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Addressing the adaptation finance gap: scaling up investment in climate change adaptation using blended finance solutions

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Abstract

Climate change is a major global threat with widespread and devastating impacts for ecosystems and human livelihoods. Although efforts to reduce emissions of greenhouse gases that cause climate change are being undertaken by the international community, they fall far short of what is needed to avert catastrophic climate change. The negative impacts of climate change are disproportionately borne by the poorest communities and countries. Countries must adapt their economies and people to a warmer and less inhabitable planet. The global costs of adapting to unavoidable climate impacts could be in the region of USD 280-500 billion per year by 2050, while only about USD30 billion per year is currently being invested globally in adaptation.

There is an urgent need to find ways to massively scale up funding to adapt to climate change and build the resilience of people and the ecosystems. The private sector is seen as an untapped potential for scaling up investment in adaptation, but there are a number of barriers. To unlock the private sector potential, the public sector needs to provide the enabling environment and catalytic funding to improve the risk and return profile of potential investment. Blended finance structures are of interest in this regard due to their potential to attract private investment into adaptation activities that would otherwise be perceived as too risky, by using public funds to de-risk investments. However, this is a new area of work and the literature on blended finance for adaptation is sparse, with very few empirical studies on the subject. This study sought to shed light on two research questions: i) what are the barriers to financing adaptation, for the public and private sectors? and ii) what is the role of blended finance in scaling up funding for adaptation and resilience to climate change? It used qualitative data obtained through expert interviews, as well as a case study of a blended finance facility for adaptation in the agriculture sector, to explore these questions.

Based on the analysis of the responses from the expert interviews, this study identified a set of eleven barriers to scaling up adaptation finance for the public and private sectors. Three barriers relate to scaling up public sector investment in adaptation, notably i) failure on the part of developed countries to meet their climate finance pledges, leading to inadequate adaptation funding reaching developing countries, ii) failure to use public budgets strategically to finance climate change resilience, and iii) the scale of the adaptation finance challenge is beyond that which can be funded from public budgets alone. Five barriers are relevant for both public and

private investment in adaptation, notably: i) issues around unclear definitions of what counts as adaptation finance, ii) lack of adequate data and metrics for tracking adaptation finance, iii) limited awareness and capacity in both the public and private sectors, iv) the economics of adaptation, which has features of public goods, and v) weak coordination, planning and institutional arrangements for scaling up adaptation finance. Three of the identified barriers are unique to private sector investment in adaptation, in particular i) difficulties in generating revenue streams from adaptation projects, ii) lack of access to concessional finance to de-risk private investments, and iii) lack of a conducive policy environment to incentivise investment.

The interviews also revealed a role for blended finance in addressing the barriers for private sector investment by using public funding to enhance the revenue streams from adaptation projects, to de-risk private investment in adaptation, as well as to strengthen capacity, collect data and develop metrics for tracking adaptation projects. Blended finance approaches could include a range of instruments and interventions, such as providing enabling interventions, such as technical assistance, as well as de-risking interventions, including blended lending facilities, guarantees, junior equity, climate risk insurance and results-based finance.

The study explored one such intervention through a case study of the Acumen Resilient Agriculture Fund, a blended finance approach for enhancing the resilience of the agriculture sector in several countries in East and West Africa. The Acumen Resilient Agriculture Fund demonstrates a blended finance approach whereby public concessional funding from the Green Climate Fund, by taking a first-loss equity position and providing a small amount of grant funding for capacity building, has de-risked commercial investments into an equity fund, which in turn has enabled investment into a number of small and medium sized enterprises that are supporting smallholder farmers in Kenya, Uganda, Rwanda, Nigeria, and Ghana to adopt farming practices that are more resilient to the impacts of climate change.

Based on the findings of the research, the study recommends that the public sector should develop blended finance approaches that use public funds catalytically to reduce the risk or enhance the return of adaptation investments for the private sector. It also recommends that the public sector invest in awareness-raising and capacity building around adaptation for both public and private sectors; and that governments develop an enabling policy environment for private investment in adaptation.

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Table of contents

<i>Plagiarism declaration</i>	<i>i</i>
<i>Abstract</i>	<i>ii</i>
<i>Acknowledgements</i>	<i>iv</i>
<i>Table of contents</i>	<i>v</i>
<i>List of tables</i>	<i>vii</i>
<i>List of figures</i>	<i>viii</i>
<i>List of abbreviations</i>	<i>ix</i>
<i>Chapter 1: Introduction</i>	<i>1</i>
1.1 Introduction and background to the study	1
1.2 Research Problem and Questions.....	3
1.3 Research objectives.....	4
1.4 Research justification.....	4
1.5 Organization of the study.....	6
<i>Chapter 2: Literature Review</i>	<i>7</i>
2.1 Introduction.....	7
2.2 Definition of concepts.....	7
2.2.1 The climate change challenge	7
2.2.2 Responding to the climate change challenge: mitigation and adaptation	8
2.2.3 Multilateral efforts to respond to climate change	9
2.2.4 Climate finance	11
2.2.5 Public, private and blended finance	14
2.3 Conceptual framework.....	15
2.3.1 Challenges in mobilising adaptation finance	15
2.3.2 The role of the private sector in mobilising adaptation finance.....	18
2.4 Empirical literature on blended finance for adaptation.....	20
2.5 Summary	21
<i>Chapter 3: Methodology</i>	<i>22</i>
3.1 Introduction.....	22
3.2 Research approach	22
3.3 Sample selection	23

3.4	Data collection and instrument	24
3.5	Data analysis	25
3.6	Ensuring dependability, credibility, transferability and authenticity of the qualitative study	25
<i>Chapter 4: Discussion of Findings</i>		27
4.1	Introduction.....	27
4.2	Demographics of the respondents	27
4.3	Identifying the barriers to financing adaptation for the public and private sectors .	28
4.3.1	Barriers to public sector finance for adaptation	29
4.3.2	Barriers common to both public and private sectors	32
4.3.3	Barriers to private sector investment in adaptation.....	39
4.4	Exploring the role of blended finance in addressing the adaptation finance gap	44
4.4.1	Findings from the expert interviews	44
4.4.2	Findings from the case study	58
4.5	Conclusion	62
<i>Chapter 5: Conclusions and Recommendations</i>		63
5.1	Introduction.....	63
5.2	Summary of findings.....	63
5.3	Recommendations.....	64
5.3.1	Invest in awareness and capacity around adaptation	65
5.3.2	Develop an enabling policy environment	65
5.3.3	Develop blended finance approaches that use public funds catalytically to enhance the return to risk profile of adaptation investments for the private sector	65
<i>References</i>		67
<i>Appendix 1: Interview Consent Form</i>		73
<i>Appendix 2: Interview Questions</i>		75

List of tables

Table 1: Institutional affiliation and demographic information of respondents	28
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List of figures

Figure 1: conceptual framework for understanding barriers to mobilising adaptation finance	18
Figure 2: Barriers to financing adaptation for the public and private sectors.....	29
Figure 3: The role of blended finance in addressing the adaptation gap	45

List of abbreviations

ABM	Adaptation Benefits Mechanism
ARAF	Acumen Resilient Agriculture Fund
CABEI	Central American Bank for Economic Integration
CAMBIO II	Productive investment initiative for adaptation to climate change project
CDM	Clean Development Mechanism
COP	Conference of the Parties
CO ₂	Carbon dioxide
CSO	Civil society organization
DBSA	Development Bank of Southern Africa
DFI	Development Finance Institution
GCF	Green Climate Fund
GHG	Greenhouse gas
IPCC	Intergovernmental Panel on Climate Change
LDC	Least Developed Country
OECD	Organisation for Economic Cooperation and Development
ODA	Official Development Assistance
MSME	Micro, small and medium enterprise
NAMA	Nationally appropriate mitigation action
NAP	National adaptation plan
NDC	Nationally determined contribution
SDG	Sustainable Development Goal
SME	Small and medium enterprise
UN	United Nations
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollars
°C	Degrees Celsius

Chapter 1: Introduction

1.1 Introduction and background to the study

Climate change is one of the biggest global threats that the world currently faces, threatening decades of development progress, and undermining the efforts of the global community towards the achievement of the Sustainable Development Goals (SDGs) (UN, 2015). The earth's average temperature has already risen by 1.1 degrees Celsius above pre-industrial levels and is projected to rise by at least 3 degrees in the absence of urgent action (IPCC 2021), a scenario that will put the lives and livelihoods of 3.3 to 3.6 billion people, approximately half of the world's population, at risk (IPCC 2022a). The impacts of climate change are already being felt, and will intensify in the coming decades, with widespread and devastating impacts for agriculture, ecosystems and biodiversity, human settlements and livelihoods, access to water and sanitation and human health and wellbeing (IPCC, 2022a). The negative impacts of climate change are disproportionately borne by the poorest communities and countries, as they are most dependent on climate-vulnerable sectors, and have limited capacity to adapt (IPCC, 2022a, 2014). Although efforts to reduce emissions of greenhouse gases (GHGs) that cause climate change are being undertaken by the international community, they fall far short of what is needed to avert catastrophic climate change (IPCC 2022b; UNEP, 2016a, 2021).

Countries globally, and developing countries in particular, thus face a stark imperative: they must adapt their economies and people to a warmer and less inhabitable planet. This will require investments on an unprecedented scale: to relocate infrastructure and human settlements away from low-lying coastal areas that will be flooded by sea level rise; to transform agriculture and land use in response to shifting ecosystems and changing climatic conditions; to develop new sources of potable water, such as through desalination technologies, in the face of changing hydrological systems and reduced ground water recharge; to protect and restore ecosystems which are a crucial natural buffer against climate impacts; to develop and strengthen early warning systems to reduce the impacts on human lives in the face of extreme weather events; to diversify economic activities and create employment opportunities in sectors that are less climate-sensitive; and to design and build infrastructure, health systems, and financial systems that can withstand climatic shocks (Global Commission on Adaptation, 2019; IPCC, 2014; UNEP, 2016b).

UNEP estimates that the global costs of adapting to unavoidable climate impacts could be in the region of USD 280-500 billion per year by 2050 (UNEP, 2016b). The Global Commission on Adaptation estimates that investing USD180 billion per year from 2020 to 2030 across five key sectors (early warning systems, climate-resilient infrastructure, agriculture, mangrove ecosystems, and water) could generate USD7.1 trillion in total net benefits (Global Commission on Adaptation, 2019). Estimates that have attempted to assess how much is currently being invested globally in adaptation to climate change put the figure at approximately USD46 billion per year (Buchner et al., 2021), approximately 7% of total climate finance and less than one sixth of the amount required. There is an urgent need to find ways to massively scale up funding to adapt to climate change and build the resilience of people and the ecosystems, especially in developing countries, where over 100 million people are at risk of falling into poverty by 2030 (Global Commission on Adaptation, 2019).

