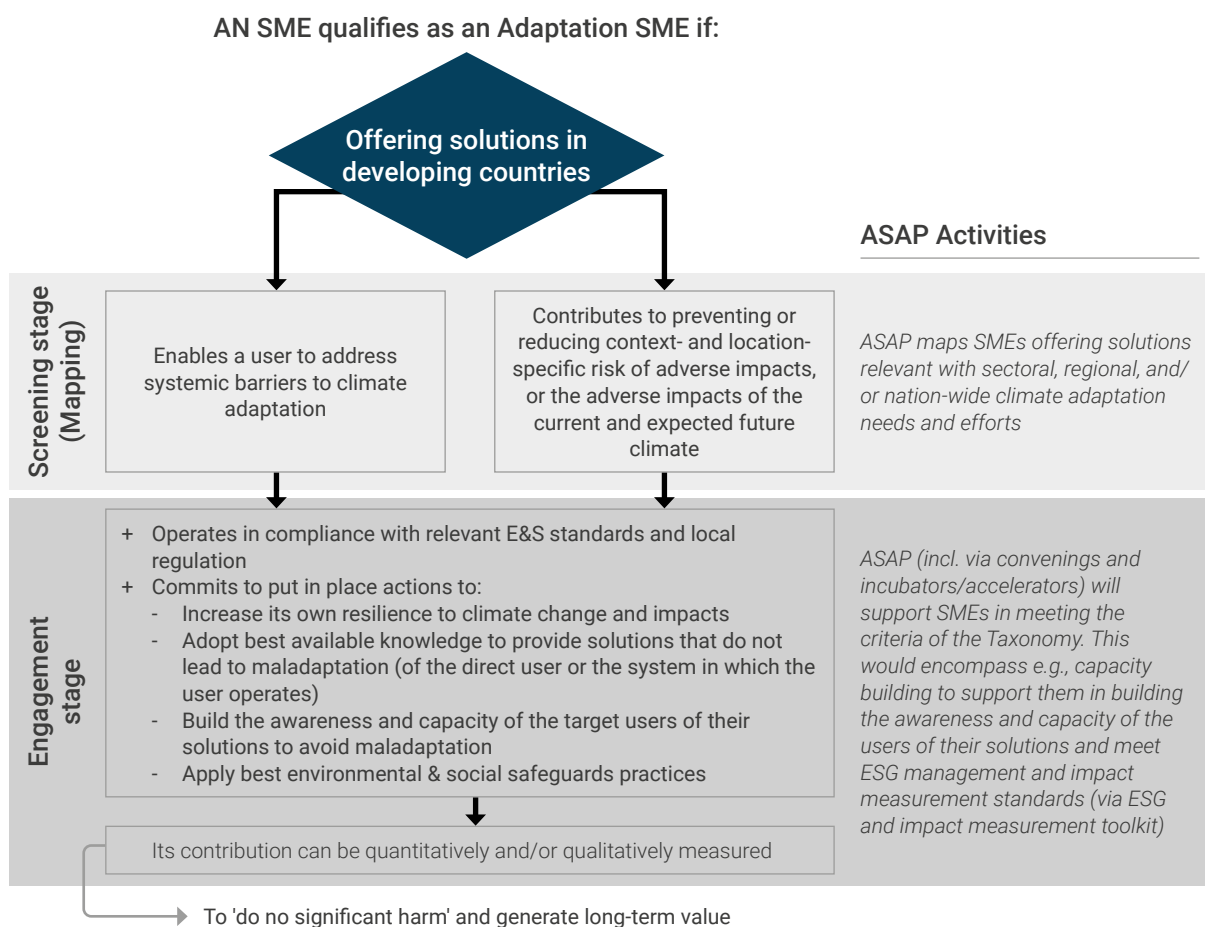
In order to identify SMEs, ASAP developed a taxonomy building on the work of e.g. the EU Taxonomy, CBI, Joint MDBs, among others. Given this taxonomy is focused on SMEs, specific sectors and emerging markets, this may have some important features for retail and agricultural banks working in the Global South. The proposed definition of adaptation financing is based on the EU Taxonomy and allows the initiative to identify SMEs that offer technologies, products or services that either:

- Enable a consumer to identify, evaluate, and/or manage physical climate risks and impacts, or
- Enable a user to address systemic barriers to adaptation

The taxonomy allows for qualitative and quantitative definitions of adaptation which is important in contexts where data is not readily available.

13 climateasap.org/the-asap-taxonomy/

Figure 3-3: Application of the ASAP Adaptation Solutions Taxonomy approach (2020)



3.2.6 Coalition for Climate Resilient Investment (CCRI)¹⁴

Focused initially on project financing for infrastructure, the Coalition for Climate Resilient Investment was launched in 2019 and brings together over 120 institutions from across banking, investment, insurance, business, engineering, climate specialists, academia, international financing institutions and government.

The Coalition’s aim is to integrate physical climate risks into investment decision-making to crowd in private financing for more climate resilient infrastructure assets and networks. The Coalition’s methodology integrates three key elements:

- a. Systemic resilience**, including the development of systemic resilience metrics and an investment prioritisation tool for governments to better plan and assess resilience across infrastructure networks
- b. Asset design and structuring**, which incorporates the Physical Climate Risks Assessment Methodology (PCRAM), resilience credit quality drivers, and the CCRI Resilience Investment Principles
- c. Financial innovation**, which will develop innovative financing instruments, including resilience bonds.

14 [Coalition for Climate Resilient Investment](#), 2022

In this context, the asset design and structuring workstream is the most relevant as PCRAM allows project investors to assess physical risks and appraise the benefits of incorporating resilient design, through a 4-step process:

1. Scoping and data gathering—determines if data is of quality and sufficiency to conduct assessment and determines ‘KPI’ or metric.
2. Materiality assessment—more detailed quantitative climate risk assessment of potential scenarios and hazards.
3. Resilience building—assessment of range of hard and soft resilience solutions
4. Economic and financial analysis—cost-benefit analysis and internal rate of return (IRR) comparison.

This approach provides a comprehensive assessment of physical risks and resilience options and is technically and financially feasible for large scale project investments where assets are expected to last for decades well into a radically altered climate. The CCRI aims to expand their methodology to other sectors and asset classes, potentially starting with real estate investments.

3.2.7 The Institutional Investors Group on Climate Change (IIGCC)¹⁵

The IIGCC released a consultation paper, ‘Working Towards a Climate Resilience Investment Framework’ in September 2022 with a view to releasing a final framework for institutional investors to integrate and adopt adaptation and resilience metrics and targets into their investment strategies. The Framework aims to complement the mitigation goals of the Net Zero Investment Framework used by the Net Zero Asset Managers (NZAM) and the Paris-Aligned Asset Owners (PAAO) initiatives in order to meet the dual objectives of the Paris Agreement to scale.

The draft framework identifies two levels of physical risks:

1. **Asset and portfolio risks:** direct impacts to investors’ clients, assets and projects, as well as impacts on the investors’ own operations.
2. **Systemic risks:** Physical climate impacts are multi-scalar, in other words investors need to address these risks at asset, portfolio and systemic levels.

The draft framework proposes six levers to address physical climate risk at all levels from asset up to systemic:

1. Integration of physical risk and opportunities into investment processes
2. Asset allocation and portfolio construction
3. Asset alignment, engagement and stewardship
4. Investment in adaptation solutions
5. Policy advocacy
6. Disclosure

¹⁵ Not currently publicly available, see listing in Bibliography.

Levers 1 and 6 focus on climate risk measurement and disclosure, while Lever 2 corresponds to climate risk management, corresponding to key outputs from TCFD-aligned framing of climate risk identification management and monitoring. In order to drive positive adaptation ‘alignment’ and address systemic risks, the framework introduces three further levers. Investment in adaptation solutions aims to channel financing into climate resilience, while Levers 3 and 5 aim to address physical climate risks through by engaging with companies on resilience building activities and with local and national administration and industry bodies on adaptation planning, and regulation, including climate disclosure frameworks. The proposed framework for investors centers on five pillars to tackle resilience at portfolio and asset levels as well as tackling systemic risk through engagement and advocacy:

Portfolio/fund level shifts direction & portfolio structure for alignment			Asset class level shifts alignment of assets to meet portfolio goals	External advocacy & engagement
Governance & strategy	Targets & objectives	Strategic asset allocation	Asset alignment	Policy advocacy & market engagement

3.3 Aligning finance with climate resilience goals

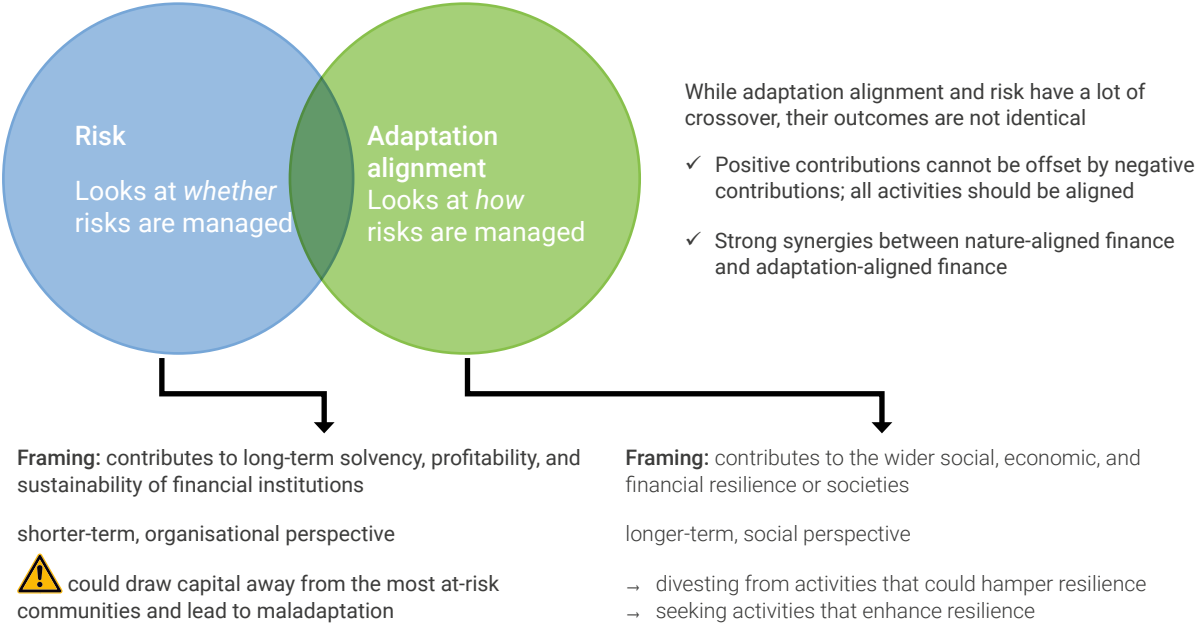
In their 2021 paper, Michael Mullan, OECD, and Dr Nicola Ranger (University of Oxford) assess several of the above-mentioned frameworks,¹⁶ highlighting common elements and framings of adaptation. This assessment identifies five common features among the five frameworks reviewed, including:

- **Positive alignment:** aim to align investments to resilience rather than identifying non-aligned investments.
- **Process-based:** building on climate risk assessment and management processes.
- **Resilience of/resilience through:** many approaches distinguish between investments that are resilient (resilience of) and investments that enable resilience (resilience through).
- **Systemic impacts:** avoid maladaptation at the system-level.
- **Monitoring:** requires measurement of performance over time.

Drawing out these common elements and distilling them into a proposal for an adaptation alignment framework, the authors underline the importance of both climate risk assessment and management. Risk management alone does not ensure a positive contribution to society (see Figure 3-4 below). For example, a bank may have significant physical risk exposures in coastal areas due to projected sea level rises. From a risk management perspective, withdrawing loans from properties in coastal areas would likely reduce the bank’s risk exposure. However, this may threaten the resilience of the affected communities.