In recent years, there has been increased focus on the potential role of the private sector in financing and delivering adaptation solutions, and several studies have suggested that the private sector will be critical to addressing the adaptation finance gap (Altamirano, 2021; Trabacchi & Mazza, 2015). Cochu, Hausotter, & Henzler (2019) provide a theoretical overview of the various roles that private sector actors can play in advancing climate change adaptation and resilience, which include *adapting* their own business activities to climate risks, *financing* adaptation actions undertaken by others, or *providing goods or services* that enable adaptation by others.

Several studies have provided a discussion on some of the barriers to private investment in adaptation, which include awareness and policy barriers, as well as high perceptions of risk and lack of clear revenue streams (Druce, Moslener, Gruening, Pauw, & Connell, 2016; Fayolle et al., 2019; Schaer & Kuruppu, 2018, World Bank, 2020). Several authors argue that to unlock the private sector potential, the public sector needs to provide the enabling policy environment as well as catalytic concessional funding to improve the risk and return profile of potential investment, including through the use of blended finance structures (Fayolle et al., 2019; Miller & Swann, 2019; Micale, Tonkonogy, & Mazza, 2018). However, much of the literature on the subject is theoretical; the empirical literature exploring private sector engagement in adaptation, and the role of the public sector in enabling this, is sparse. Further work is thus needed to explore real examples of how public finance is being used to catalyse private investment, and how this could be scaled up.

Blended finance is defined by Convergence (2021) as “the use of catalytic capital from public or philanthropic sources to increase private sector investment in developing countries to realize the SDGs”. The OECD defines it as “the strategic use of development finance for the mobilization of additional finance towards sustainable development in developing countries” (OECD, 2018). It is an approach to structuring investments which allows organizations with different objectives (in terms of financial return expectations and social impact goals) to co-invest, with each achieving its own objectives (Convergence, 2020). Blended finance structures are gaining prominence in the global dialogue around financing sustainable development and climate change mitigation and adaptation due to their potential to attract private investment into deals that would otherwise be perceived as too risky or insufficiently rewarding (offering lower-than-market returns), by blending the private investments with public or philanthropic funds (Convergence, 2021; OECD, 2018). Blended finance can be used for adaptation activities that have the potential to generate revenue streams, such as those related to job creation and value-addition in climate related sectors (Convergence, 2020).

This study aims to make a contribution to the existing body of knowledge and theory around financing adaptation to climate change, and to propose possible solutions for scaling up financing for adaptation using blended finance approaches to attract additional investment in climate change adaptation. Through a series of expert interviews, it will distil the barriers to financing adaptation and explore ways in which blended finance could play a role in addressing these barriers. Through a case study evaluation, it will explore an example of a blended finance approach that has been deployed to successfully attract investment in climate change adaptation, and extract lessons for replication and scaling up. Based on the findings, it will propose ways in which blended finance approaches could be applied to scale up investment in climate change adaptation, and set out the role of public policy and finance in enabling the uptake of such approaches. Finally, it will set out a number of recommendations for public and private actors interested in scaling up finance for adaptation.

1.2 Research Problem and Questions

There is wide recognition among scholars and practitioners of the need for significant investment in bolstering the resilience of communities, economies, and ecosystems globally to the negative impacts of climate change (UNEP, 2016b; Global Commission on Adaptation, 2019). The funding currently being invested in adaptation is significantly below the amount

needed, and comes primarily from public sources (UNFCCC, 2016). Although there is some scope to scale up public sector adaptation finance, investment in adaptation is not likely to reach the scale needed with public finance alone (UNFCCC, 2016). Several studies have noted that there is strong potential for private sector investment in adaptation (Druce et al., 2016; Tippmann et al., 2013; UNFCCC, 2016) and some have identified some of the barriers and put forward some ideas as to how they may be overcome (Druce et al., 2016; Fayolle et al., 2019). However, to date private sector funding for adaptation is very limited, estimated at approximately 2% of global investment in adaptation, and only 0.3% of global private climate finance (Buchner et al., 2021).

This raises the question of how to incentivise the private sector to invest in adaptation. Several studies have suggested that blended finance approaches, which use public funds to catalyse private sector investment in the SDGs (Convergence, 2021), could offer new opportunities for scaling up investment in adaptation (Micale et al., 2018; Miller & Swann, 2019). Climate funds are starting to explore these approaches, but they are still in very early stages of experimentation (Stoll, Pauw, Tohme, & Grüning, 2021). This is a nascent but promising area of research, and further work is needed to understand the role that various private sector actors could play and the barriers they face, and how blended finance could help to unlock their potential.

This study will attempt to respond to this gap in the body of knowledge around financing adaptation by seeking insights on the following research questions:

1. What are the barriers to financing adaptation, for the public and private sectors?
2. What is the role of blended finance in scaling up funding for adaptation and resilience to climate change?

1.3 Research objectives

The objectives of the research are the following:

1. To explore the reasons for the adaptation finance gap, through an assessment of the barriers to public and private investment in adaptation at the scale needed.
2. To explore the role that blended finance can play in scaling up funding for climate change adaptation and resilience.

1.4 Research justification

This study aims to make a contribution to the existing body of knowledge and theory around financing adaptation to climate change. The negative impacts of climate change are already being felt, and the poorest countries and communities are disproportionately affected (IPCC, 2022a, 2014). Efforts to reduce GHG emissions are being made, but they lack the urgency and scale required to put the world on path to achieving the 1.5 to 2 degree Celsius target set in the Paris Agreement (UNEP, 2016a). The longer mitigation efforts are delayed, the greater the negative impacts on human and natural systems, and the higher the cost in adapting to those impacts. Even under an ambitious mitigation scenario, the costs of adaptation are estimated to be orders of magnitude higher than the current funding being invested in adaptation (UNEP, 2016b). The world cannot afford to be complacent. There is an urgent need to find ways to massively scale up funding to adapt to climate change and build the resilience of people and the ecosystems on which they depend.

The private sector has the potential to play an important role, both as a source of financing on a larger scale than can be provided by public sources, and as a provider of climate solutions (Coche et al., 2019; Druce et al., 2016). To unlock the private sector potential, the public sector needs to provide the enabling environment and catalytic funding to improve the risk to return profile of potential investment (Fayolle et al., 2019; Micale et al., 2018). Blended finance, which uses strategic public funding to unlock private investment for development outcomes (Convergence, 2020) has the potential to be transformational (Altamirano, 2021; Miller & Swann, 2019).

This study will contribute to the understanding of the barriers to public and private investment in adaptation, and to the way in which public climate finance, combined with public policy, can address these barriers and attract private investment at scale, using blended finance approaches. It will draw lessons from some of the early experiences in blended finance to identify recommendations.

This research will be of value to international climate funds, development finance institutions, and other actors who are investing concessional finance in climate change adaptation and would like to use their funds catalytically to crowd in private finance, thereby enhancing the impact of their limited resources. It will also be of value to developing country governments, who have an interest in strengthening the resilience of their economies, their ecosystems and their citizens,

and in ensuring that their own budgetary resources are invested in climate-resilient development outcomes. It will further be of value to the financial sector, whose assets may be threatened by climate risk, and who can see opportunities in climate resilience that are not currently being realised. The private sector, who is well positioned to deliver climate adaptation solutions, with the right enabling environment and incentives, also stands to benefit. And finally, but most importantly, this research will ultimately be of value to the people who are most vulnerable to the impacts of climate change.

1.5 Organization of the study

The study is set out as follows: Chapter 2 provides a review of the literature. Chapter 3 provides an overview of the methodology used to collect and analyse data. Chapter 4 discusses the findings of the study, and Chapter 5 sets out the conclusions and recommendations.

Chapter 2: Literature Review

2.1 Introduction

This chapter provides an overview of the key concepts and definitions, then provides a conceptual framework for understanding the challenges in scaling up finance for adaptation as well as the role that blended finance could play in attracting private investment in adaptation and resilience to climate change. It then reviews the empirical literature around blended finance for adaptation, and finally summarises and notes the gaps in the literature.

2.2 Definition of concepts

2.2.1 The climate change challenge

The Intergovernmental Panel on Climate Change (IPCC), the United Nations body established to assess the science of climate change, defines climate change as “a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer” (IPCC, 2014). Warming of the global climate is caused by the increased concentration of greenhouse gases (GHGs) in the Earth’s atmosphere, which trap infrared radiation from the sun, thereby increasing the temperature within the Earth’s atmosphere (IPCC, 2014). There is broad consensus in the scientific community that the levels of global warming observed over the last seven decades are unprecedented in the previous millennia, and that this warming is unequivocally caused by human activity (IPCC, 2021). The impacts of global warming observed since the industrial revolution include warming of the land by an average of 1.6 degrees Celsius (°C) above pre-industrial average temperatures, warming of the ocean by an average of 0.9 °C, reductions in the amount of snow and ice globally (up to 40% reduction in arctic ice sheets), and an increase in average sea levels of 20cm (IPCC, 2021).

The United Nations Framework Convention on Climate Change (UNFCCC), established in 1992 to address climate change and ratified by 197 countries, is more specific in its framing of climate change as an anthropogenic phenomenon, defining it as “a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods” (United Nations, 1992). The UNFCCC further defines GHGs as the “gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and re-emit infrared

radiation”, and emissions as “the release of greenhouse gases and/or their precursors into the atmosphere over a specified area and period of time” (United Nations, 1992). GHGs include carbon dioxide (CO₂), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulphur hexafluoride, and nitrogen trifluoride (UNFCCC, 1997). For the purposes of this study, the UNFCCC definitions of climate change, GHGs, and emissions will be used.

The negative impacts of a changing climate severely threaten the ability of all countries to achieve sustainable development (UN, 2015). The IPCC (2022a) has conducted an exhaustive review of the available scientific literature on climate change and its impacts, and documents severe, extensive, and in some cases irreversible impacts on people and ecosystems, which are already being felt and are expected to become more extreme as atmospheric GHG levels rise (IPCC, 2022a). These impacts include rising sea levels, which threaten coastal communities and infrastructure, affecting millions of people living in low-lying coastal regions or small island states worldwide. Furthermore, changes in temperature and rainfall and increased variability in climatic conditions threaten entire ecosystems, leading to habitat and biodiversity loss, desertification, and reduced productivity of agricultural land, and threatening the hundreds of millions of people worldwide who depend on agriculture or natural ecosystems for their livelihoods (IPCC, 2022a). In addition, increasing frequency and intensity of extreme weather events threatens physical infrastructure, agriculture and human lives; changing rainfall patterns affect hydrological systems and threaten access to potable water and sanitation for millions of people; and a warming climate also affects the distribution of pathogens and vectors of major diseases, threatening human health (IPCC, 2022a, 2014). An estimated 3.3 to 3.6 billion people, approximately half of the world’s population, are considered highly vulnerable to the negative impacts of climate change (IPCC, 2022a).

2.2.2 Responding to the climate change challenge: mitigation and adaptation

2.2.2.1 Climate change mitigation

In order to limit the impacts of climate change, substantial and sustained reductions in GHG emissions are needed, requiring urgent and fundamental changes to global economic systems (IPCC, 2014; United Nations, 1992). The IPCC defines climate change mitigation as “a human intervention to reduce the sources or enhance the sinks of greenhouse gases” (IPCC, 2014).

2.2.2.2 Climate change adaptation and resilience

Reducing GHG emissions, although necessary to limit global warming, will not be enough to

limit the risk of climate change, as the existing levels of GHGs have already resulted in global warming that is “locked-in” for the decades to come (IPCC, 2022a, 2014). The impacts of climate change are disproportionately borne by the poorest and most vulnerable countries and communities, as they are most heavily dependent on climate-sensitive sectors, and have limited capacity to adapt (IPCC, 2022a, 2014; UNFCCC, 2006). It is therefore necessary to build the resilience of countries, economies, communities and ecosystems to the impacts of climate that cannot be avoided, and to enable them to adapt to a changing climate. The IPCC (2014) defines adaptation to climate change as “the adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects that moderates harm or exploits beneficial opportunities”, while adaptive capacity is “the ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences”. It further defines resilience to the impacts of climate change as the “capacity of social, economic and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity and structure, while also maintaining the capacity for adaptation, learning and transformation” (IPCC, 2014).

2.2.3 Multilateral efforts to respond to climate change

2.2.3.1 The UNFCCC

The UNFCCC was established by the United Nations Conference of Environment and Development held in Rio de Janeiro, Brazil in 1992 with the aim to achieve the “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner” (United Nations, 1992). The Convention recognizes that countries have different levels of historic responsibility for causing the climate change problem, as well as different levels of development, which affect their moral obligation and their capacity to contribute to reducing GHG emissions. It commits developed countries to take steps to reduce their GHG emissions, and to provide financial and technology support for climate change mitigation actions in developing countries (United Nations, 1992). It also commits developed countries to provide financial support to developing countries to adapt to the unavoidable impacts of climate change (United Nations, 1992). It provides a list of countries considered to be developed in Annex I, while all other countries are considered to be developing countries

(UNFCCC, 2006).

2.2.3.2 The Kyoto Protocol and carbon markets

Since the establishment of the UNFCCC, progress has been made in the multilateral negotiations on its implementation through the annual Conferences of the Parties (COPs), although many observers have noted that the process lacks the urgency required, and has not made the progress necessary to adequately address the climate change challenge (UNEP, 2021). In 1997, an important milestone was reached with the agreement of the Kyoto Protocol, which established concrete and legally binding GHG emissions reduction targets for 36 developed countries (UNFCCC, 1997). Although the Kyoto Protocol was ultimately limited in the impact it could achieve by the fact that the United States, the largest emitter of GHGs at the time, did not ratify the agreement (Watson & Schalatek, 2019), it nonetheless paved the way for some important advances in climate change mitigation, notably by introducing markets for reducing GHG emissions

To enable them to meet their targets through international trade, the Kyoto Protocol established three market-based mechanisms: International Emissions Trading among developed countries; the Clean Development Mechanism (CDM), and Joint Implementation. These mechanisms aimed to enable a cost-effective approach to reducing GHG emissions, whereby countries with emissions reduction targets could meet them by investing in activities or technologies that reduced GHG emissions in another countries, or by trading their obligations to reduce emissions with other countries in which it could be done at a lower cost (UNFCCC, 1997). These market mechanisms provided a major innovation in addressing the climate change challenge at scale, by driving a market for activities that shift global economic activity away from heavily GHG emitting industries and towards cleaner alternatives (UNFCCC, 2006). They further provided incentives for technology development, demonstrated the commercial viability of a wide range of technologies and approaches in the renewable energy, forestry and other sectors, and attracted private sector investment in climate change mitigation on an unprecedented scale. The CDM alone led to some USD 300 billion in investments in climate change mitigation projects between 2001 and 2018 (UNFCCC, 2018). Some authors have suggested that the success of the market mechanisms for climate change mitigation could inform a similar approach for adaptation (Phillips, 2020).

2.2.3.3 The Paris Agreement

In 2015, the COP to the UNFCCC reached another milestone agreement, the Paris Agreement. The Paris Agreement identifies a target for limiting global temperature rise, which is based on scientific assessments of the amount of warming that natural and human systems can accommodate: “to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius” (UNFCCC, 2015). The IPCC conducted a review of these targets and found that a 1.5 degree scenario is possible, but would require a rapid and significant decrease in GHG emissions, reaching net zero emissions by 2050, a scenario that would require fundamental changes in the global economic system, including rapid decarbonisation (IPCC, 2018).

2.2.3.4 Nationally Determined Contributions

Unlike the Kyoto Protocol, the Paris Agreement does not commit countries to specific emissions reduction targets. Instead, it commits all countries to take action on climate change, and provides for a process through which countries can determine their own targets for GHG emissions, to report regularly on their progress, and to review and increase their targets every five years (UNFCCC, 2015). These national commitments are known as Nationally Determined Contributions (NDCs). The Paris Agreement has been ratified by all Parties to the Convention and therefore engages all major emitting countries, however the United States has subsequently announced its intention to leave the Paris Agreement. Despite being a breakthrough in multilateralism in the climate change negotiations, the collective commitments contained in the NDCs submitted to the UNFCCC under the Paris Agreement fall far short of putting the world on track to meet the 2 degrees target (UNEP, 2016a, 2021). In addition, many of the NDCs submitted by developing countries include a majority of proposed actions whose implementation is conditional upon receiving financial support from developed countries (UNEP, 2021).

2.2.4 Climate finance

2.2.4.1 Definitions of climate finance and adaptation finance

There is no single internationally recognized definition of climate finance (UNFCCC, 2021b). The UNFCCC Standing Committee on Finance, which publishes a biennial assessment of global climate finance flows, provides the following definition: “climate finance aims at reducing emissions and enhancing sinks of GHG and aims at reducing vulnerability, and maintaining and increasing the resilience, of human and ecological systems to negative climate

change impacts” (UNFCCC, 2021b). This definition can be broken into two components, a definition of mitigation finance as funding which aims at “reducing emissions and enhancing sinks of GHG”, and a definition of adaptation finance, which is funding aimed at “reducing vulnerability and maintaining and increasing the resilience of human and ecological systems to negative climate change impacts”.

2.2.4.2 Estimating adaptation finance needs

In a comprehensive survey of existing literature on the cost of adaptation, UNEP (2016b) concluded that the cost of adapting the unavoidable impacts of climate change could be in the range of USD140 – 300 billion per year by 2030, and USD 280-500 billion per year by 2050, and could rise even beyond this if the global target of limiting global temperature rise to 2°C is not met. The Global Commission on Adaptation estimates that investing \$1.8 trillion globally (USD180 billion per year) in five key sectors (early warning systems for disaster risk reduction, climate resilient infrastructure, climate resilient agriculture in dryland regions, protection and restoration of mangrove ecosystems, and sustainable water provision) from 2020 to 2030 could generate USD7.1 trillion in total net benefits (Global Commission on Adaptation, 2019). For Africa alone, UNEP estimates that the cost of adaptation across all sectors could range from USD 50 billion per year under a 2°C scenario to USD 100 billion per year by 2050 if the world fails to achieve the 2°C scenario (UNEP, 2015). In a dire warning UNEP (2015) estimates even under a 2°C scenario, over 50% of Africa’s population would be at risk of undernourishment.

2.2.4.3 Sources of adaptation finance

The UNFCCC has established or adopted a number of financial mechanisms for mobilizing funds from developed country governments and other sources towards climate change mitigation and adaptation in developing countries (Amerasinghe, Thwaites, Larsen, & Ronquillo-Ballesteros, 2017; Watson & Schalatek, 2019). The largest of these is the Green Climate Fund (GCF), established in 2011 and capitalised to date with USD20 billion, which aims to achieve an allocation of 50% of its resources to adaptation (Amerasinghe et al., 2017). One of the innovations of the GCF is that it includes a strong focus on engaging the private sector in financing climate adaptation and mitigation, and unlike many other climate funds, it also uses a wide range of financial instruments including concessional loans, equity and guarantees, with the aim of attracting private sector co-financing (UNFCCC, 2011).

The Global Environment Facility, established in 1992 includes climate change as a focal area (along with biodiversity, desertification, and others), and has two subfunds; the Least Developed Countries Fund and the Special Climate Change Fund which provide grant funding to Least Developed Countries for climate adaptation activities and supporting technology for adaptation and mitigation, respectively (Watson & Schalatek, 2019; Amerasinghe et al., 2017). The Adaptation Fund, established in 1997 under the Kyoto Protocol, is focused exclusively on funding adaptation to climate change (UNFCCC, 1997). An innovation of the Adaptation Fund is that in addition to pledges from developed country governments, it mobilised funding through a levy of two percent on sales of carbon credits under the Clean Development Mechanism (Amerasinghe et al., 2017). However, a slump in the carbon markets as a result of uncertainty in the future of the Kyoto Protocol market mechanisms meant that this modality has not raised as much funding as expected (World Bank 2016). Nonetheless, the recent Glasgow Climate Pact, agreed at the 26th COP in November 2021, reached agreement on the continuation of carbon market mechanisms under Article 6 of the Paris Agreement, and reinstated an adaptation levy as part of this agreement (UNFCCC, 2021a).

In addition to funding provided through the above-mentioned funds, there are several additional sources of public and private funding for climate change adaptation in developing countries. These include resources provided by development finance institutions such as multilateral development banks, UN agencies, developed country bilateral development agencies and development banks, as well as regional and national development banks and funds in developing countries (Buchner et al., 2021, 2019; Watson & Schalatek, 2019). In addition, developing countries fund climate change adaptation and mitigation activities through their own national budgets (UNFCCC, 2016).

2.2.4.4 The adaptation finance gap

Several studies have attempted to assess the amount of funding that is actually being invested in responding to climate change, and although the estimates vary, there is clear agreement that actual funding flows are orders of magnitude less than what is needed (Brown et al., 2015; Buchner et al., 2021; Jachnik, Caruso, & Srivastava, 2015; OECD, 2015; UNFCCC, 2016). The Climate Policy Initiative (Buchner et al., 2019) estimated annual climate finance flows of USD 632 billion, on average, over the two-year period from 2019 to 2020, of which only seven percent was for adaptation to climate change (Buchner et al., 2021). The UNFCCC (2016) estimated climate finance flow at USD 714 billion on average in 2013 and 2014, of which about

25% was for adaptation. The differences in estimates can be attributed to differences in the way in which climate finance is defined and measured, as there is no single internationally recognized definition of climate finance (UNFCCC, 2016).