¹⁶ Mullan & Ranger’s paper also assess the World Bank’s [Resilience Rating System](#) and the European Bank of Reconstruction and Development’s (EBRD) [Paris Alignment Methodology](#).

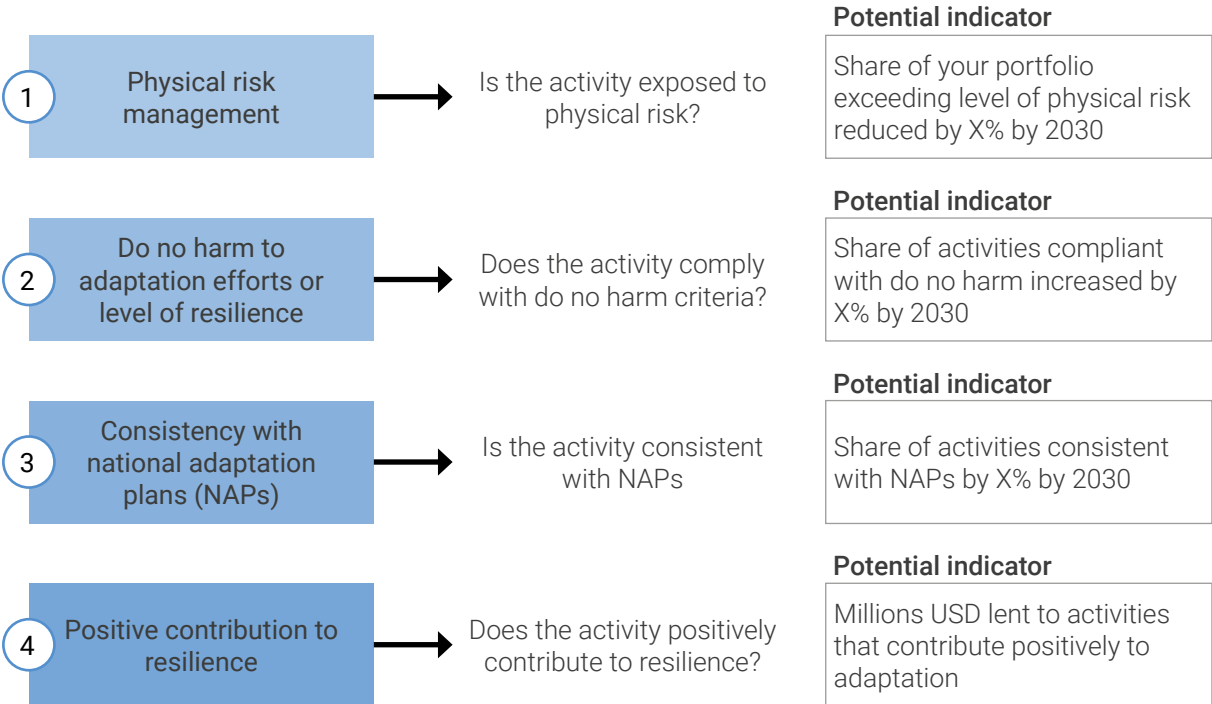
Figure 3-4: Graphic summarising the differences between the risk management and adaptation alignment. (Source: Mullan and Ranger 2022)



Secondly, they propose aligning finance with adaptation and resilience goals by ensuring that investments are not maladapted. Do no harm criteria can help banks navigate this. For example, the bank can use the EU taxonomy definition of an activity harmful to adaptation as guidance: “if it leads to an increased adverse impact of the current climate and the expected future climate, on the activity itself or on people, nature or assets”. Financing activities should also be consistent with National Adaptation Plans (NAPs).

Finally, the authors distinguish between ‘adaptation alignment’ and ‘positive adaptation alignment’ by including a fourth factor. Where possible, financial institutions, including banks, should proactively support or incentivise activities that directly contribute to adaptation and resilience (of a particular community, firm or society more widely) or enable more climate-resilient development (Item 4 in Figure 3-5). This could also mean divestment from activities that create or increase physical risks as a *last resort*. Through a combination of risk-sharing instruments in partnership with insurers, innovative financing instruments or processes to incentivise resilience-building, client engagement and dialogue between government, communities, and financial institutions including insurers, financial institutions could deliver positive climate-resilient outcomes in the real economy. For example, in the case of lending to coastal areas at risk of sea level rise, the bank could ensure that all its real-estate clients retrofit flood-resilient designs to existing properties, while engaging with insurers and government on risk pooling and local and national authorities on flood risk management and mitigation measures. A possible indicator would be tracking the amounts (or percentage increase) in lending to activities that contribute positively to adaptation. Figure 3-5 sets out this hierarchy of ‘positive adaptation alignment’ stages (Mullan & Ranger 2021).


Figure 3-5: Approach to achieving positive adaptation alignment (Mullan and Ranger 2021), with potential indicators (authors)



3.4 Overview of resilience framing for banks

The Theory of Change outlined in section 3.1 provides a conceptual basis for linking drivers of change, direct and indirect climate impacts, to the change that we want to see in society and the economy, i.e. climate resilience. The aim here is to identify how changes in banking governance, strategy and decision-making can deliver impact. To transform the concept into reality, a suitable framework needs to define the necessary actions. Several frameworks have already been developed for different use cases, such as defining climate resilience bonds, tracking adaptation finance or accelerating finance for resilient infrastructure. These frameworks have common characteristics, which aim to assess whether a particular activity is adapted or contributes to adaptation. However, some of the frameworks are focused on particular products, e.g. bonds, SMEs or project investments, while the aspect of positive adaptation needs to be reinforced (Mullan & Ranger 2022).

A target-setting impact framework also need metrics to quantify and assess progress. Identifying suitable metrics to assess progress on adaptation requires careful analysis and discussion between banks. We have provided a small selection of metrics in this report, but a comprehensive review of metrics must be part of the next phase of framework development.



4. How banks are facing the growing threat of climate change—a survey

4.1 Methodology

This study was designed as a qualitative study of banks globally, with dedicated sections on Middle East and North Africa (MENA) and Latin America and Caribbean (LAC) as two regions prone to the physical impact of climate change. Data were collected through a survey distributed to the signatories of the Principles for Responsible Banking as well as banking associations in the MENA and LAC regions.

Of the 143 respondents, 86 banks are PRB signatories, 29 of which are also Net-Zero Banking Alliance (NZBA) members. This global analysis focuses on signatories of the Principles. Data from non-PRB respondents will be discussed in more detail in the regional chapters.

The survey was divided in four sections: general, identification and assessment of climate risks, managing climate risks, and financing of climate adaptation and resilience. Several limitations arose in the collection and interpretation of these data. First, regions are not equally represented. Thus, averages are biased by the LAC and Europe regions. Where regional differences are important to the analysis these were qualified, though Sub-Saharan Africa and North America were excluded from these as the dataset was too small ($n < 5$). Secondly, adaptation remains a nascent area and some of the feedback suggests that the term may not be fully understood by most, despite IPCC definitions, including of adaptation, resilience and mitigation being included in the interview. Some answers provided suggest some confusion between mitigation and adaptation, and are indicative of a potentially larger issue around the definition and interpretation of adaptation. One example would be the highlighting of renewable energy as a focus of adaptation financing in the LAC region. It is possible that these may be climate adapted investments, but future surveys should provide more explicit direction on what constitutes 'adaptation-aligned financing' in the questions.

Follow up interviews were conducted with banks that indicated they had either begun working on adaptation targets or developed adaptation-specific products. Results have been integrated in the analysis and were used to contextualise the survey findings.

4.2 Survey results

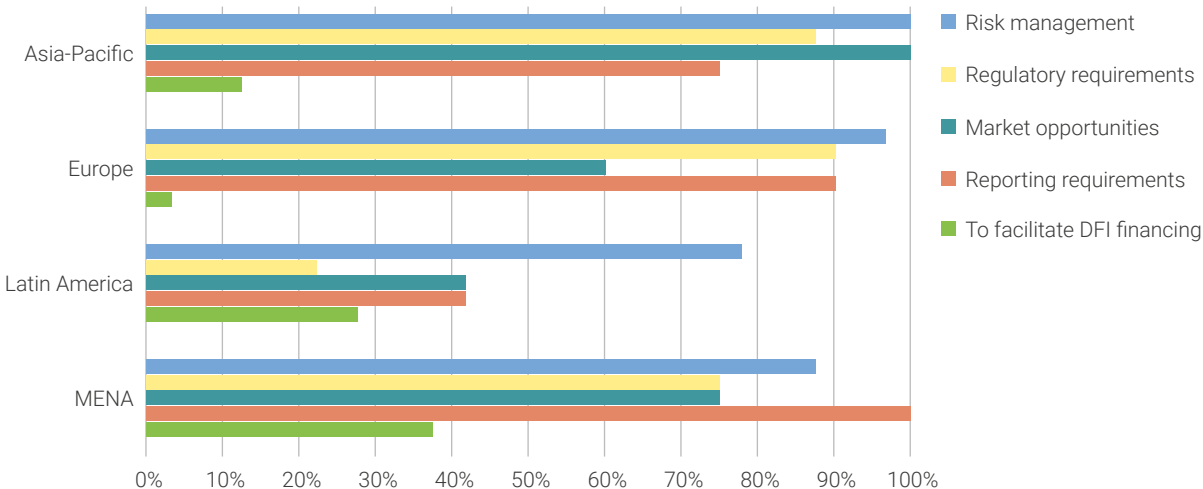
4.2.1 Identification and assessment of climate risks

94% of respondents (n=86) are assessing climate-related risks. Of those, 45% are reported to be considering both physical and transition risk in their assessment while 41% consider that they are currently working on climate risk assessment. 8% state that they are focusing on physical risk only. 22% have measured and 52% of respondents are in the process of measuring their physical risk exposure. Over 80% of banks use one or more reporting frameworks including, in order of popularity: TCFD, CDP, relevant EU frameworks and GRI.

When asked about the main climate-related risk drivers, almost 80% of responding banks pointed to transition risk, while 60% percent pointed to acute physical risks such as extreme weather events. Only around 50% consider gradual changes in climate as a main climate related risk driver. However, only 22% report having measured their physical risk exposure, with 52% of banks being in the process of doing so.

Strong regional trends emerged in the reasons banks gave for assessing climate-related risks (see Figure 4-1). While risk management is the most popular reason for banks to assess climate-related risks (88% of banks across the regions), regulatory requirements are nearly equally important in Asia-Pacific and Europe. On the flipside, only 22% of LAC respondents view regulatory requirements as a reason. All respondents from Asia-Pacific also see market opportunities as a reason, in contrast to the other regions where this is a less frequently listed factor. Reporting requirements are most important in Europe and MENA, less important in Asia Pacific and least important in LAC. Development finance was not seen as a reason to assess climate-related risks in most regions, though notably more LAC banks see development finance as a reason than regulatory requirements.

Figure 4-1: What are the reasons why you are assessing climate-related risks? Due to low response rates (n<5), Africa and North America were excluded from the chart.



In summary, while the majority of banks are working on climate risk assessments, the focus of banks is on transition risk assessments with only a fifth reporting measuring its physical risk exposure.

4.2.2 Managing climate risks

Most banks claim to have either partially put in place an approach to manage climate related risks or included physical risk in their risk management strategy (42%) or are planning to do so in the coming year (42%). Only 13% state that they have already put in place an approach to manage physical risks in their portfolios.

While some banks have begun work on setting targets on climate-related risks and developing policies in line with NAPs, this is still a work in progress or only an area of work for a quarter of responding banks.

Figure 4-2: Has your bank set targets used by the organization to manage climate-related risks and opportunities and performance against targets?