In light of the estimated costs of adapting to climate change, the low levels of adaptation finance reported (one sixth of the estimated needs or less, depending of which estimates are used) by the above-mentioned studies is cause for concern. This observation led UNEP to coin the concept of the “adaptation finance gap”, which it defines as “the difference between the costs of, and thus the finance required, for meeting a given adaptation target and the amount of finance available to do so” (UNEP, 2016b). Several authors have suggested that tapping into private sector funding will be critical to addressing the adaptation finance gap, and that blended finance mechanisms offer innovations that can crowd in private capital towards adaptation outcomes (Altamirano, 2021; Miller & Swann, 2019).

2.2.5 Public, private and blended finance

2.2.5.1 Definitions of public and private finance

The UNFCCC Standing Committee on Finance considers public climate finance to include two subcategories: international public finance and domestic public finance (UNFCCC, 2016). International public finance includes funds provided by multilateral development banks, international climate funds, bilateral development agencies, and other international development finance institutions, while domestic public finance includes funding allocated by national or subnational governments to climate change adaptation, including through the national budget as well as through tax incentives, credit provided or guaranteed by government, or through state-owned enterprises (UNFCCC, 2016). The Climate Policy Initiative considers private sector climate finance as funding that is invested in climate adaptation and mitigation by households, non-financial corporations, commercial financial institutions, institutional investors, and private equity investors (Buchner et al., 2021, 2019).

2.2.5.2 Definition of blended finance

Blended finance is defined by Convergence (2021) as “the use of catalytic capital from public or philanthropic sources to increase private sector investment in developing countries to realize the SDGs”. It is an approach to structuring investments which allows organizations with different objectives (in terms of financial return expectations and social impact goals) to co-invest, with each achieving its own objectives (Convergence, 2020).

2.3 Conceptual framework

2.3.1 Challenges in mobilising adaptation finance

2.3.1.1 Distinguishing adaptation finance from development finance

One of the challenges in mobilizing finance for adaptation is due to difficulties in defining it, as adaptation finance can be difficult to distinguish from development finance. This is because investments that promote adaptation usually have positive development outcomes, and investments in human development which boost resilience to a broad range of economic and other shocks also reduce vulnerability to climate shocks (Mcgray, Hammill, & Bradley, 2007). Mcgray et al. (2007) propose that the relationship between adaptation and development can be framed as a continuum rather than a clear distinction, and provide a framework for characterising the continuum which considers four categories of adaptation activities: i) addressing drivers of vulnerability (for which there may be significant overlap between adaptation and development outcomes); ii) building response capacity by investing in the institutions, systems and skills needed to deliver adaptation (which may be the same as those needed to deliver development outcomes); iii) managing climate risk, for example by taking climate change projections into account in the design of infrastructure or agriculture projects; and iv) confronting climate change, through activities that provide climate adaptation outcomes as their primary objectives (Mcgray et al., 2007).

There is considerable debate among climate change practitioners as to whether measures of adaptation finance should include all of these categories, even where they overlap with development finance, or whether they should count only the incremental cost of adaptation – that is the additional cost of adaptation to climate change that would not be funded by development finance alone (Bapna & Mcgray, 2008; Mcgray et al., 2007; Tippmann et al., 2013). Mcgray et al. (2007) and Bapna & Mcgray (2008) make a case for the less stringent approach to distinguishing adaptation finance, as they point out that poverty and vulnerability to climate change are inextricably linked, and therefore development and climate change adaptation need to be pursued as aligned and mutually beneficial goals.

2.3.1.2 The local nature of adaptation

An additional consideration in financing adaptation is that the impacts of and vulnerabilities to climate change are highly localized, and often felt at the community or household level (Hesse, 2016; Mcgray et al., 2007; Steele & Shakya, 2017). Unlike mitigation, in which emissions

reductions are location agnostic, adaptation actions must be targeted to the specific vulnerabilities of a community, ecosystem or local economy, and these can differ widely from one location to another (Hesse, 2016, 2017). Steele and Shakya (2017) argue that climate change adaptation interventions at the local level can address these most vulnerable populations in ways that are often more effective, efficient and sustainable, as local communities and actors are uniquely positioned to know their vulnerabilities and needs, and have a stake in the outcome of any adaptation intervention enhancing the accountability of adaptation interventions. However, their research finds that less than 10% of climate finance reaches the local level (Steele & Shakya, 2017). The challenge to the international community therefore is to find ways to significantly scale up financing for adaptation by creating incentives for investment in adaptation and resilience, but to do so in a manner that ensures that adaptation investments are tailored to local needs and priorities, and that affected communities actively engaged and empowered through their design and execution (Bapna & Mcgray, 2008; Fenton, Reid, Wright, & Huq, 2015; Hesse, 2016; Schaer, Dale, & Dorkenoo, 2019; Steele & Shakya, 2017).

2.3.1.3 Lack of private sector investment in adaptation

The role of the private sector in financing and delivering adaptation solutions is an area that is receiving increased interest by researchers in the past few years. Attempts to track climate finance flows show that current climate finance for adaptation is provided almost exclusively by the public sector (Buchner et al., 2021, 2019). Although this may be in part a result of challenges in identifying and measuring private sector investment in adaptation, especially due to the challenges in distinguishing adaptation from development as described above, it is clear from several studies that even if private sector investment in adaptation is not zero, it is far from significant (Buchner et al., 2021; Tippmann et al., 2013; UNEP, 2016b; UNFCCC, 2016). This is viewed as a significant challenge to raising adaptation finance at the scale required, as although there is some scope to scale up public sector adaptation finance, investment in adaptation is not likely to reach the scale needed with public finance alone (UNFCCC, 2016).

Several studies have discussed the significant potential of the private sector to invest in adaptation (Cochu et al., 2019; Druce et al., 2016; Fayolle et al., 2019; Frey et al., 2015; Global Center on Adaptation, 2021; Micale, Tonkonogy, & Mazza, 2018; Miller & Swann, 2019; Schaer & Kuruppu, 2018; UNFCCC, 2016; World Bank, 2020). Some studies have explored the barriers to private sector investment in adaptation (Altamirano, 2021; Druce et al., 2016;

Fayolle et al., 2019; Richmond, Choi, Padmanabhi, & Lonsdale, 2021; Richmond et al., 2021; Schaer et al., 2019; Schaer & Kuruppu, 2018; Tippmann et al., 2013) . These barriers can be grouped into the following four general categories: information and awareness barriers, policy and regulatory barriers, access to finance and de-risking instruments, and the lack of a revenue stream. These are further discussed below.

2.3.1.3.1 Information and awareness barriers

These barriers include the lack of easily available data on climate change trends and projections, which hinders action in responding to climate change risk or designing adaptation interventions (Miller & Swann, 2019; Richmond, Choi, Padmanabhi, et al., 2021; World Bank, 2020). It also includes a lack of information and expertise on how to address climate change risk (Tippmann et al., 2013; World Bank, 2020), as well as a lack of awareness among micro, small and medium enterprises (MSMEs) and local communities of the opportunities that may exist in climate adaptation activities (Druce et al. 2016; Trabacchi & Mazzo, 2015).

2.3.1.3.2 Policy and regulatory barriers

These barriers include the existence of disincentives, or the lack of policy incentives such as tax benefits for investing in adaptation (Druce et al. 2016; Trabacchi & Mazzo, 2015) or incentives that could be provided through public procurement systems for adaptation results (Altamirano, 2021). Another barrier is the lack of clearly defined adaptation priorities in developing countries, which limits the opportunities for mobilising funding (World Bank, 2020). Policy barriers may also include the absence of climate risk disclosure requirements for companies, which can lead to lack of transparency on exposure to climate risk (Miller & Swann, 2019; Richmond, Choi, Padmanabhi, et al., 2021).

2.3.1.3.3 Access to finance and de-risking instruments

Several studies note that the real or perceived risk associated with adaptation investments is often high for the private sector, in part due to the above-mentioned information and awareness barriers, but also due to real risks associated with unproven approaches and technologies (Altamirano, 2021; Micale et al., 2018). This is further compounded by the limited availability of financing instruments that enable risk-sharing with the public sector, thereby reducing the risk of investment for the private sector (Convergence, 2020; Druce et al., 2016; Fayolle et al., 2019; Richmond et al., 2021).

2.3.1.3.4 Lack of revenue streams

Lack of revenue streams for adaptation is another challenge that is mentioned by several authors (Richmond et al., 2021; World Bank, 2017, 2020). In some cases this may be because some adaptation actions are by nature public goods (Khan & Munira, 2021). In other cases it may be due to difficulties in predicting or monetizing the benefit. Where the expected revenue from the adaptation activity is less than the cost of investing, the private sector will not invest as it does not make financial sense to do so, even if the activity generates a public good (Convergence, 2020).

These challenges are illustrated in Figure 1 below.

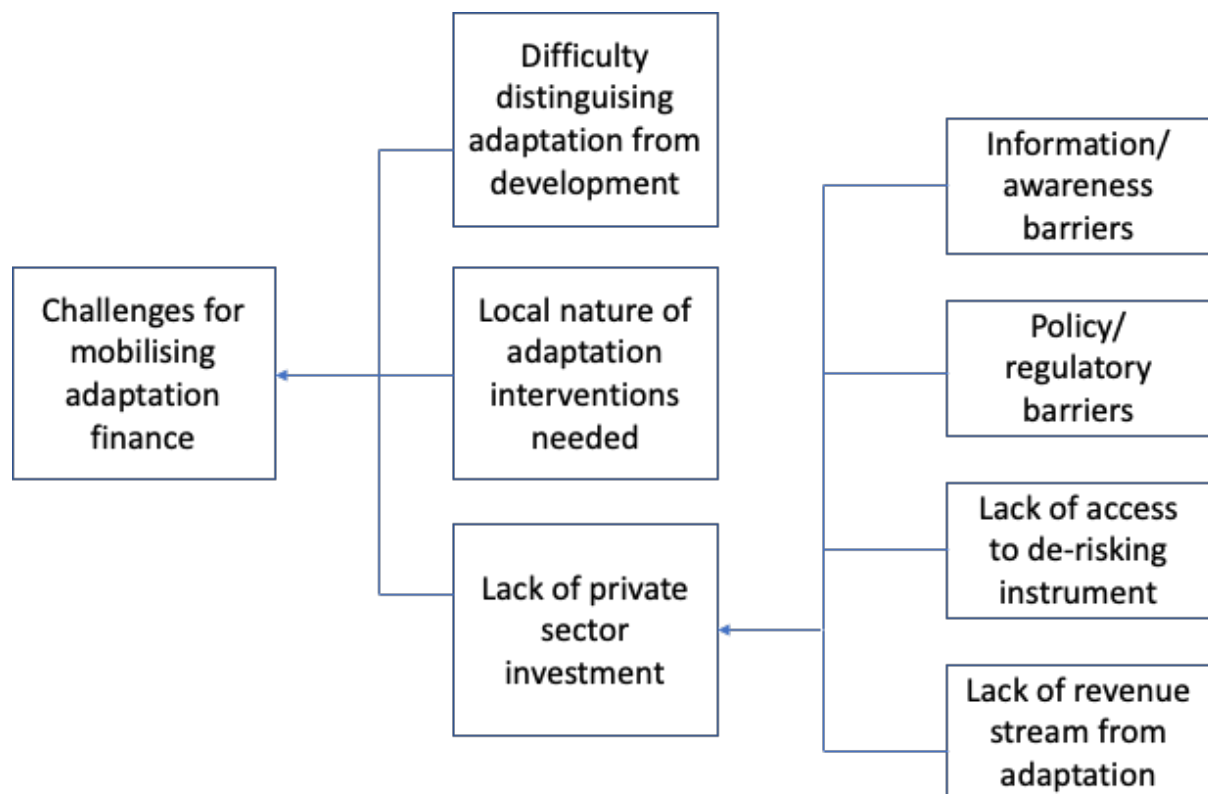


Figure 1: conceptual framework for understanding barriers to mobilising adaptation finance