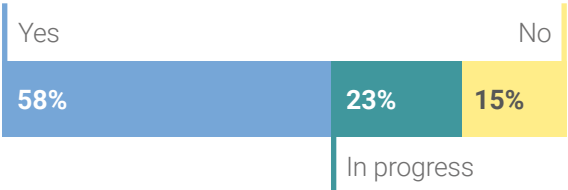
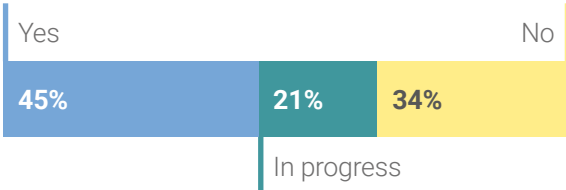


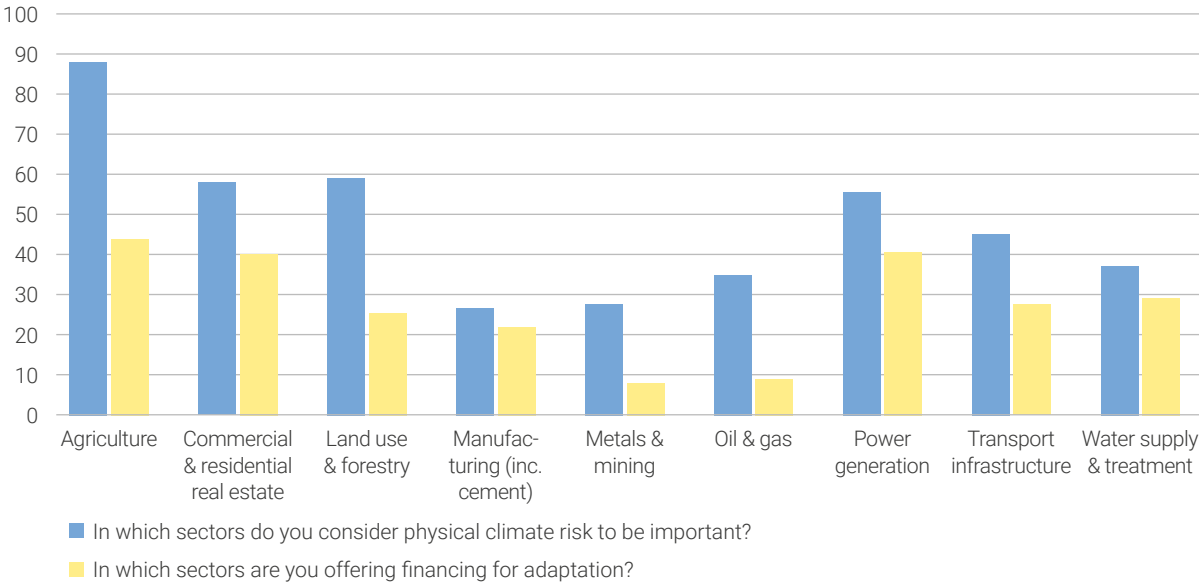
Figure 4-3: Has your bank put in place policies that help you align with the relevant National Adaptation Plan(s) and/or relevant regulatory requirements?



4.2.3 Financing of climate adaptation and resilience

45% of respondents say they are investing in or financing adaptation or climate resilience. These products and services are mostly credit products (69% of respondents) followed by green bonds (43%), client engagement/advice (37%) and financing of infrastructure (36%). However, none of these financing vehicles are tracked, nor is there a clear understanding of how these are defined.

Figure 4-4: Compares the answers to two sector-specific questions: firstly, in which sectors physical risk is deemed important and secondly, in which sectors they offer financing for adaptation.



Agriculture, commercial and residential real estate, land use and forestry, and power generation emerged as the sectors most affected by physical risks (see Figure 4-4). These map roughly to the sectors in which banks are financing adaptation, although there is a divide between the perceived importance of physical risks and allocated funding for these sectors. Also, less exposed sectors receive relatively less funding compared to agriculture and land use especially.

These products and services are being developed in response to a wide range of hazards. The most selected hazards include drought, water stress and sustained temperature rise. While these were similar across regions, the share of banks choosing the hazards were much higher in Africa, MENA and Asia Pacific, which is indicative of the higher exposure and vulnerability of populations in those regions.

At the same time, 29% of banks consider or assess physical climate impacts when making financing decisions, 52% report doing so partially and 19% not doing so at all. The lack of high-quality data is seen as an important barrier to adaptation finance by the largest share of respondents (67%). Training and awareness in the bank (48%), regulation (45%) and public policy (44%) are seen as similarly large barriers. The lack of public policy and regulation stand out as large barrier to Latin American banks (61% of respondents) than they do to other banks (avg. 30%). On the other hand, the short-term business case is one of the largest barriers for banks from Asia Pacific (75%), where it seems to be less of a challenge for banks in other regions (avg. 33%). An important additional barrier was identified in the interviews: the lack of a commonly agreed definition for adaptation.

4.3 Discussion

- The survey results indicate a clear awareness of adaptation as an issue, but that no structured approaches exist. Other areas are given priority over adaptation. This may be due to the perceived low materiality of physical climate risks within the time horizons of banking products. It may also be due to the complexity of assessing the need for tracking the implementation of adaptation measures at asset level and securing the benefits associated with climate adaptation investments.
- Processes for identifying and measuring adaptation are missing. While 45% of banks report investing in adaptation or having adaptation-related products, these are not figures that are corroborated by adaptation metrics and cannot be compared due to the lack of agreed-upon definitions.
- Physical risks are being reported by a larger proportion of banks than those that integrate climate risks into their decision making. Banks need to advance from risk identification to assessment to management.
- Public policy and regulation are identified as major barriers in the Latin America and Caribbean region, requiring focused engagement with policy makers from across the finance sector.
- The lack of a defined short-term business case is identified as a major barrier in Asia and this is also seen as a potential driver for financing adaptation. Identifying innovative investment approaches and vehicles is crucial for scaling adaptation finance to enable risk sharing.
- Data for the assessment of physical risks is a major barrier to identifying the key sectors at risk and for assessing and measuring the benefits of financing adaptation.

5. Adaptation & banking in the Latin America and the Caribbean region

5.1 Review of the main physical impacts of climate change in the region

Although Latin America and the Caribbean has contributed on a smaller scale than other regions to climate change, it is especially vulnerable to its effects mainly due to its geographical and climatic situation, its socio-economic and demographic status, and the high climate sensitivity of its natural assets, such as forests and biodiversity (ECLAC 2015).

As indicated by the Intergovernmental Panel on Climate Change's March 2022 report on Impacts, Adaptation and Vulnerability (IPCC 2022), climate change has already resulted in substantial damage and irreversible losses both in natural systems (marine and terrestrial ecosystems) and in human systems (migration, deterioration of health, loss of fresh water and food), and will continue to do so across the region:

Caribbean subregion: with 23 Small Island Developing States (SIDS) and five members of the Vulnerable 20 (V20) Group, this region is highly vulnerable to climate change. Sea level rise is of significant concern with a high concentration of population and infrastructure in the coastal area, where tourism prevails as the main economic activity. All this is further affected by the increasing occurrence and severity of hurricanes and tropical storms that significantly affect the provision of drinking water, basic service infrastructure, coastal erosion, and significant damage to the region's reefs.

Subregion Central America: affected by growing water stress, both surface and groundwater, by a combination of factors including temperature increase, reduction in rainfall regimes, deforestation, soil erosion and population growth. All this translates into a greater demand for water while reducing natural sources of supply, with significant impacts on key economic activities (agriculture, energy), population health and on biodiversity and ecosystems. The countries of Central America and the Caribbean are very vulnerable to climate change, due to a combination of factors, including extreme weather events, territorial size, limited economic structures, and fragile fiscal regimes.

Many countries in Central America and the Caribbean have incurred significant debts to cope with damages caused by climate hazards, such as hurricanes and floods, resulting in further deterioration of their fiscal and macroeconomic position. In other words, they are paying the cost for high greenhouse gas emission levels generated elsewhere.

Andean subregion: The Andes are severely impacted by melting glaciers, as a result of temperature rise. Countries in this region, in particular Bolivia, Chile, Colombia, Ecuador, and Peru, have very fragile ecosystems combined, in many cases, with high levels of poverty. Glacial retreat generates very significant impacts on the availability of water, both for consumption and for other uses such as agriculture, livestock and energy generation—it is estimated that 70% of energy production in these countries is hydroelectric.

Amazon subregion: The Amazon is highly vulnerable to rising temperatures and changes in rainfall regimes, which, combined with increasing deforestation, result in important impacts on biodiversity, ecosystems, and the services they provide to different communities and economic activities. The vulnerability in this region is aggravated by wildfires, in many cases caused by human activities aimed at expanding the area of agricultural exploitation.

The impacts of climate change in the region are significant, but in no case are they linear or heterogeneous. In fact, in some regions and/or economic sectors impacts could have a greater negative impact than predicted and, in others, the impact could be positive.

In summary, the main changes projected for the region are (IPCC 2022):

- **Increased rainfall** during summer in southeastern South America (northern Argentina, Paraguay, Uruguay, and southern Brazil). Increased rainfall is also projected on the northern coast of Peru and Ecuador, and in the western Amazon.
- **Decrease in rainfall** in the southern territory of the Andes Mountains (Chile and Argentina), in the eastern Amazon, and in northeastern Brazil, in Central America and Mexico.
- **Rising temperatures** in South America, Mexico, Central America, and the Caribbean.
- **Extreme events (acute):**
 - Increased **droughts** in the eastern Amazon and northeastern Brazil.
 - Increased **extreme rainfall** events in southeastern Brazil, western Amazon, northwestern Peru, and Ecuador.
 - Increase in **hurricane and tropical storm** activities in the Caribbean region.

However, the future of the region is already here, according to the World Meteorological Organization's recent State of the Climate report in Latin America and the Caribbean 2020 (WMO 2020). Climate-related events and their impacts claimed more than 312,000 lives in the region and affected more than 277 million people between 1998 and 2020. In recent years, there have been the worst droughts in 50 years in the southern Amazon and the record hurricanes and floods in Central America during 2020 are the new normal.

The report warns that the region must strengthen monitoring of climate threats and early warning systems, and put in place early action plans to reduce disaster risk. Given the seriousness of the climate crisis in the region, the international community must mobilize with the aim of prioritizing the financing of adaptation measures. It is important that such adaptation measures consider the needs of vulnerable groups. For example, early warnings systems issued through only mobile phones may not reach those who do not have or cannot use such devices and are at the same time at the highest risk.

5.2 Main economic impacts in the region from physical climate risks

5.2.1 Main economic impacts

Climate change, in addition to severely impacting the environment and people, is also a considerable threat to economic and financial stability in the region.

Studies conducted between 1990 and 2010 estimated that the annual cost to the region would be between 1.5% and 5% of current GDP, if the temperature increase was 2.5°C by 2010. A 2014 estimate puts the loss at around 2% of GDP annually. These estimates have uncertainties and various methodological limitations, such as difficulties in incorporating adaptation processes, biodiversity loss and the potential effects of extreme weather events (Bárcena et al 2020). It is important to note that most estimates made for the region linked to the economic impact of GDP relate only to rising temperatures and do not consider the costs of natural disasters, water availability, or losses in agricultural yields, among other factors.

Evidence of the impacts of climate change on the economies of Latin America and the Caribbean shows that these effects are already significant and, with a high probability, will be more intense in the future. There is already evidence of significant impacts on agricultural activities, water, biodiversity, sea level rise, forests, tourism, health, and cities (ECLAC 2015).

Efforts to articulate solutions to address the impacts of climate change clash with at least four features that characterize the phenomenon and make it difficult to resolve, particularly in developing countries and in Latin America and the Caribbean (p.70, ECLAC 2019):

- i. **The temporal paradox.** Climate change is a process whose full effects arise in the long term. However, there is a growing awareness that its solution requires immediate action and simultaneous attention to mitigation and adaptation processes.
- ii. **The fundamental asymmetry between emissions and vulnerability.** Total emissions from Latin America and the Caribbean account for only 8.3% of global emissions, but, at the same time, the region is particularly vulnerable to the impact of climate change due to its geographical, climatic, socio-economic, and demographic characteristics.
- iii. **Inequality within countries.** At the national level there is also an asymmetric condition which, combined with that of the previous point, results in a double inequality. In general, the poor are more vulnerable to the negative impacts of climate change, while their relative contribution to greenhouse gas emissions is far lower.
- iv. **The inevitability and urgency of adaptation.** Given the increased frequency of extreme weather events and the inertial trajectory of greenhouse gas emissions, which is likely to lead to a temperature increase of at least 2°C during the twenty-first century, it is essential to implement adaptation processes to reduce the expected damage. However, adaptation has limits, faces barriers and can be inefficient: in the future there will be residual and some irreversible damage, as well as additional costs.

For several reasons, the role of climate change adaptation in Latin America and the Caribbean is may be unique. For instance, well-planned adaptation could also improve the quality of life in rural areas, as much as climate mitigation actions could improve the quality of life in urban areas.

Climate change accelerates and intensifies the economic, social, and environmental consequences and pressures of current development approaches and, therefore, only through a transition to sustainable development, will it be possible to solve the challenges it poses. The challenge of climate change is the challenge of achieving sustainable development.

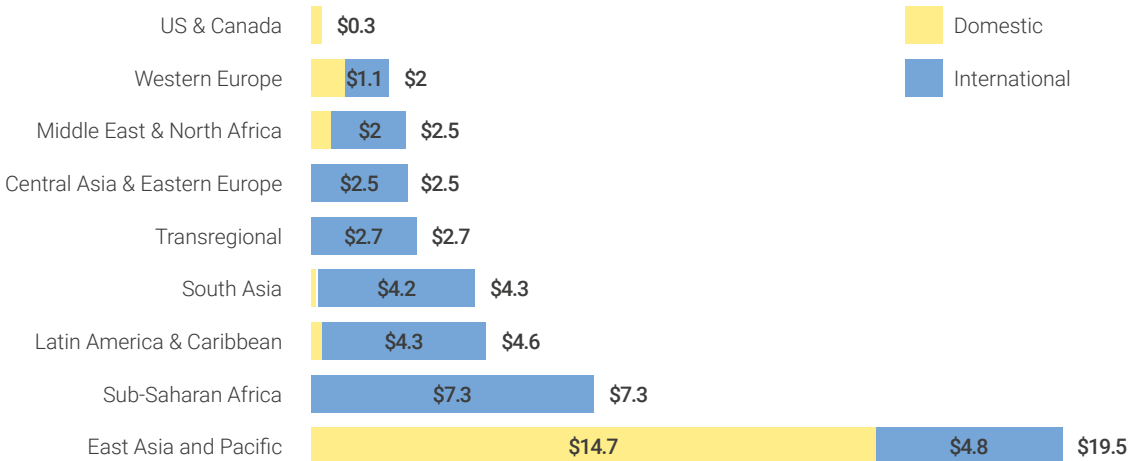
The sustainable use, management, conservation, and restoration of ecosystems play a central role in climate change adaptation and mitigation policies, increasing resilience and reducing disaster risks, as well as maintaining and increasing carbon inputs or providing services that replace the use of fossil fuels.

5.2.2 State of Adaptation Finance in LAC Region

As indicated in a recent LAC regional survey (UNEP FI 2021a), climate-related factors may have significant impacts for the financial sector, both from a risk and opportunity perspective. For example, agricultural portfolios can be affected by physical climate-related risks, because of extreme or persistent weather events. IPCC AR6 has already warned about the increase in the incidence of storms, floods, and landslides, which could affect the value of properties and/or affect the probability of default on payments, resulting in credit risk. Additionally, the urgency of a transition to a low-carbon economy could also affect portfolios of the wholesale segment linked to fuels, which means a high exposure to transition risks such as the implementation of a carbon tax.

According to a recent report on the Global Landscape of Climate Finance (Climate Policy Initiative 2021), although adaptation finance is gaining momentum and increasing significantly compared to 2017/2018, it represents only 7% of total climate finance based on available data. Adaptation finance in LAC is in line with global trends, with most adaptation measures (mainly related to infrastructure) financed by public actors assisted by multilateral development banks, international funds, and fiscal budget resources.

Figure 5-1: Adaptation finance by region (US\$ billion)



Source: Global Landscape of Climate Finance—Climate Policy Initiative 2021

To date, there are no detailed studies at the regional level on the main obstacles for private capital for climate adaptation. Based on our interviews, there are financial and investment products (green credits; green, climate, or sustainability-linked bonds; ESG funds; etc.) whose resources seek to contribute to emission reductions. However, the scenario is different when looking for financing, investment, or insurance products with a focus on financing adaptation. Available financing vehicles are mostly traditional financial products that, for example, are used to support water-efficient irrigation in the agricultural sector and are today are framed as climate change adaptation.

Many countries in the region have remodelled their National Adaptation Plans (NAPs) to include the private sector and are exploring innovative mechanisms to finance climate resilience initiatives. The next step for most countries in the region is to engage the private sector through innovative financing mechanisms.

There are serious challenges to tracking private adaptation finance due to a combination of factors. Firstly, the private sector's concerns about the bankability of adaptation projects, in part due to limited knowledge and skills, in order to make a proper evaluation and apply appropriate time horizons. Secondly, most reporting requirements do not request financial entities to differentiate adaptation finance from other types of traditional lending.

5.2.3 Climate risk regulatory framework in LAC

Most financial regulators in LAC countries have not yet explicitly included climate-related risks¹⁷ in their regulatory frameworks or in their supervisory schemes. Several financial institutions across the region have introduced measures, and internal policies and procedures around environmental and social risks in anticipation of a more official regulation of climate-related risks.

Regarding regulatory and supervisory efforts, the countries of the region can be classified into three main groups:

- i. **Countries with regulatory frameworks** (Brazil, Ecuador, Honduras, Panama, Paraguay and Peru) covering environmental, social and governance (ESG) reporting requirements, including climate change.
- ii. **Countries where supervisory measures have been implemented or initiated**, (Brazil, Chile, Colombia, Mexico, Paraguay and Peru), and
- iii. **Countries where private sector initiatives** (or self-regulatory practices) (Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Honduras, Mexico, Paraguay, Peru and Uruguay), are being implemented and are leading financial system efforts. Many of these actions or initiatives derive from the requirements of multinational banks.

The most advanced and proactive countries in this field may belong to one or more of these groups, and there is a gradual, but steady progress in the integration of standards or regulatory frameworks following the recommendations of initiatives such as the Network for Greening the Financial System (NGFS).

17 According to the parameters defined by the Network for Greening the Financial System (NGFS) and by the Task Force on Climate-Related Financial Disclosures (TCFD).

5.3 Adaptation and Banking Survey

The survey of Latin American and Caribbean banks was coordinated by UNEP FI, CAF—the Latin American Development Bank, the Latin American Federation of Banks (FELABAN), and the Latin American Association of Development Financial Institutions (ALIDE). 76 financial institutions from the private sector, public sector and even mixed economy entities responded to the survey. The respondents included 35 PRB and 41 non-PRB institutions. Only one response was received from banks in the Caribbean region. Efforts are being made to receive more responses from this sub-region, which will be incorporated in a more detailed regional report to be available after COP 27.

The respondents have operations in 17 Latin American countries: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, and Uruguay.

The analysis of the responses obtained from the banks participating in the survey allows us to highlight the following findings:

5.3.1 Main findings on Climate Risk Identification and Assessment

- 15% of banks surveyed in the region manage both physical and transition climate risks while another 14% assess only physical risks. It should be noted that 55% of respondents are in the process of implementation.
- Only 23% of respondents are disclosing their climate-related risks and opportunities.
- 72% of financial institutions consider climate issues to manage credit risk. Only 29% assess climate risk to meet regulatory requirements.
- 53% of financial institutions determine the significance of credit impacts while 47% consider reputational repercussions.
- Extreme weather events are considered the main risk factors for 69% of respondents, while transition risks are considered important for 47%.
- The economic sectors most sensitive to climate change in the region in order of importance are: agriculture (89%), energy generation (71%), land use and forestry (68%).

In the LAC region there are low levels of identification and assessment of climate risks within the financial institutions surveyed, which could be explained by the absence of regulatory frameworks or requirements in most countries, combined with the lack of specific knowledge on how to assess climate risks. There are also difficulties in accessing reliable and consistent data needed to carry out risk and opportunity assessments.

5.3.2 Climate risk management

- 8% of respondents have a comprehensive strategic management of physical climate risks, while 32% do so partially. Comprehensive strategic management means that banks integrate climate risks as part of the business risk profile evaluation of their portfolios (or individual risk analysis) and aligned with potential business opportunities.

- 21% of the entities have aligned their internal policies with National Adaptation Plans.
- 28% of entities use the amount of assets vulnerable to physical risks as the main metric to establish materiality.
- 7% of respondents say they have set portfolio targets linked to climate risks and opportunities, the assumption is that these targets have been set considering both transition and physical risks.

Climate risk management is affected by a lack of adequate knowledge to identify and evaluate risks in business portfolios. Limited access to reliable and useful information for decision-making generates a certain reluctance to integrate the management of climate risks and opportunities into the strategy and business plans of the financial institutions surveyed. The absence of tangible commitments from Nationally Determined Contributions (NDCs) and National Adaptation Plans impedes alignment between national policies and the strategies of financial institutions, as well as in the setting of business portfolio targets related to climate change.

5.3.3 Main findings on climate adaptation and resilience financing

- 36% of respondents say that they are financing climate change adaptation.
- The sectors with the highest level of adaptation financing are agriculture (36%), energy generation (32%), land use and forestry (24%).
- The development of financial products is aimed at addressing the needs posed by natural hazards such as drought (27%), temperature increase (17%) and water stress derived from long term unsustainable usage (16%).
- The most widely used financial products for climate change adaptation are traditional financing lines (57%), green bonds (23%) and insurance (17%).
- 23% consider physical climate impacts holistically in financing decision-making while 48% do so partially.
- 12% consider physical climate impacts when developing green products, most entities do so partially (21%), and others are working on it (28%). We note that many institutions, mainly those working with the agricultural sector, prefer to transfer the identified climate risks to third parties (e.g., insurance companies/guarantee providers) rather than developing financial products themselves.
- The most important barriers or obstacles to financing adaptation to climate change would be the following: lack of training (60%), lack of public policies and regulatory framework (59%), lack of reliable and accessible data (48%), lack of awareness about climate risks (47%), lack of clear market signals (37%).

Based on some of the responses we note that there might be some confusion in certain banks regarding the scope and/or definition of adaptation finance since they are referring to investments which are usually considered as mitigation measures (e.g. renewable energy).

The reported low levels of financing for adaptation to climate change can be justified by the absence of reporting requirements that consider the classification or categorization of adaptation financing, perhaps due to the lack of a taxonomy for these operations. This type of financing is usually included in the general financing to clients either as financing

of medium and/or long-term investments or as working capital financing. The providers of funding sources are also not usually specific in terms of the destinations for this type of financing.

Interviewees' discussion of the main obstacles and their perspectives on possible recommendations for boosting adaptation financing in the region largely coincide with the findings reported in the 2019 UNEP FI global report, "Driving finance today for the climate-resilient society of tomorrow", whose classification we adapt to account for the findings and recommendations of this paper.