2.3.2 The role of the private sector in mobilising adaptation finance

2.3.2.1 The potential for private investment in adaptation

A number of authors have discussed ways in which barriers to private sector investment could be addressed. Cochu et al. (2019) provide a framing of the roles that private sector actors can play in climate change adaptation, which divide into three categories: i) adapting their own operations to climate change, in order to mitigate climate risks to their own business model or value chain; ii) financing adaptation; or iii) providing products or services to promote climate adaptation. They argue that different types of private actors, (MSMEs and farmers, large

companies, private associations and cooperatives, banks and investors, and insurance companies) may play one or a combination of these roles in different scenarios (Cochu et al., 2019). Druce et al. (2016) provide a slightly different framing of private sector roles in adaptation, dividing the private sector into two broad categories: private financiers (who invest in climate change adaptation, thus providing the supply side of adaptation finance) and private entrepreneurs (who provide products and services or who invest in the resilience of their own business model or supply chain, thus that with the right incentives and enabling environment, these two sets of actors will generate the demand and the financing for scaled up private investment in climate adaptation).

2.3.2.2 The role of public policy and public finance in driving private sector investment in adaptation

Druce et al. (2016) argue that the role of governments and development finance institutions is to address information asymmetries by raising awareness on climate change risks and opportunities, provide grant funding and fiscal incentives to address the positive externalities associated with climate adaptation investments, and provide concessional financing to address capital market imperfections (e.g. by providing credit enhancement for loans with longer tenors or lower interest rates, due to the long-term nature of climate risks).

Schaer et al. (2019) and Schaer & Kuruppu (2018) have discussed the role of MSMEs in providing locally relevant solutions to climate change adaptation, and have emphasized the importance of cooperation and coordination between local governments and MSMEs in order to develop mutually beneficial adaptation solutions, a point which is also emphasized by other authors including Fayolle et al. (2019). Some authors have also raised the possibility of using market-based mechanisms or results-based payments to attract private investment in adaptation (Persson, 2011; Tippmann et al., 2013), although this has not been studied in detail.

2.3.2.3 Blended finance for adaptation

Blended finance structures are gaining prominence in the global dialogue around financing sustainable development and climate change mitigation and adaptation due to their potential to attract private investment into deals that would otherwise be perceived as too risky or insufficiently rewarding (offering lower-than-market returns), by blending the private investments with public or philanthropic funds (Convergence, 2020). Blended finance can be

used for adaptation activities that have the potential to generate revenue streams, such as those related to job creation and value-addition in climate related sectors (Convergence, 2020).

2.4 Empirical literature on blended finance for adaptation

The empirical literature on blended finance in adaptation is sparse. The Climate Policy Initiative's evaluation of global climate finance flows in 2019 and 2020 estimated that the total amount invested in adaptation globally was around USD 46 billion, 98 percent of which came from public sector funders including national and multilateral development finance institutions (Buchner et al., 2021). Private sector funding represented only 2% of the adaptation finance tracked, and only 0.3% of total private sector climate finance (Buchner et al., 2021). Trabacchi & Mazza (2015) explored investments by seven development finance institutions that mobilised private sector investment into adaptation projects primarily in the water and agricultures sectors. They found that public funding that addresses knowledge gaps by providing market studies and advisory services helped strengthen the awareness and confidence of the private sector to engage in climate adaptation activities, such as water-efficient agricultural technologies and climate resilient agribusinesses and agricultural supply chains (Trabacchi & Mazza, 2015). They also found that concessional finance to local financial institutions through credit lines, technical assistance or credit enhancement could address risk perceptions and enable them to provide affordable loans to MSMEs investing in climate resilience (Trabacchi & Mazza, 2015). They further note the importance of an enabling policy and regulatory environment to attract private investment in climate resilience.

Several blended finance facilities have recently been established which include climate change adaptation and resilience among their targeted impacts. These include the Development Bank of Southern Africa (DBSA)'s Climate Finance Facility (GCF, 2018a), the Acumen resilient Agriculture Fund (GCF, 2018b), and the Central American Bank for Economic Integration (CABEI)'s Productive Investment Initiative for Adaptation to Climate Change, CAMBIOII, (GCF 2018c), all of which are co-financed by the GCF. However, these are still in early stages of implementation and lessons are yet to be published. The latter two are the first GCF private sector projects focused exclusively on adaptation, and they thus represent an important innovation in engaging the private sector in adaptation finance. Stoll, Pauw, Tohme, & Grüning (2021) in a review of the GCF's portfolio of adaptation projects found in addition to these two projects which are categorised as private sector projects, a further nine mobilise either financial

or non-financial contributions from the private sector in some form through a public sector project.

Convergence, in its assessment of the state of blended finance in 2020 (Convergence, 2020), found that out of nearly 600 blended finance transactions, representing nearly USD144 billion in total financing, 35% were listed as being aligned to the SDG for addressing climate change. However, the authors do not further disaggregate the data into mitigation and adaptation finance transactions, and a review of the indicators used across all transactions suggests that the majority of these transactions are focused on mitigation, as 31% of transactions report on “GHG emissions reduced or avoided”. However, the inclusion of indicators such as “women empowered” and “smallholder farmers supported” and “SMEs financed” in a minority of transactions could suggest that there may be transactions among those reported that do contribute to climate change adaptation.

2.5 Summary

Overall, it can be concluded that the literature on the role of the private sector in financing and delivering adaptation solutions is sparse, and further work is needed to unpack the role that the private sector could play in adaptation and to understand the barriers (Cochu et al., 2019), as well as to explore how these barriers could be addressed through blended finance solutions.

Chapter 3: Methodology

3.1 Introduction

This chapter sets out the methodology for the study, including the research approach, research design, sample selection and data collection, data analysis, and how dependability, credibility, transferability and authenticity of the qualitative study were ensured.

3.2 Research approach

This study used a qualitative and inductive research methodology to make a contribution to the understanding and theory around the financing gap for climate change adaptation. The literature reveals that this is an area of study which is relatively new, and for which quantitative data is scarce or non-existent. There are a number of circumstances in which a research question may be better addressed through a qualitative research method than a quantitative one, notably: an exploratory study, which aims to an area which is not well understood; a complex and nuanced problem, for which a qualitative approach may be able to distil complexity in a more coherent manner than quantitative methods; a study in which context plays an important role, and may not be able to be explained through quantitative methods; or when the data of interest cannot be easily quantified and measured (Creswell, 2014; Saunders, Lewis, & Thornhill, 2019; Sauro, 2015). According to Strong (1992), “qualitative research stands for an approach rather than a particular set of techniques, and its appropriateness - like that of quantitative research - is contingent on the nature of the phenomena to be studied”. In the case of this study, the above circumstances are observed: the research seeks to explore and explain a phenomenon that is complex, poorly understood, and context-specific, and for which limited quantitative data exist.

The purpose of the research is exploratory, which according to Saunders & Lewis (2018) and Saunders et al., (2019) is seeking to gain insights into a topic that is not well understood. It explored the nature of the problem of inadequate finance for climate change adaptation, as well as the possible role of blended finance in responding to these challenges.

The study employed a research design involving two strategies of research which were complemented by documentary research: i) semi-structured interviews with key experts, and ii) a case study. These strategies are further described below. The first research question (what are the barriers to financing adaptation, for the public and private sectors?) was addressed through interviews with experts in the fields of adaptation, climate finance and blended finance.

The second research question (what is the role of blended finance in scaling up funding for adaptation and resilience to climate change?) was addressed through the expert interviews, and by making use of the case study approach.

3.2.1 Expert interviews

Interviews offer an opportunity to gather in-depth information on a participant's perspective on a topic and may provide insight that was not available in published documents (Mack, Woodson, Macqueen, Guest, & Namey, 2005). In a field that is relatively new for which the literature is sparse, interviews can be particularly valuable as a means to gather data on a topic of exploratory research (Saunders et al. 2019; Saunders & Lewis, 2018). For this study, interviews of experts in the subject of adaptation finance were used to add to the body of academic knowledge on the subject of the adaptation finance gap.

3.2.2 Case study

A case study approach uses an in-depth analysis of one or more cases within a real-life context in order to explore, explain or describe an event or phenomenon (Creswell, 2014; Saunders et al., 2019). A case study approach is often used in exploratory research in order to get a nuanced and in-depth understanding of a phenomenon or problem within a specific context (Saunders & Lewis, 2018). In this study, a case study was used to explore lessons from existing blended finance approaches in adaptation, focusing on one such example. This approach allowed for a more detailed understanding of the role that blended finance can play in catalysing private sector investment into adaptation.

3.3 Sample selection

For the expert interviews, the sample selection used the purposive sampling approach, which uses the informed judgment of the researcher to select a set of interviewees that will have the requisite expertise to engage with the research question (Saunders et al., 2019). A heterogeneous group of approximately 10 to 20 experts in the subject area from around the world was identified, representing diverse backgrounds and experiences. Interviewees were selected by identifying organisations that are working on issues of blended finance for adaptation from a range of different angles, including as public funders, private investors, project developers, researchers, etc., and then identifying the appropriate person within the organisation, who was ideally a senior person leading this area of work and with at least five

years' experience in a relevant field. In some cases, interviewees were identified following the recommendation of another interviewee. The identification of interviewees considered a wide range of perspectives, interests and backgrounds, including interviewees representing climate change funds, project executing agencies, think tanks or academic researchers working on related issues, development finance institutions (DFIs), government agencies, private sector investors, as well as MSMEs engaged in adaptation activities.