Intervention categories	Recommendations	Barriers addressed
Awareness, training, and capacity building	<ul style="list-style-type: none"> ▪ Trainings aimed at different levels of seniority in financial institutions, including top management, decision makers, new professionals and officials working in key public and private institutions of the financial ecosystem in each country. ▪ Incorporate the climate goals of the financial institution in performance evaluations at different levels of financial institutions, starting at board level and cascading down to lower management level of the personnel. ▪ Encourage and promote affiliation of initiatives to the Race to Resilience initiative.¹⁸ 	<ul style="list-style-type: none"> ▪ Weak capacity in the governance bodies of the financial system. ▪ Few capacities within the different financial actors.
Tools & data availability and reliability	<ul style="list-style-type: none"> ▪ Promote and strengthen the availability of science-based data for climate risk assessments and corresponding decision-making. ▪ Establish a clear alignment between NDCs and National Adaptation Plans that include adequate target setting and concrete action plans. ▪ National authorities should provide more details on the climate scenarios expected in the medium- and long-term and their consistency in relation to NDCs, National Adaptation Plans and the necessary measures to reduce the vulnerabilities of different economic activities. ▪ Give greater prominence to Nature-based Solutions (NbS) that integrate mitigation and adaptation actions (e.g. the restoration of natural forests in high areas, which would protect communities in lower-lying areas from floods and landslides, being also carbon sinks and providing greater protection to biodiversity and natural ecosystems). 	<ul style="list-style-type: none"> ▪ Weak management of physical climate risks. ▪ Insufficient availability and adoption of climate risk data and tools.

18 "Race to Resilience": climatechampions.unfccc.int/race-to-resilience-launches/

<p>Policies, regulations and creating the enabling environment</p>	<ul style="list-style-type: none"> ▪ Focus on specific metrics on adaptation and an adequate Monitoring, Reporting and Verification (MRV) process to adjust strategies and action plans in climate finance, but especially in adaptation financing. ▪ Adequate adaptation metrics would allow better prioritisation of actions, orienting resources and defining goals that give adaptation the sense of urgency and visibility it deserves. Without a regionally harmonized approach to measuring adaptation, mitigation will continue to be more visible and attract more attention. ▪ Develop new tools and methodologies for climate risk analysis in traditional risk assessment processes. ▪ Regulatory frameworks should place greater emphasis on regulating land use and managing the territory to better target investments in infrastructure and/or warn of the risks of inhabiting areas exposed to increasing flooding, drought, hurricane, and rising sea levels. ▪ Promote more active collaboration between the public and private sectors to have a clearer regulatory framework that stimulates more effective and efficient financing channels for adaptation to climate change. ▪ Promote more efficient coordination and alignment of the needs of the different economic sectors. ▪ Promote the development of green or sustainable bond markets to finance projects or investments related to climate change adaptation by applying the Principles of the International Capital Market Association (ICMA)¹⁹ or the Climate Bonds Initiative (CBI).²⁰ This would provide greater transparency and reliability to the capital market and stimulate a more active participation of the private sector. ▪ Increase visibility of success stories in climate change adaptation financing to replicate or eventually scale up this type of financing. ▪ Share experiences and lessons learned among finance entities to facilitate the growth of adaptation financing. Develop networks of learning and peer exchange. 	<ul style="list-style-type: none"> ▪ Insufficient public financial support. ▪ Insufficient incentives for private finance to act Weak legal/regulatory frameworks and guidance. ▪ Lack of meaningful disclosure of climate risks. ▪ Lack of harmonized metrics, standards and taxonomies. ▪ Perception of absence of profitable investments. ▪ Perception of low commercial readiness linked to adaptation and resilience solutions.
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19 ICMA Green Bond Principles: [icmagroup.org/sustainable-finance/the-principles-guidelines-and-handbooks/green-bond-principles-gbp/](https://www.icmagroup.org/sustainable-finance/the-principles-guidelines-and-handbooks/green-bond-principles-gbp/)
20 Climate Bonds Initiative—[Green Bond Standards](https://www.climatebonds.org/)

5.4 Conclusion

The LAC region presents very diverse conditions across topography, ecosystems, urban distribution and demography, economic characteristics, ethnic and cultural aspects, and local climates. According to the IPCC's AR6 report, several countries in the region are highly climate vulnerable due to their natural conditions and low adaptive capacity (IPCC 2022).

Regional economies are very dependent on agriculture and a dependence on natural resources. The acute and chronic impacts of climate change, combined with sociopolitical and economic factors, already affect these countries and, according to the IPCC, these conditions are expected to worsen in their frequency and intensity.

UNEP FI's survey shows that there is not enough information or awareness within the financial community on climate change adaptation financing. There is a perception of an uneven distribution between countries and that the main source of financing comes from multilateral and bilateral cooperation. Countries' access to these sources is limited by the lack of common guidelines and language designed for the region, technical capacity, difficulties in following the procedures established by various financial institutions and low levels of awareness of the need to act, as well as the types and diversity of funds available.

To change the current context, it is suggested to act firstly by promoting a higher level of awareness of the magnitude and importance of the potential negative impacts of climate change, both from the economic and social points of view. That higher level of awareness would generate greater interest and need from the various actors to strengthen their knowledge, skills, and the development and application of tools for the management of climate change. The public sector should act decisively to improve the current regulatory framework, to allow greater and better access to climate databases, to promote the validity of a clear taxonomy that facilitates communication and interaction between the various sectors of the economy, and society in general, and above all the implementation of measures consistent with national and regional commitments and plans about sustainable development and the fight against climate change. Due to the economic constraints and socio-political conditions in the region, it is essential to maintain and increase the collaboration of multilateral organizations and between public and private institutions.

6. Adaptation and banking in the Middle East & North Africa region

6.1 Introduction

6.1.1 Background and context

This chapter addresses the impacts of climate change in the Middle East and North Africa (MENA) region and how banks are responding to its physical impacts. It aims to analyze the current state of adaptation finance; the context for banks to identify, assess and respond to physical climate impacts; as well as barriers and recommendations to accelerate and scale up finance for adaptation in the region. The results of this study are based on three components: 1) desk-based background research; 2) a survey of regional banks distributed to PRB signatories, as well as to non-PRB banks and banking associations, and 3) interviews with a sample of commercial and development finance institutions.

6.1.2 Physical Climate Impacts

The MENA region is highly vulnerable to physical climate change impacts and is one of the world's most water-scarce regions, with a high dependency on climate-sensitive agriculture, and a large share of its population and economic activity in flood-prone urban coastal zones. Vulnerable populations and ecosystems will be exposed to a range of acute hazards, such as drought, heatwaves and extreme weather. The region has a large percentage of its population and economic activity in coastal zones that are potentially exposed to floods (World Bank 2013). The following three climate change trends will put increased pressure on the region, its infrastructure, economy and people in the decades to come:

- 1. Temperature rise:** In a +2°C scenario, unusual heat extremes have been projected to occur in about thirty percent of summer months across most of the MENA region (Waha et al. 2017). A +4°C world could see a new norm of extreme temperatures of up to 56°C, throughout the region. In parts of the region, summer temperatures may reach 8°C warmer by the end of the century (World Bank 2020). Temperature rise also leaves the region in acute danger of wildfire, which is already prevalent.
- 2. Precipitation variability:** The arid MENA region has always experienced both cyclical and discrete periods of drought. However, due to climate change, these drought periods are projected to significantly increase in intensity, particularly in countries along the Mediterranean coast which may receive about 10–20% less rain in a

2°C world and up to 50% less rain in a 4°C world (World Bank 2020). This most obviously impacts the availability of water supply with implications for agricultural crops and livestock. Combined with temperature rises, reduced rainfall is expected to shift the 'aridity line', or the point at which arable lands meet the desert, where annual rainfall falls below 200mm/year and rain-dependent agriculture becomes impossible. Increased droughts may also have impacts on other forms of infrastructure, such as through sandstorms caused by drying soil and the accumulation of desert dust in the atmosphere. These may accelerate land degradation and desertification, limit solar generation potential, and cause erosion and sedimentation that hinder water- and land-based transport (Stefanski et al. 2009).

- 3. Sea level rise:** Sea levels may rise by an average of 0.36m in a 1.5°C average warming scenario, and 0.6m in a 4°C scenario, accelerated by coastal erosion in parts of the region (World Bank 2020). This is notable as a large share of the region's population and economic activity are in flood-prone urban coastal zones: seven percent of the MENA's total population lives in areas under five meters above sea level, which includes major metropolises (Borghesi & Ticci 2021), with an estimated 100 million people potentially exposed to coastal flooding by 2030 (Waha et al. 2017). Seawater can also intrude into coastal aquifers and wells, salinizing the water and devastating littoral agricultural communities as well as reducing municipal waters supplies.

Overall, an estimated 75% of buildings and infrastructure in the MENA region are considered at direct risk of climate change impacts such as sea level rise, storm surges, and increased temperatures (Göll 2017).

6.1.3 Economic Impacts Associated with Physical Climate Risks

Bio-physical impacts of climate change are paired with other pressures and a general lack of resilience that pose a threat to economic development in the region. Some estimates predict a loss of 0.4 to 1.3% of GDP in MENA countries due to climate change effects, rising to 14% in the absence of appropriate mitigation and adaptation measures (Peridy et al. 2012). Many of these economic impacts are linked to projected climate change impacts on the highly interlinked factors of water security, agricultural productivity, and migration, displacement and urbanization. The MENA region, being the world's most water-scarce, is at risk from compromised food security and productive and arable land sustainability due to climate change, given the high dependency on climate-sensitive agriculture. For example, in a 2°C average global warming scenario, freshwater availability in the region could drop between 15 and 45%, with a resulting reduction in GDP between 6 and 14% by 2050. This link between climate variability and agricultural production across MENA countries has been demonstrated to be significant across studies, with a one percent increase in winter temperature resulting in a 1.12 percent decrease in agricultural production across 20 MENA countries (Salah et al, 2016).

The reduction of domestic agricultural productivity—which is 70% rainfed—places importing countries at risk of international food price shocks. The potential impacts are exaggerated by other global supply chain challenges due to Covid-19 and the war in Ukraine. For example, there is existing reliance on wheat imports from countries such as Ukraine

and Russia (85% of Egypt's wheat imports, 43% Libya, 22% Yemen), and price volatility or disruptions may lead to economic impoverishment or uprisings. A decline in global demand for oil, which historically forms a significant part of many MENA economies, compounds these economic and social impacts. Generally, smallholder farmers and women are hardest hit by losses in agricultural productivity due to climate change.

Climate change acts as a threat multiplier in the MENA region. Given high socio-political instability in some parts of the region, climate change may act as a push factor in migration, driving forced displacement and increasing the risk of violent conflict, economic deprivation and food crises (World Bank 2020). Climate change impacts are likely to magnify over time beyond these scenarios. Therefore, immediate action towards scaling up and accelerating adaptation finance is critical to address the climate adaptation gap and lessen or prevent potential climate change risks. In short, the future of development plans, economic and social resilience in the MENA region hinges on scaling up finance for adaptation.

6.2 The State of Adaptation Finance in the MENA Region

6.2.1 Sustainable Finance and ESG Management

Many MENA countries have adopted green growth strategies. However, their progress in aligning national financial systems with sustainable development needs and goals is varied. For example, the UAE leads sustainable finance practices in the region, while Morocco is at an advanced stage (UNEP FI 2021b), and Egypt has addressed climate finance in some of its green/sustainable development and sustainable finance policies, strategies, and public spending plans. Jordan and Bahrain have committed to aligning their financial systems to finance their sustainable development agenda. Saudi Arabia's national policy framework has been driven mainly by economic diversification to reduce their oil dependence and increase the contribution of non-oil sectors to GDP, while also increasing private sector participation (UNEP FI 2021b). All six countries have developed ESG guidelines, engaged in sustainability reporting and, except for Saudi Arabia, worked on promoting sustainable finance through awareness campaigns and education initiatives. As for financial market innovations, only three countries—the UAE, Morocco and Egypt—have issued green bonds.