For the case study, the sample selection was based on a purposive sampling approach, using the "critical case" selection, which considers a case which will provide critical or unique insight into the phenomenon (Saunders et al., 2019). This approach was chosen over a "typical case" selection because there are so few documented cases of blended finance for adaptation that it would not be possible to identify a case that is "typical". Yin (2018) distinguishes between a case study approach that uses a single case versus one which uses multiple cases, noting that the former may be applied when it represents a critical case or one which provides an opportunity to explore a phenomenon that has not received much attention. For this reason, this study used the single case approach.

The case examined is the Acumen Climate Resilient Agriculture Fund (ARAF), a fund established with funding from the GCF to support small and medium sized enterprises in Uganda, Ghana, Nigeria and Kenya to invest in climate change adaptation in the agriculture sector (GCF, 2020b). This case was selected as it is the only known case of a climate fund investing in private sector led adaptation in Africa for which the project documents are in the public domain, and the only GCF-funded project for private sector-led adaptation that is already in an advanced stage of implementation. The case was explored using a combination of documentary research and semi-structured interviews with three to four experts on the case (ideally one from Acumen, one from a funder of the project, and one from an investee of the fund), in order to get a balanced set of perspectives.

3.4 Data collection and instrument

For the expert interviews to respond to both research questions, as well as for the case study to respond to the second research question, the data collection technique involved semi-structured interviews. In an inductive research approach, semi-structured interviews apply a set of broad themes and interview questions which are established in advance and posed to all interviewees, but with a considerable amount of flexibility to adapt the questions and enable the interview to

evolve based on the information that emerges (Saunders et al., 2019). Interviews were approximately one hour each and carried out online using the teleconference software Zoom. Interviews were recorded with the consent of the interviewee in order to allow for review and transcription of the material. The interview consent form and interview questions are provided in Appendix 1 and 2 respectively. Interviews were conducted between November 2021 and February 2022.

The researcher made use of the interview protocol refinement framework described in Castillo-Montoya (2016) which makes use of four stages to refine the interview protocol so as to enhance the quality of the data obtained. These stages are: i) aligning the interview questions with the research questions for the study; ii) constructing an inquiry-based approach that balances inquiry with conversation, in order to ensure a comfortable experience for the interviewee, iii) obtaining feedback on interview protocols, and iv) piloting the interview protocol with a small sample of interviewees in order to refine the approach (Castillo-Montoya, 2016). After the first set of interviews were conducted it was found that the interview protocol was appropriate and did not require changing.

3.5 Data analysis

The analysis of data obtained through the expert interviews used the thematic analysis, which seeks common themes across the responses. Using the approach set out by Saunders et al. (2019), this involved gaining familiarity with the content of the interviews through transcribing the interview scripts, coding the qualitative data according to similarities and patterns observed, seeking common themes and relationships between themes, and refining and evaluating the themes to establish propositions and put forward findings.

For the case study, the data analysis used an inductive approach as described by Saunders et al. (2019), by identifying themes and patterns in the data, drawing comparisons with the existing literature to identify the links to the theory, and identifying the lessons that could be drawn from the case.

3.6 Ensuring dependability, credibility, transferability and authenticity of the qualitative study

The quality of the research design is of critical importance for ensuring that the results of the research are credible and not misleading. For qualitative research, key measures of quality of

the research design include: dependability (ability of the research to reveal consistent findings if repeated by a different researcher); credibility (research questions are measuring what they are intended to measure); transferability (findings can be applied to other contexts); and authenticity (fairness is ensuring that all views are represented in the research) (Saunders et al., 2019).

In this study, the quality of the research was ensured by using triangulation of data, using data collected through three different strategies (documentary research, expert interviews and case study) to triangulate and identify any inconsistencies (Saunders et al., 2019). The expert interviews included a heterogeneous diversity of interviewees in order to minimize potential sources of bias. In addition, a careful structuring of interview themes and questions to be neutral and avoid introducing any bias as well as the flexibility afforded by semi-structured interviews to probe deeper into certain areas enabled the researcher to get a thorough understanding of each respondent's perspective and thereby minimize potential researcher bias.

Chapter 4: Discussion of Findings

4.1 Introduction

This chapter sets out the results of the study, which sought insights on the two research questions: i) what are the barriers to financing adaptation, for the public and private sectors?; and ii) what is the role of blended finance in scaling up funding for adaptation and resilience to climate change? In particular it presents the results of the semi-structured expert interviews and draws comparisons between the interview findings and the findings extracted from documentary research. It also sets out the results of the case study which sought to provide insight on the second research question through a real life example. It discusses the findings of the interviews and the case study in the context of the research questions.

4.2 Demographics of the respondents

The researcher conducted a total of 16 semi-structured interviews with identified experts from a range of public, private, and civil society institutions, including both international institutions and developing country institutions based in Africa, Asia and Latin America. The respondents reflected a diversity of types of institution, including international DFIs such as multilateral development banks and bilateral DFIs, international climate funds, non-profit think tanks, regional development banks, international private sector associations, private equity funds, MSMEs engaged in adaptation activities, and specialised consultancy companies. Of the 16 experts, all had a minimum of 5 years of experience in the fields of climate finance, adaptation finance or blended finance and all were actively working on topics that relate directly to the research question, and therefore could be considered experts in their relevant subject areas. Despite efforts by the researcher to achieve gender balance in the interviewees, the majority of respondents (11 out of 16) were male. This may be a reflection of the gender bias within this field of work, especially within developing country institutions where the gender bias was more pronounced (four of the five female interviewees were affiliated with international institutions). Table 1 below shows the demographic information (gender and number of years of experience) and institutional affiliation of the respondents by category of institution (public, private or civil society), the type of institution, and whether it is an international institution or a developing country institution.

Table 1: Institutional affiliation and demographic information of respondents

Category	Number of respondents
a) International or developing country institution	
International	9
Developing country	7
b) Category of institution	
Public	7
Private	5
Civil Society	4
c) Type of institution	
International Climate Fund	3
Think Tank	4
Regional Development Bank	2
International development finance institution	2
Private Fund	2
Consulting Company	1
MSME	1
International private Sector Association	1
d) Gender of respondent	
Female	5
Male	11
e) Years of experience of respondent	
between 5 and 10	6
between 10 and 15	4
between 15 and 20	1
more than 20	5
TOTAL RESPONDENTS	16

For the case study, three respondents were interviewed to complement a comprehensive review of available documents. One was a representative of the institution implementing the case study intervention; one was a representative of an investor in the case study intervention, and one was a representative of an institution that has been funded through the case study intervention.

4.3 Identifying the barriers to financing adaptation for the public and private sectors

The first research question “what are the barriers to financing adaptation for the public and private sectors?” was explored through the expert interviews. The responses can be organised in three groups; barriers to public sector finance for adaptation, barriers that are common to both public and private sectors, and barriers to private sector investment in adaptation. These are discussed further below and presented diagrammatically in Figure 2.

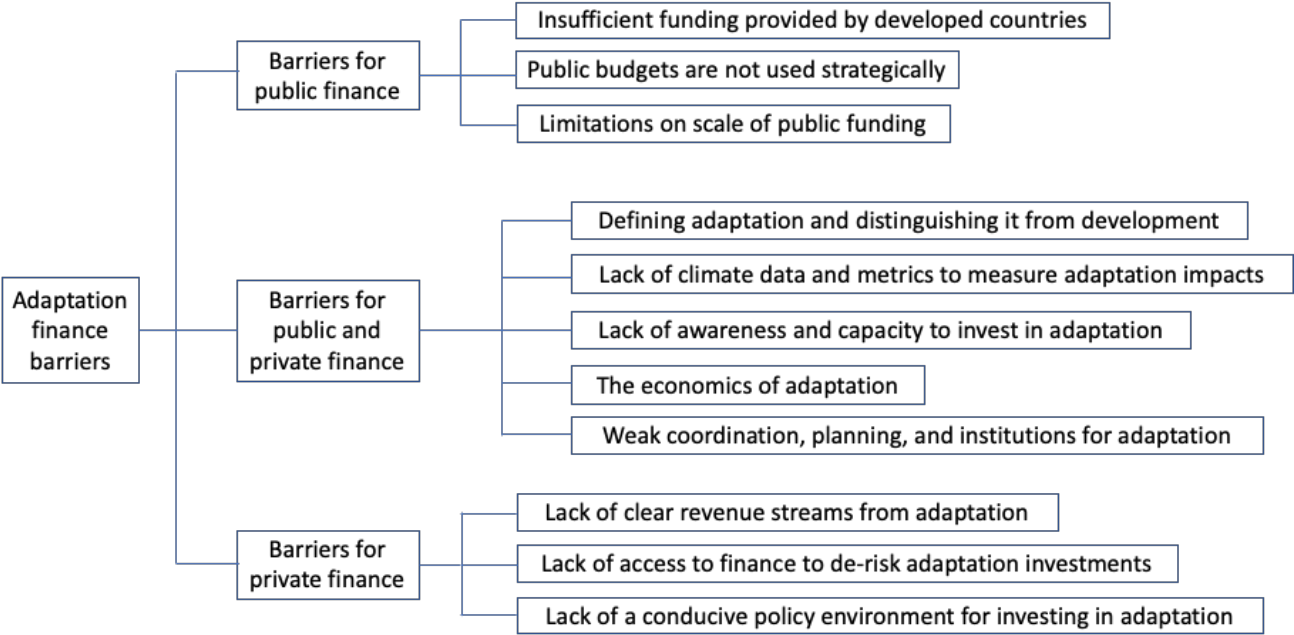


Figure 2: Barriers to financing adaptation for the public and private sectors

4.3.1 Barriers to public sector finance for adaptation

Public sector finance for adaptation relates to the funding provided by developed country governments to developing countries as part of their commitments on climate finance, often channelled through bilateral or multilateral development finance institutions. It also includes adaptation investments by developing country governments through their own public budgets, or through south-south support to other developing countries. The barriers to public sector investment in adaptation are discussed below.

4.3.1.1 Insufficient funding provided by developed countries

Several respondents emphasized that developed countries should be making a more significant contribution to financing climate change adaptation in developing countries through their public funds, both for moral reasons, since they bear the overwhelming responsibility in having caused the climate change crisis, and for economic reasons, since they have the far greater

financial capabilities to invest in adaptation than developing countries. Indeed, this framing of responsibilities echoes the key principles of the UNFCCC of “common but differentiated responsibilities” and “respective capabilities” which underly the multilateral framework for cooperation on climate change (United Nations, 1992).

Several respondents emphasized that developed countries have so far collectively failed to achieve the modest climate finance goal that they committed to developing countries in 2010 of USD 100 billion per year by 2020, a fact that is supported by several studies (Carty, Kowalzig, & Zageba, 2020; OECD, 2021). Some respondents noted that because developed countries don’t distinguish between financial instruments in their reporting on climate finance, adaptation finance is overstated since the loan proportion (estimated at 80% by Carty et al. (2020) is counted at face value. Some respondents also noted that the provision of adaptation in the form of loans is problematic from a climate justice perspective, as developing countries, especially least developed countries and small island states, are already facing a significant debt burden. The fact that a significant proportion of limited climate finance, including for adaptation, is provided in the form of loans contributes to over indebtedness and thereby compromises long term climate resilience. As stated by a respondent:

“Currently 80% of adaptation funding is in the form of loans. This is an absolute injustice” (Respondent 2).

Respondents further noted that adaptation overall receives a small proportion (only 7% according to Buchner et al. (2021) of total climate finance, despite commitments by developed countries and various climate funds to increase adaptation finance to 50%. A further challenge that was noted is that official development assistance (ODA) is increasingly being diverted towards funding adaptation, such that:

“More and more ODA is diverted as adaptation, but ODA has got different role. ODA is going down while climate finance is going up”. (Respondent 2).

This claim is also supported by Carty et al. (2020), who claim that “the climate finance developing countries receive is likely to be displacing vital spending on health, education and other essential areas” and argue that moving forward “developed countries should commit to ensuring that future increases of climate finance qualifying as ODA form part of an overall aid budget that is increasing at least at the same rate as climate finance” Carty et al. (2020).

In highlighting the lack of meaningful climate finance commitments by developed countries, several respondents drew parallels with the recent COVID recovery facilities that have been made available by developed country governments to stimulate economic recovery for example the over USD 20.5 trillion in stimulus packages for COVID recovery globally (Richmond, Choi, Rosane, et al., 2021), arguing that these commitments are evidence that the ability of developed country governments to mobilise public funds at scale is not matched by the political will to act on climate change.

4.3.1.2 Public budgets are not used strategically

Several respondents noted the importance of using public funds to enhance resilience to climate change impacts in developing countries, including through integrating climate change into development planning and budgeting so as to ensure that development is funded in ways that take climate change projections into account. This supports work by Allan (2019) which argues for a strong role for domestic budgets in scaling up adaptation finance.

“At a national level, domestic adaptation finance is low as countries struggle to integrate climate change into development. They are in a traditional development model, addressing poverty, water, natural resources without thinking of climate change. As a result, domestic funding for adaptation is almost non-existent” (Respondent 7).

“Good development promotes adaptive capacity and building adaptive capacity leads to better development. There’s a strong role of public policy in advancing adaptation and development in integrated way. We need to mainstream adaption – it should not be regarded as a separate action. Adaptation is development in adverse climate. So governments must have an active role in ensuring development becomes environmentally and climate friendly.” (Respondent 2).

4.3.1.3 Limitations on scale of public funding

Notwithstanding the barriers to public sector funding discussed above, there was consensus among the interviewees that even if public funding for adaptation is significantly scaled up, the scale of the funding needed is such that the public sector alone will never be able to mobilise enough funding to adapt economies and communities to the impacts of climate change. This is strongly supported by the literature which shows that investments in the region of hundreds of billions of dollars are needed annually to build resilience and adapt to climate impacts that are already locked in (Miller & Swann, 2019; UNEP, 2016b).

Public budgets are limited and face multiple competing objectives, and therefore private sector financing for adaptation is a necessity.

“Resources from the public sector alone are not enough to address climate change and implement the transition required while building adaptation and resilience among communities, so raising private finance is necessary” (Respondent 8).

“We can’t expect the public sector alone to finance local adaptation needs. The private sector has to intervene” (Respondent 7).

It therefore becomes important to understand the barriers to private sector investment in adaptation, which are discussed in the following sections.

4.3.2 Barriers common to both public and private sectors

Several of the barriers that were identified through the interviews affect the private sector, but are not unique to the private sector. These barriers that affect funding for adaptation from both the public and private sectors are discussed further below.

4.3.2.1 Defining adaptation and distinguishing it from development

One of the major challenges identified by interviewees was the difficulty to separate where ‘business as usual’ development starts and where adaptation, or “climate resilient development” starts. This challenge is discussed in (Mcgray et al., 2007). This is because most development interventions will lead to enhanced resilience of the beneficiaries to shocks, including climate shocks, even if they are not designed with climate change in mind. Similarly, any intervention that builds resilience to climate change will have some developmental benefits beyond the targeted adaptation impacts. As stated by Respondent 2:

“Good development promotes adaptive capacity and building adaptive capacity leads to better development”.

Climate funds generally attempt to distinguish between adaptation and development by requiring a clearly articulated climate change rationale that sets out how the proposed intervention will respond to a specific challenge that is caused or exacerbated by climate change. It was noted by one interviewee that:

“The distinction between climate adaptation and development is very fine, a development project could easily be eligible for climate finance and the inverse is also true. The main difference is in the need for a climate change rationale. Adaptation finance treats questions of development, but the eligibility criteria are very specific – an adaptation project must respond to an adaptation need caused by a climate change vulnerability, e.g. a potable water project must demonstrate that the problem is linked to a climate change effect eg. scarcity of water ... If a clear climate change rationale can be articulated for an intervention, then it can be considered as climate adaptation” (Respondent 7).

However, articulating this rationale can be challenging and requires knowledge of climate change vulnerabilities as well as data to demonstrate a link between climate change impacts and the challenge that the intervention responds to. As a result, many investments in development have the potential to contribute to climate change adaptation, but don't adequately make the case for a climate change rationale and are therefore not considered as adaptation investments (Richmond, Choi, Padmanabhi, et al., 2021).

One respondent noted that the concept of climate change rationale as required by climate funds is in itself problematic, because it is based on historic data rather than future climate projections. *“The GCF has a strong emphasis on climate rationale which requires demonstrating the linkage between climate change impacts and a project activity. This is inherently backward looking. For example, 30 years worth of historic data shows farmers can't grow crops thus the project responds to this. The international community needs to accept that it's okay to say climate models predict X and we need to act to make farmers resilient before disasters occur, based on the predictions of climate models”* (Respondent 4).

A further layer of complexity in distinguishing what counts as adaptation finance is that climate change is increasing the frequency of natural disasters such as hurricanes and cyclones, and causing or exacerbating the conditions that lead to migration and displacement of people, including resource scarcity and conflict, and sea level rise threatening island states. There is thus an increasing degree of overlap between adaptation finance and humanitarian finance (Jarzabkowski, 2019). As one respondent stated on the distinction between adaptation, development and humanitarian finance:

“In my view, this is a false distinction, and the sooner we can get beyond these questions the quicker we'll be able to move towards more integrated and better projects ... I believe that to

be able to tackle climate emergency, the sustainable development goals, and the refugee and migrant crisis at same time, those three sources of finance are going to need to learn together and we're going to need to perhaps have some different rules and different boundaries about how these sources of finance can be applied to support the poorest and most vulnerable people” (Respondent 1).

Another respondent raised a related issue on the links between adaptation and fragility: *“Fragility needs to be taken into account as it places an additional burden on development ... Fragility is not just driven by war, the drivers can be many, including climatic drivers such as natural disasters ... How we treat fragile and conflict countries is a discussion that is not happening but we need to tackle this problem as these countries with limited capacities will be left behind in adaptation making them even more vulnerable.”* (Respondent 7).

4.3.2.2 Lack of climate data and metrics to measure adaptation impacts

Several interviewees noted that a key challenge for investing in adaptation is the lack of clearly defined metrics for tracking adaptation impacts. This is in contrast to climate change mitigation, which is relatively straightforward to track as there is a single and universally used metric for impact, which is the amount of reduced or avoided GHG emissions, measured in terms of tons of carbon dioxide equivalent. For adaptation, the measures of success of an investment could differ significantly from one sector or project to another and there is no universal metric. This finding is consistent with the literature, for example Richmond, Choi, Padmanabhi, & Lonsdale, (2021) note that “constraints arising from the lack of definition and taxonomy to identify adaptation activities as well as the lack of universally accepted impact metrics make it challenging to account for the efforts from public and private actor at the regional and national level”. Richmond et al., (2021) and World Bank (2020) have also discussed challenges around metrics and data for climate adaptation projects. As stated by an interviewee:

“Mitigation is easier to measure – we can easily measure how many tons of CO₂ were reduced. People like to see a number. In adaptation there is not yet a number that can describe how successful we are. To claim you are doing something, you need to be able to assess, to measure it. Measuring climate resilience of smallholder farmers for example, there are no standards” (Respondent 5).

According to Respondent 9:

“A core methodological issue for adaptation is there is no one common metric. Is it water conserved? Forest conservation?”.

Respondent 15 further noted that:

“The lack of agreed climate outcome or impact metrics makes it difficult predict success, and to measure ex post success”.

Further compounding the difficulty of measuring adaptation impacts is the challenge of climate change data. Adaptation interventions are designed to respond to an underlying climate change risk, but understanding what that risk is and how it will evolve in the future requires data on historic climatic trends, which in turn can be used to model future climate scenarios – data which is often sparsely available in developing countries. As stated by Respondent 1:

“There is a lack of data on climate change trends that can inform projections in developing countries. Investment in climate information, early warning and hydrometeorological systems and services in developing countries is needed”.

Respondent 15 noted that:

“There is a lack of physical climate risk data – or its not in right places. Getting it in the hands of people who need it is challenge. It’s expensive to develop data - often its held by large climate risk management companies and making the connection between them and folks in LDCs who need the data is challenging. That makes it difficult to figure out what is the underlying climate change risk to which adaptation intervention would be responding”.

This observation is supported by Richmond, Choi, Padmanabhi, et al. (2021) who highlight the challenges of access to climate data to inform planning, lamenting the “lack of reliable and accessible information about climate risks and impacts”.

The challenges around data and metrics for adaptation give rise to an additional challenge, which is that of how to ensure that the interventions that are labelled as adaptation, really do advance adaptation and resilience. Issues of quality of adaptation finance were raised by a number of respondents who noted that where the conceptualisation of adaptation interventions is weak, or where the theory of change of an adaptation intervention is not well articulated, there is a risk that it:

“could lead to maladaptation or the impression of doing adaptation that is better than what we actually are doing” (Respondent 13).

This issue has been explored by McGray et al. (2007) who argue that maladaptation can occur when development interventions fail to take into account projected future climate conditions, leaving an affected community less resilient than before the intervention. For example, an intervention aimed at diversifying the livelihoods of a community through introducing new crop varieties may be maladaptive if the crops introduced are unable to withstand the increased rainfall or temperature projected for the region (McGray et al., 2007).