Table 6-1: Sustainable finance policies and practices in the MENA region (UNEP FI, 2021)²¹

	UAE	Egypt	Morocco	Jordan	Bahrain	KSA
Sustainable development agenda	✓	✓	✓	✓	✓	✓
Sustainable finance framework	✓	✓	✓	✓	✓	
ESG/ESG Reporting	✓	✓	✓	✓	✓	✓
Sustainable finance products & services	✓	✓	✓			
Awareness & education initiatives	✓	✓	✓	✓	✓	
Supportive regulations or enabling environment i.e., PPP	✓	✓	✓	✓		✓
Climate focused policies & strategies	✓	✓	✓	✓	✓	✓

Some of these practices relate to climate change, particularly mitigation such as ESG reporting guidelines, sustainable finance frameworks, and innovative financial products. Others may specifically address climate adaptation finance and climate risk assessment such as Egypt’s climate change strategy and the Central Bank of Egypt’s guiding principles for sustainable finance. Although the above-referenced MENA countries are mostly advanced in terms of sustainable finance policies, the level of climate finance maturity, especially adaptation finance, remains largely unaffected by these policies. Sustainable finance policies and practices can be classified into different categories that vary in their influence on advancing sustainable, and consequently climate, finance as presented in the table below.

Table 6-2: Sustainable/climate finance policies and practices categories

Category	Policy/Practice Examples
Promotion and awareness	Awareness campaigns; and educational or training programs.
Guidelines for voluntary action	Offering guidance, access to case studies, and best practice manuals such as ESG reporting guidelines or taxonomies without mandatory requirements.
Indirect policies and regulatory support	Policies, strategies, and practices that can indirectly impact sustainable finance or create the enabling environment such as PPP, public spending, and national sustainable development agendas/frameworks.
Direct policies and regulations	Policies and strategies that directly affect or promote sustainable finance practices such as mandatory products allocation or national sustainable/climate finance frameworks.

The maturity levels of governments, private sectors and markets clearly reflect which policy categories are dominant in each country. In many cases, progress towards direct policies and regulations is supported by awareness, guidelines, and regulatory support. However, this is not always the case. Following a phased approach is useful in the sense that it promotes awareness, provides tools, develops markets, builds capacities, and creates the enabling environment and business case before enforcing change. Never-

²¹ The data presented in this table has been updated. Therefore, some inputs are different from those presented in the UNEP FI, 2021 reference.

theless, this approach takes far longer and does not guarantee the desired changes in outcomes. In mature markets, outcomes may move in the opposite direction. Government policy may be directly driven by lobbying, as well as by the success stories of leading private sector organizations, which manage to disrupt the status quo and showcase the benefits of sustainable/climate finance for all stakeholders.

6.2.2 Physical Climate Risks and National Plans

To address its climate risks, Egypt has submitted its Nationally Determined Contributions (NDCs) to the UNFCCC, launched its climate change strategy and is currently updating its National Adaptation Plan (NAP). The government has integrated climate metrics in its national sustainable development strategy, launched a dedicated National Climate Change Strategy, and has been actively engaging in multilateral and bilateral cooperation with other countries to address the climate adaptation finance gap while preparing to host the 27th Conference of Parties (COP27). Furthermore, the Central Bank of Egypt (CBE) has issued the guiding principles for sustainable finance which integrates managing climate change risks among its six principals, laying the foundation for identifying and managing climate change risks, in addition to encouraging financing projects that contribute to addressing climate change. Similarly, the Egyptian Financial Regulatory Authority—the regulatory authority of non-banking financial institutions (NBFIs)—recently mandated ESG reporting for publicly listed organizations and required climate reporting according to the Task Force on Climate Related Financial Disclosure (TCFD) for large NBFIs.

Egypt aims to increase the proportion of green projects in the government's investment budget from 14% in 2020 to 30% in 2022 while leveraging PPP. In preparation for COP27, Egypt announced 85 projects in its portfolio with a total cost of US\$ 11.9 billion including both mitigation and adaptation projects. The government is further pitching for investments for two adaptation projects with budgets of US\$ 800m and US\$ 600m respectively: the first project is to increase the resilience of crop production in the Nile valley and delta; and the second to build six desalination plants, powered by solar energy, to reduce dependence on freshwater supplies from the Nile. According to a recent announcement by the CEO of the Egyptian Environmental Affairs Agency, Egypt is currently seeking a total of US\$ 415 billion for climate related projects, including US\$ 115 billion for adaptation projects ahead of COP27 in November 2022.

In 2019, Morocco adopted its National 2030 Climate Plan, which aims to ensure the adaptability of the most vulnerable sectors including water, agriculture and fisheries, and mitigate the effects of greenhouse gas emissions caused by sectors such as power generation and transport. Implementing the plan will require considerable investment, estimated at about US\$ 50 billion for mitigation programs and another US\$ 35 billion for adaptation projects by 2030 (UNEP FI 2021). Morocco also adopted the National Charter for Environment as part of its National Sustainable Development Strategy including transition towards a green economy, promoting sustainable development culture, consolidating sustainable development governance, improving natural resource management, promoting human development and reduce social inequalities, giving particular attention to sensitive areas, and accelerating the implementation of climate change policy. In 2016, Morocco launched its national roadmap for aligning the financial sector with sustainable development and its climate change commitments. The Roadmap aims to

promote higher investment flows into sustainable and climate-change-related projects to address Morocco's mounting social and environmental challenges.

6.2.3 Funding Adaptation in MENA

Public funding, both national and international, has been the main source of financing for adaptation activities in most developing economies, including the MENA region, and directs domestic and international budgets into a wide range of projects aimed at increasing resilience to climate change on various levels. This funding is mostly in the form of climate adaptation grants and funds, as well as both direct and indirect finance from development banks. While data on international public funding is available and relatively accurate, data on national budgets is extremely limited (UNEP 2016).

Financing from the multilateral climate funds in the MENA region is largely concentrated in a small number of large projects in the form of loans or concessional loans. The total amount of finance approved between 2003 and 2020 is US\$ 1.5 billion for 139 projects. This money has largely gone towards mitigation efforts despite pressing adaptation needs, especially for water conservation and food security. Of the total funding approved for the region, US\$ 560 million has taken the form of grants. Adaptation projects have all been supported by grants. US\$ 964 million has been provided in the form of loans or concessional loans for just a few large-scale energy infrastructure projects approved by the Clean Technology Fund (CTF) and the Green Climate Fund (GCF). The top two recipients—Egypt and Morocco—have received 29% and 19% of total approved climate finance in the region respectively. Approved finance grew by US\$ 88 million in 2020 (Watson & Schalatek 2021).

Roughly three-quarters of Arab states have been able to secure Green Climate Fund (GCF) readiness support, but there have only been 13 approved GCF projects to Arab states since the first one in 2015 through to 2019. A mere five of those focus solely on adaptation, while five others are cross-cutting projects pursuing both mitigation and adaptation objectives. Egypt has received a total of US\$ 300 million from the Green Climate Fund (GCA 2020).

6.2.4 Development Financial Institutions (DFIs) play a central role in financing adaptation and enabling private sector adaptation finance in the MENA region

By providing technical assistance to banks for embedding environmental and social considerations, including climate, in banks' governance and risk management systems; by identifying, assessing, and managing climate related risks and opportunities; by developing climate strategies, and by promoting climate investment in the most vulnerable sectors and communities, DFIs play a central role in financing adaptation and enabling private sector adaptation finance in the MENA region. DFIs also work with governments, regulators and policy makers to create the enabling environment for sustainable finance.

The following examples shed some light on DFIs and their climate related activities in the MENA region:

European Bank for Reconstruction and Development—EBRD (EBRD Personal Interview, July 2022)

In an interview with their Climate Adaptation and Strategy team, the EBRD stressed the important role mobilizing private finance can play in climate adaptation. Recent actions taken by the EBRD to address barriers to private financing for adaptation include:

- Climate adaptation and resilience is a core part of the EBRD's [Green Economy Transition \(GET\)](#) strategy. For climate adaptation projects, EBRD assesses resilience impacts by focusing on 6 categories of climate resilience outcomes which financed projects may deliver rather than looking at the additional costs of adapting projects. [EBRD's Green Economy Financing Facility \(GEFF\)](#) operates through a network of more than 140 local financial institutions across 26 countries and is supported by more than EUR 4 billion. Under the GEFF programme, the EBRD has provided climate financing to several banks, SMEs and projects across the MENA region, including in Egypt and Morocco.
- Preparing a [Guide for Issuers on Green Bonds for Climate Resilience](#), together with the Global Center on Adaptation (GCA) and the Climate Bonds Initiative (CBI).
- [EBRD Green Finance Academy](#)—This platform was specifically developed for financial institutions and professionals, to enhance industry knowledge on green finance and advise on best practices.
- [Corporate Climate Governance Programme](#)—Supporting corporate, FI and municipality clients to assess, manage and disclose climate risks (including physical climate risks) in their operations and therefore improve their access to capital markets.

World Bank

The World Bank's Roadmap for Climate Action in MENA, which runs from 2021-2025, aims to drive climate action and a green recovery in the region by financing climate smart projects and policy reforms in addition to private sector financing towards climate smart investments. The bank is planning to invest 50% of the allocated amount in building resilience, reflecting regional heterogeneity and country-specific demand. The roadmap outlines four key transformation areas to build low-carbon, resilient societies:

- Food systems, water security and resilient natural capital;
- Energy transition and low-carbon mobility;
- Climate-smart cities and resilient coastal economies;
- Sustainable finance for climate action (World Bank 2021).

International Finance Corporation—IFC (IFC Personal Interview, July 2022)

In an interview with the IFC's Financial Institutions and Climate team, it was noted that the IFC is working with private financial institutions and regulators on several climate-related targets in the context of the [30by30 Zero program](#) which helps the banking sector increase climate-related lending to 30 percent with zero or near zero coal exposure by 2030. IFC realizes the importance of physical climate risk assessment as one of the

barriers to accelerating adaptation finance in the private sector. Building private banks' capacity for properly identifying and assessing physical climate risks can provide a better understanding of banks' needs for financing resilience and the different private sector risk exposures, potential financial instruments, technical assistance, and priority sectors in need of support.

French Development Agency (AFD)

As part of the Transforming Financial Systems for Climate (TFSC) program and with financial support from the Green Climate Fund (GCF), the National Bank of Egypt (NBE) and French Development Agency (AFD) signed a new EUR 100m loan agreement to finance projects to support the low-carbon and climate-resilient transition of Egyptian SMEs. This credit line to NBE aims to finance investments that are 100% climate-compatible in terms of both greenhouse gas mitigation issues and aspects related to adaptation to the impacts of climate change. Under this program, AFD has also allocated a EUR 1.5m grant to implement technical assistance to support NBE's climate strategy, as well as environmental and social management. This agreement will help disseminate innovative financing mechanisms for sustainable development, especially for the development of climate finance.

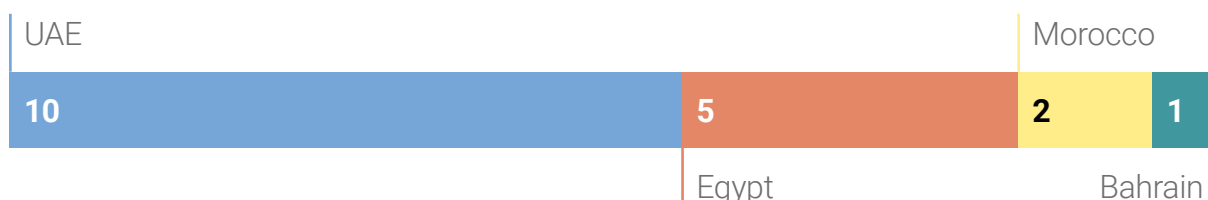
6.2.5 Green Bonds

Green bonds are financing debt instruments that can be issued by national, regional, multinational public entities, as well as private corporations. Their proceeds are specifically tied to financing environmental and/or social investment. 12% of the green bonds that included resilience activities were issued by sovereigns and local governments, 65% by government-backed entities, 16% by development banks, 4% by financial corporates, and 3% by non-financial corporate organizations. The first green bond fully dedicated to support climate-resilient infrastructure, climate-resilient businesses, and climate-resilient agriculture and ecological systems—labelled as a 'Climate Resilience Bond'—was issued by the EBRD in January 2020 (GCA 2021). The first green corporate bond in the Arab region was issued in 2017 in the United Arab Emirates by the National Bank of Abu Dhabi (ESCWA 2019). Egypt then became the first Arab country to issue sovereign green bonds to finance its sustainable public projects, namely, renewable energy and energy efficiency, pollution reduction and control, and sustainable water and waste management. More recently, Egypt's Commercial International Bank (CIB) issued a US\$ 100 million green bond that is fully subscribed by IFC. The bank is intending to use the proceeds to support projects that promote sustainable solutions to climate change such as renewable energy, industrial energy efficiency, green buildings, and resource efficiency.

6.3 Adaptation and Banking Survey

UNEP FI launched an online survey in July 2022 and communicated the survey across the Principles of Responsible Banking (PRB) and Net-Zero Banking Alliance (NZBA) networks. Overall, 18 MENA banks responded to the survey from UAE, Egypt, Morocco, and Bahrain. 8 respondents have signed the PRB and 2 have joined the NZBA.

Figure 6-1: Location of main office of survey respondents, MENA region.



6.3.1 Identification and assessment of climate risks

The drivers and context for identifying climate-related risks vary between MENA countries but the sectors of interest such as agriculture and water are consistent with literature on climate risks and resilience needs in the region. Agriculture is considered to be the most affected sector by 72% of respondents followed by water and transport infrastructure at 67%. The current low identification, exposure measurement, and assessment rates (12% of respondents) could be mainly due to lack of awareness and understanding of how adaptation affects the bank operations, tools to measure transition and physical risks, regulations and incentives, clear business case, and reliable data. In general, banks are largely focused on addressing short term risks and impacts on their business while climate risks are usually more significant in the medium to long term. However, it is worth noting that a significant number of banks are currently working on processes to identify and report on climate risks (72%), which shows progress and change in MENA market dynamics. The UAE's significant participation in the survey (55%) may have affected these results being the most advanced country in the region in terms of sustainable finance policies and awareness. This could also be attributed to the controlling entities of global banks imposing certain climate requirements on their subsidiaries as part of their management and reporting strategies. Other market factors such as rising innovation in sustainable products and services as well as climate investment opportunities and blended finance facilities that are normally associated with climate and other environmental/social impact conditions set by DFIs for disbursing such facilities may have also affected how banks' view and position on climate risks and opportunities.

It is also evident from the choice of transition risks—such as policy and technology (89%)—over physical climate risks (6%) as the key driver by the majority of respondents, that long term risk profiling is not at the focus but rather the clear business case for adaptation finance. This finding, however, is not consistent with the majority of banks starting to work on measuring physical risk compared to transition risk (6% of respondents are measuring their physical risk exposure while 67% are working on it). Many factors could affect this tendency including a lack of knowledge and tools for measuring transition risks compared to physical risks. Further, banks might also be dealing with

transition risk as part of overall market risk. 67% say that assessing climate risks is driven by risk management and market opportunities and 50% say regulatory requirements are driving their assessment. Climate reporting, however, is at promising levels. 33% of respondents are reporting on climate risk via TCFD and CDP reporting frameworks, while 39% said they are using other reporting frameworks such as the Global Reporting Initiative (GRI) and the Equator Principles.

6.3.2 Managing climate risks

Managing climate risks in banks' portfolios and operations is currently very low at 11%. Over a third of surveyed banks are relying on the amount of assets or business activities at risk as their key metric for assessing and managing financially material climate risks and opportunities, while 44% are relying on other metrics such as turnover which shows a rising understanding of financial related climate impacts. 22% of responding banks partially consider NDCs and NAPs or other regulatory requirements when designing their business strategy. However, only 6% answered yes to having policies that help to align with NAPs and relevant regulatory requirements compared to 39% that do not have such policies, and 56% are currently working on it. This finding shows the level of disconnection between governments and banks on the subject of adaptation finance. This is also consistent with the literature as presented earlier in this chapter. Furthermore, interpreting national plans and transforming the targets in these plans into bankable projects is a huge challenge that banks cannot address on their own and adds to the complexity of the subject as one of the key barriers in addition to the absence of regulations, incentives, and climate reporting requirements. 72% of respondents are working on setting targets to manage climate-related risks and opportunities while 28% are not planning to set targets, and none has targets in place. Similar to the results on the identification and assessment of climate risks, a significant number of banks are working on establishing risk management systems. However, the rate and extent to which this work in progress will be translated into solid financial products and services that can address the MENA region's adaptation and resilience needs are largely affected by several factors such as awareness, capacity, reliable data, lack of coordination between government and banks to finance national adaptation and resilience needs, public private partnership context, and the uncertainty of relevant market risks and drivers.

6.3.3 Financing of climate adaptation and resilience

Despite the lower levels of identification, assessment, and management of physical climate risks, more than a third of banks said they are offering adaptation-related products and services. This is an important finding and is consistent with the fact that some financial products and services—that are normally offered by banks due to their bankability—indirectly address adaptation. Furthermore, the fact that almost one third of respondents said they do not know whether they are financing adaptation or not is evidence that there is a huge gap in awareness and knowledge in addition to several other barriers that would still slow down systemic integration of adaptation finance in MENA banks.

Once more, water supply and treatment as well as other infrastructure-related products are in the focus of current adaptation finance (33% and 28%) which is consistent with the regional climate risks and resilience needs. Agriculture, however, came at a

lower interest next to oil & gas and real estate at 22%. This is probably due to the low number of banks that are heavily invested in the sector regardless of its vulnerability to climate impacts which, once more, shows that the business case is driving banks' strategies and is expected to continue doing so in the foreseeable future. Only 11% said they are assessing physical climate impacts in their financial decisions while 50% said they partially do so and 39% don't. As for banks' views on the most significant barriers, lack of awareness came first at 67%; followed by lack of data, training and resources; while lack of regulations, public policy, business case and public funding came last.

6.4 Barriers and Recommendations to scaling up Adaptation Finance in the region

6.4.1 Barriers

Despite the pressing need to finance adaptation and resilience in the MENA region, most banks in the region are currently disconnected from national climate plans, actions, and adaptation needs. Most banks currently have neither climate change strategies nor do they identify, assess, manage, or consider physical climate risks and opportunities in their decision-making processes. Banks need greater capacity and reliable data to establish a business case before taking a decision regarding their products and services. This is why most banks are focusing on climate mitigation, while very few are focusing on adaptation. It is worth mentioning in this context that some financial products and services that are normally offered by banks due to their bankability indirectly address adaptation. For example, investments in microfinance; agriculture and food; infrastructure particularly energy expansions, water (e.g., desalination plants), sustainable transport systems; investing in sustainability innovation and SMEs, all have varying indirect impacts on adaptation and resilience. Although the barriers presented below are applicable to all countries and financial institutions, climate impacts and adaptation needs are location and sector specific. Therefore, each FI would need to have an understanding and assessment of their level of exposure based on exposed sectors and locations in their portfolios. The lack of private sector participation and interest in financing adaptation could be attributed to several factors as follows:

- **Absence of standards, definitions, and disconnection between banks and governments.** Absence of unified and clear climate adaptation definitions as well as the absence of standards, metrics, and methodologies such as national taxonomies. Banks need reliable and structured information to reach viable business decisions. Further, failing to properly integrate adaptation in the public-private partnership (PPP) market hinders adaptation financing and the transition to climate-resilient economies.
- **A perceived lack of profitable opportunities in climate related projects.** Responding to climate change needs has long been perceived as a public good that lacks profitability and must be funded by national budgets or international grants. There is also poor awareness of PPP opportunities in climate change-related projects (UNEP FI 2021).

- **Lack of awareness of adaptation finance business case and benefits.** Aside from risk management, there are several benefits from investing in climate resilience. For example, investees including governments may receive technical and financial support from their financiers. However, banks still perceive that corporations and governments don't realize this value and do not appreciate that integrating sustainability practices makes good business sense, seeing it primarily as a means to acquire green certifications and enhancing their brand positioning (UNEP FI 2021).
- **Market barriers driven by shortage of data, training, knowledge and capacity.** Physical climate risks are location and sector specific. Therefore, high-granularity impact modelling and asset-level data are crucial to better understand risk exposure and design adaptation-focused products and services for identified opportunities. Obtaining such information can be difficult and costly. In addition, climate risk assessment methodologies are not readily available for all sectors and bankers need to be trained properly on using them, or at least understand their limitations.
- **The absence of adequate policy and regulatory support,** incentives, reporting requirements, and enforcement mechanisms for sustainable finance policies including adaptation finance, is among the top barriers to scaling up adaptation finance in the MENA region. Climate mitigation has benefited from various regulations and policy incentives while adaptation has not seen similar support.

6.4.2 Recommendations

The physical impacts of climate change affect all sectors to varying degrees, so individual investments in adaptation cannot build resilience on their own. Adaptation therefore requires collaboration between a range of stakeholders, including national and local government, businesses, financial institutions, development banks, civil society organizations and people. The recommendations below were drawn based on the desk review, the survey, and the interviews held while conducting this study.

Table 6-3: Recommendations and barriers

Intervention Categories	Recommendations	Barriers addressed
Awareness, training, and capacity building	<ul style="list-style-type: none"> ■ Conduct awareness campaigns to redefine adaptation and adaptation finance in the overall economic and social context i.e., building socioeconomic resilience, highlighting the importance, business case and benefits of adaptation finance to all stakeholders. ■ Showcase success stories and successful financial products and services addressing adaptation from similar markets to replicate and scale up. ■ Design and disseminate capacity building programs addressing all aspects of adaptation finance in coordination with central banks and banking associations. 	<ul style="list-style-type: none"> ■ Lack of awareness of the meaning, business case and benefits of adaptation finance. ■ Perceived lack of profitable opportunities in climate adaptation projects. ■ Market barriers driven by shortage of data, training, knowledge and capacity.

<p>Tools & Data availability and reliability</p>	<ul style="list-style-type: none"> ▪ Launch and promote adaptation finance knowledge databases that contain verified reliable climate data to increase banks' level of confidence and encourage the utilization of information including guidance on where and how this information can be used in the context of climate risks identification, assessment, and management. ▪ Identify and assess vulnerable sectors, communities, economic activities, and locations that can benefit from adaptation finance in line with national plans. ▪ Improve national climate data availability and reliability and provide open-source/low-cost accessible tools. ▪ Develop national taxonomies and accessible platforms compiling bankable adaptation opportunities with linkage to SDGs, national climate strategies, NDCs and NAPs. ▪ Generate a pipeline of adaptation projects that are aligned with national plans. ▪ Develop tailored metrics, tools, and methodologies to assess and manage physical climate risks and opportunities in vulnerable sectors in partnership with the international community, DFIs, financial regulators, academics, and consultants. ▪ Integrate adaptation finance knowledge databases and tools with all potential databases and sources that banks already rely on in their sector risk and market analysis. 	<ul style="list-style-type: none"> ▪ Absence of adequate standards and definitions. ▪ Disconnection between banks and governments. ▪ Lack of awareness of adaptation finance meaning, business case and benefits. ▪ Market barriers driven by shortage of data, training, knowledge and capacity.
<p>Policies, regulations and creating the enabling environment</p>	<ul style="list-style-type: none"> ▪ Promote policy and legislative frameworks to promote identification and management of physical climate risks. ▪ Put more focus on general market policies to create the enabling environment for adaptation and improve the business case of adaptation projects like in the case of mitigation. ▪ Develop national level incentives and support mechanisms for banks financing adaptation in the current market environment. ▪ Promote and enforce climate reporting frameworks such as TCFD while adding more focus on adaptation in existing ESG reporting mandates. ▪ Promote assurance on ESG and climate reporting to improve the reliability of reported information as well as looking into possible means of improving the relevance and materiality of reported information. ▪ Integrate adaptation finance in the PPP structure and create linkages with the government green finance and SDGs targets. 	<ul style="list-style-type: none"> ▪ Absence of adequate regulatory support and incentives. ▪ Absence of adequate standards and definitions. ▪ Disconnection between banks and governments.

7. Conclusion & recommendations

The need for financing adaptation measures is clear. Climate science provides evidence that adaptation alone (much like mitigation alone) will have adverse effects. The recent 'United in Science' report concludes that we are moving in the wrong direction (WMO 2022), emphasising yet again the urgency of clear and ambitious adaptation measures.

7.1 Barriers to adaptation strategy

As this report outlines, both at the global level and from our deep dives into two highly climate vulnerable regions of the world, there are many barriers to developing a sound strategy and meaningful indicators for adaptation alignment:

- **Definitions:** Adaptation and resilience are poorly defined, especially in the context of the financial sector.
- **Uncertainty:** High uncertainty around climate hazards and data availability makes setting quantifiable targets difficult. Climate tipping points are major tail risks and few if any risk assessments take these uncertainties into account.
- **Data:** availability compounds the challenge with developing a robust, specific adaptation strategy.
- **Collaboration:** Climate impacts are highly localised but cut across sectors, requiring collaborative approaches at the local scale. Collaboration between public authorities, businesses, financial institutions and citizens where institutional incentives and goals differ, can be highly challenging.
- **Multiplier impacts:** At the same time, adaptation interacts with and has a multiplier effect on many other economic, social and environmental impact areas. Examples outlined in this report include the threat of pandemics, war and ecosystem degradation. These additional multiplier effects have highly uncertain interaction effects, but also need to be considered.

Despite these barriers, a business-as-usual approach to climate change will result in high residual risks for banks. As we have seen in this report, frameworks do exist and some banks are identifying risk hotspots through climate risk assessments.

7.2 An outline framework

None of the adaptation frameworks reviewed in Chapter 3 appear to have all the necessary elements for off-the-shelf deployment by commercial banks. However, certain trends appear in the majority of these frameworks, which could allow banks to build on this existing work. Mullan and Ranger (2021) find that adaptation frameworks including the EU Taxonomy, the CBI Climate Resilience Principles, and the Joint MDB group have common features, including:

- **Positive alignment:** aim to align investments to resilience rather than identifying non-aligned investments.
- **Process-based:** building on climate risk assessment and management processes.
- **Resilience of/resilience through:** many approaches distinguish between investments that are resilient (resilience of) and investments that enable resilience (resilience through).
- **Systemic impacts:** avoid maladaptation at the system-level.
- **Monitoring:** requires measurement of performance over time.

These are all elements that could be applied to a target-setting climate resilience framework for banks, alongside a factor that identifies financing that contributes to positive adaptation impact, as well as the need for adaptation metrics to capture how a bank is contributing to adaptation and as a basis for establishing targets.

Ideally an adaptation and resilience alignment framework for commercial banks should follow the below principles:

- **Compatible:** with existing regulatory frameworks. For example, EU-based banks do not want to have a new framework to align to when meeting the requirements.
- **Practical:** able to be developed with existing data, methodologies and technologies, so that banks with different business models, sizes, sectoral and geographical scope can employ the framework.
- **Adaptable:** to expanding data and evolving methodologies. The framework could be applied initially to certain sectors where data is available to conduct adequate risk assessments, engage with clients and build the case for financing adaptation.
- **Measurable:** Definitions of metrics are key to measuring adaptation finance and setting impact targets.
- **Impactful:** The Principles for Responsible Banking's target-setting framework is founded on real-world impact and an adaptation framework must demonstrate that it enables climate resilient societies and economies.
- **Systemic:** While systemic impacts should be addressed and measured at sectoral, regional or national level, individual banks have a role to play. Policy advocacy and stakeholder engagement are crucial in addressing the multiple risks and challenges imposed by climate change.

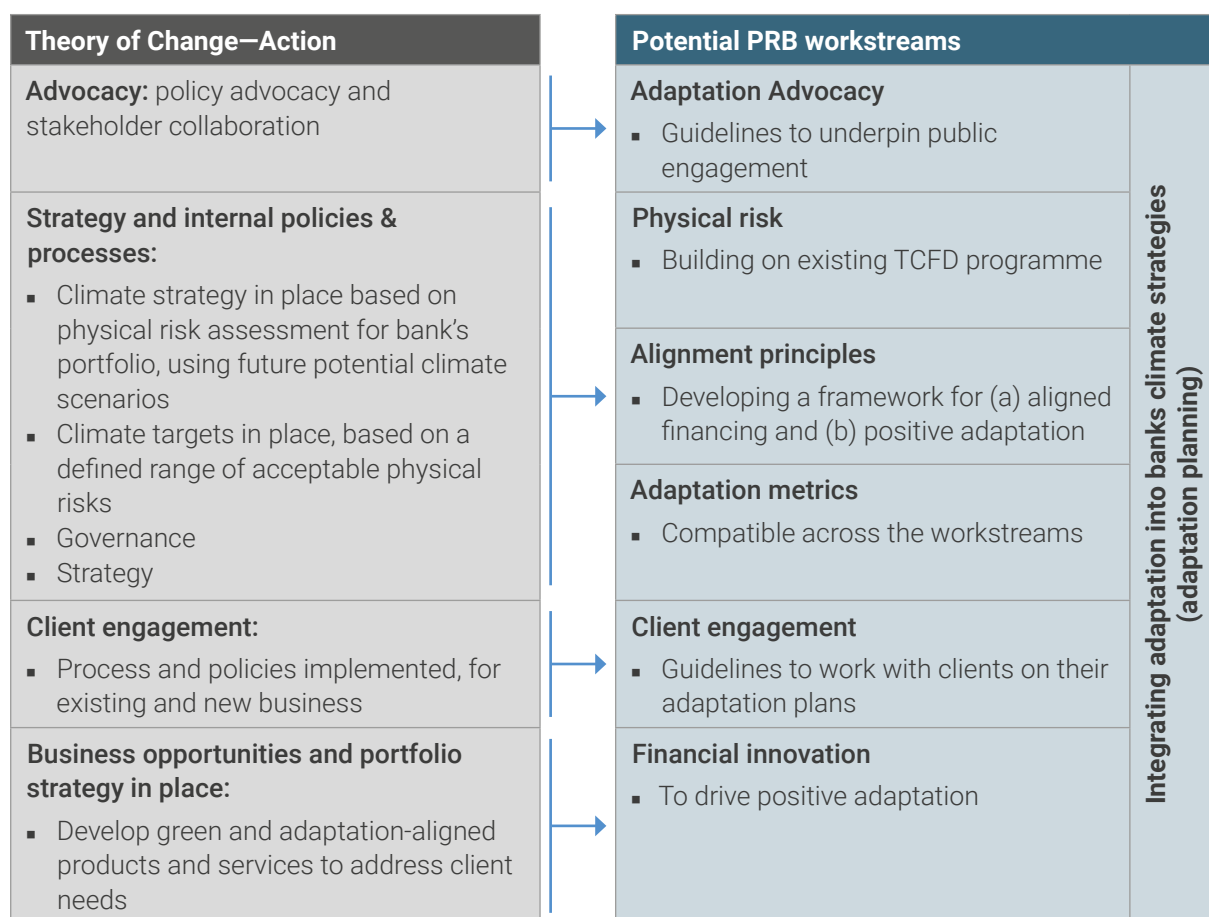
As per the 6th IPCC report, inclusive, equitable and just adaptation pathways are critical for climate resilient development. Furthermore, climate change will have a huge impact, not only on human systems, but also ecosystems. Therefore an adaptation and resilience alignment framework for commercial banks must also take into account the SDGs, nature, ecosystems, gender and social issues.

7.3 Next steps

Banks are only just starting to assess physical risks systematically and need to have better strategies in place to manage and reduce their risks to an acceptable level, meaning that ultimately their client and customer base needs to improve their risk ratings to remain bankable. The required capital to finance these adaptation measures is not provided in sufficient quantity. As described, determining whether and which clients and projects will remain bankable from a pure risk assessment perspective only, is not enough to increase the resilience of systems. These necessary ‘adaptation alignment’ steps are even less developed or understood to date.

The draft Theory of Change provides a starting point for banks to develop the building blocks of an adaptation impact framework for the PRB. Figure 7-1 shows how a set of potential workstreams could build on the Theory of Change:

Figure 7-1: Mapping the draft theory of change for adaptation onto workstreams to deliver an adaptation framework



This report forms a basis for discussion with Principles for Responsible Banking signatories to convene a group of banks with specific expertise and interest in climate adaptation to work on a set of workstreams that together will deliver a comprehensive framework for commercial banks that is compatible, practical, adaptable, measurable, systemic and above all, impactful. The set of workstreams in Figure 7-1 above are an initial proposal for developing the climate adaptation framework.

Acronyms & abbreviations

AFD	Agence Française de Développement
ALIDE	Asociación Latinoamericana de Instituciones Financieras para el Desarrollo (Latin American Association of Development Financing Institutions)
CBI	Climate Bonds Initiative
CCRI	Coalition for Climate Resilient Investment
CPI	Climate Policy Initiative
CTF	Clean Technology Fund
DFI	Development Financing Institution
DNSH	Do No Significant Harm
EBF	European Banking Federation
EBRD	European Bank for Reconstruction and Development
ECLAC	Economic Commission for Latin America and the Caribbean
ESCWA	Economic and Social Commission for West Asia
ESG	Environmental, Social and Governance
FELABAN	Federación Latinoamericana de Bancos (Latin American Banking Federation)
GCA	Global Center on Adaptation
GCF	Green Climate Fund
GEF	Global Environment Facility
GEFF	Green Economy Financing Facility (EBRD)
GET	Green Economy Transition (EBRD)
GRI	Global Reporting Initiative
ICMA	International Capital Markets Association
IDFC	International Development Finance Club
IFC	International Finance Corporation
IPCC	Intergovernmental Panel on Climate Change
LAC	Latin America and the Caribbean
MDB	Multilateral Development Bank
MENA	Middle East and North Africa
NAPs	National Adaptation Plans

NBE	National Bank of Egypt
NBFI	Non-Banking Financial Institutions
NDCs	Nationally Determined Contributions
NGFS	Network for Greening the Financial System
NZBA	Net-Zero Banking Alliance
OECD	Organisation for Economic Cooperation and Development
PCRAM	Physical Climate Risks Assessment Methodology (CCRI)
PPP	Public-Private Partnerships
PRB	Principles for Responsible Banking
SDGs	Sustainable Development Goals
SMEs	Small and Medium-sized Enterprises
TCFD	Taskforce for Climate-related Financial Disclosures
TFSC	Transforming Financial Systems for Climate (AFD)
UNEP FI	United Nations Environment Finance Initiative
UNFCCC	United Nations Framework Convention on Climate Change
WMO	World Meteorological Organisation

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