4.3.2.3 Lack of awareness and capacity to understand and invest in adaptation

Interviewees noted that public and private funding for adaptation may be limited by a lack of understanding of what climate change is, how it impacts on business or development activities, and the opportunities that may exist in building resilience. This lack of awareness and capacity is challenge for multiple sectors and actors. For governments, understanding of the climate change vulnerabilities faced by different sectors of the economy may be limited, and sectoral ministries may not have enough expertise in the subject to integrate climate change resilience into development planning and budgeting, thereby missing opportunities to advance climate resilience through the national budget. This challenge is also emphasized by Micale et al., (2018) who argue that public funding for adaptation is often initially needed to “overcome barriers related to lack of awareness of climate impacts and lack of experience and knowledge of available solutions”.

For corporations and other private sector entities that are exposed to climate risk through their value chains or physical climate risks to infrastructure and assets, a lack of understanding of how climate change affects the business may be a key obstacle to incorporating these risks into business decisions (Miller & Swann, 2019).

This can lead to *“inadequate pricing of physical climate risk”* (Respondent 16), as the pricing of goods or services the corporate offers do not take into account the full set of climate risks incurred in their production.

For financial institutions, a lack of understanding of climate change risks and opportunities often results in underdeveloped markets for climate adaptation, as financial institutions are unable or unwilling to provide the financial products that are needed by potential project

developers and MSMEs, as discussed by Micale et al., (2018) and World Bank, (2020). One interviewee, in speaking about an example of a blended finance approach for adaptation funded by the GCF through a development bank, noted that:

“Local banks are not comfortable putting in their own funding. But the idea is that in future local banks will understand risk better, know what rates to charge and can fund themselves” (Respondent 6).

Conversely, although there may be businesses that are involved or have the potential to engage in adaptation activities, such as developing drought resistant seeds for improved crop production, or developing water-saving irrigation systems, or offering clean cooling solutions, they may have limited awareness of what adaptation is and the business opportunity it offers (Richmond, Choi, Padmanabhi, et al., 2021). The lack of understanding and awareness on both sides leads to both an under-demand and an under-supply of adaptation in the market, or as stated by Respondent 15:

“There are business model and capacity barriers due to uncertain and unknown value add of adaptation activities. Thus the value of adaptation is not known or not accepted by capital markets”.

For vulnerable communities on the ground who bear the most direct impacts of climate change, such as farming communities whose food production is impacted by floods, droughts or land degradation and desertification, or coastal communities who are affected by sea level rise and increasing frequency of natural disasters, there may be a limited understanding of the linkage between climate change and the challenges they are experiencing. Even if the link is understood, the community may not know how to respond in order to build resilience to climate change risk, or how to develop business ideas or project proposals that could be submitted to potential funders or investors.

“Local communities don’t understand that there is a commercial livelihood that can be made through building resilience” (Respondent 11).

4.3.2.4 The economics of adaptation

Several respondents raised the challenge of the underlying economic model that makes climate change such a persistent challenge. Climate change is a market failure, which can be seen as the result of *“an undersupply of mitigation by emitters”* (Respondent 2). Several adaptation actions have some of the characteristics of public goods, notably non-rivalry (one person’s

consumption of the good does not affect another's) and non-excludability (someone who invests in providing the good cannot exclude others from benefitting from it) (Khan & Munira, 2021). Furthermore, adaptation can be viewed as a *global* public good, a perspective echoed by Khan & Munira (2021). As stated by one respondent:

“Adaptation benefits are viewed from a narrow perspective. Benefits are seen as local or national only, not extending beyond. Mitigation is regarded as global public good, but adaptation is viewed as benefits only locally or nationally. This is the main reason why adaptation finance is not picking up ... Climate change is a global public bad. Adaptation is a meant for addressing those global public bads and should be regarded as a global public good, but that is not the case. Adaptation continues to be needed due to undersupply of mitigation by emitters. Adaptation is regarded as local but climate change also has impacts that are global in nature, e.g. risk of large scale migration, human rights violations and insecurity, and disruption to global trade systems” (Respondent 2).

The failure of the international community to address this market failure also results in measures of economic value, notably GDP, which do not take into account the true costs of climate change or the benefits of adaptation and resilience. As noted by an interviewee,

“The value of natural resources (or their loss) is not counted in GDP ... for example, forests are not budgeted in the national budget, even if they contribute to GDP. We don't account for the benefits they bring to people and the dependency that people have on forest products” (Respondent 8).

4.3.2.5 Weak coordination and planning for adaptation

Several respondents emphasized that in order to be able to effectively attract financing for adaptation, developing countries need to have clarity on what their adaptation priorities are. A key challenge is that in many developing countries, there is no clear strategy or plan for advancing adaptation, and as a result there are no clear signals to public and private funders on where to invest. This is supported by the World Bank (2020) who note the need for clear priority setting around adaptation by developing countries. Several respondents highlighted the need for developing countries to develop national adaptation plans (NAPs) and ensure that they are consistent with other development plans and policies.

There is a need for a *“whole of government approach to adaptation planning and policy. NAPs should be coordinated with subnational governments, finance ministries, sectoral ministries –*

the more coordination the better to mainstream climate risk thinking into all public investment decisions” (Respondent 15).

“It’s important to get engagement between public and private sectors. ... Having national adaptation plan is helpful to set out what priorities are. ... We need to have NDCs, NAPs, climate investment strategies with clear priorities for investment” (Respondent 6).

4.3.3 Barriers to private sector investment in adaptation

Private sector investment in adaptation refers to funding provided by any private sector actor in order to enhance the resilience of people, ecosystems or economic activities to climate change impacts, whether for its own benefit (e.g. by enhancing the resilience of actors within its supply chain in order to ensure sustainability of supply of inputs; or by investing in an adaptation project for financial return, as discussed in Miller & Swann (2019)) or for the benefit of others (e.g. by enhancing the resilience of a community to climate change through its corporate social responsibility, as discussed in (Altamirano, 2021)). Adaptation investments could be undertaken by the private sector in a wide range of roles, including financial institutions who invest in or lend to adaptation projects or businesses, corporates who invest in enhancing the resilience of their operations and supply chain, small businesses who provide goods or services that advance climate change adaptation, and institutional investors who incorporate climate resilience into their investment criteria, among others. The barriers to investment for the private sector fall into three main categories: lack of clear revenues streams from adaptation; lack of access to finance to de-risk adaptation investment; and the lack of a conducive policy environment for investing in adaptation. These are discussed below.

4.3.3.1 Lack of clear revenue streams from adaptation activities

A key challenge that many respondents identified is that it is difficult to identify or ringfence revenue streams from adaptation investments. This may in some cases be due to the nature of some adaptation activities as public goods, as stated by Respondent 2:

“Why should a global public good be funded by private money? Private money will not come for public goods. ... Normally private sector looks for benefits that are exclusive, not non-excludable”.

In other cases the challenge may be that although there are potential revenue streams, adaptation is inherently uncertain and subject to climatic risk, so revenues are unpredictable.

In addition, the revenues may be realised only over very long time horizons. Several studies have noted the challenges of generating revenue flows for adaptation including Trabacchi & Mazza, (2015) and the World Bank, (2017).

“The revenue flows [for adaptation] are not well known. Unlike renewable energy investments, where you know how much energy you’ll produce, you have an upfront [power purchase] agreement, so you have stable cash flows. With adaptation, e.g. investing in agriculture, the revenue streams are less well known” (Respondent 6).

“Depending on nature of projects, revenue streams are not clear enough it does raise a lot of questions around ability to incentivise private sector to get involved” (Respondent 3).

“For private sector, the key challenge is project structuring. The private sector doesn’t see return on investment, or revenues. Mitigation is straightforward. For adaptation programmes, it’s not so simple to structure them financially. The return on investment is over the long term which limits interest of the private sector” (Respondent 7).

“The return on investment [for adaptation] is over a long period of time. For example, New York City has massive issues with inundation. They’re trying to figure out how to build levies and dykes. There is certainly a return on investment in terms of property values, but is so far in the future and so diffuse that they are difficult to realise [by the investor]” (Respondent 9).

These observations are consistent with the findings of several studies, including Trabacchi & Mazza (2015), who state that “adaptation investments can have additional or high upfront costs, longer payback periods and uncertain returns, and higher perceived risks”. Altamirano (2021) further explains that “a great share of benefits generated by an adaptation investment are of a societal nature and do not generate directly additional financial returns or cash-flows to the party that makes the investment”.

4.3.3.2 Lack of access to finance to de-risk adaptation investments

The majority of respondents noted that adaptation activities are viewed as risky by the private sector. This may be in part due to lack of awareness and understanding of adaptation activities and limited ability of potential investors to assess the risks of potential projects, thereby leading to perceptions of risk that may be higher than the actual risk. But there is also an element of high real risk.

“Adaptation projects are risky. For example, an investment in an agriculture project is at risk of climate impacts. That limits private sector interest. There is no local support available for mitigating climate risk” (Respondent 7).

“Mobilising private sector finance for adaptation is a new area for commercial banks and private funders and it is perceived as risky. We need to de-risk these projects to attract private sector finance. In emerging markets, it’s difficult to crowd in institutional investors for these projects” (Respondent 3).

The majority of respondents emphasized that there are limited financial products and instruments on the market to de-risk adaptation investments. This is in contrast to mitigation investments such as renewable energy projects, with which financial institutions now have significant experience and a suite of instruments that can de-risk private investments (UNFCCC, 2006).

Adaptation projects are generally viewed as too risky for banks to lend without prohibitive interest rates or collateral requirements. As stated by a respondent:

“Lending rates are quite high, especially for new areas and technologies. The type of loan products in the green space are quite underdeveloped especially in southern Africa context. ... Projects are extremely risky, for mitigation and even more so for adaptation. In the water sector for example have not seen much involvement of the private sector.” (Respondent 3).

This is consistent with the literature which finds that adaptation projects are risky compared to mitigation projects, and that de-risking instruments are not widely available (Micale et al., 2018; Richmond, Choi, Padmanabhi, et al., 2021).

Although several climate funds and DFIs are exploring approaches to bring private investment into adaptation, this remains a very new area of work and the few existing instruments are still in their early stages and need more time to show results. For example, the CAMBIO II project of CABEI (GCF, 2018c), once operational, will provide concessional loans to smallholder farmers for climate resilient agriculture.

“Currently, the financial market does not have a specialised offer, so producers have no option to access these kind of credits. That’s what we’re trying to change. We’re trying to create this financial environment” (Respondent 10).

For MSMEs that are providing innovation around adaptation solutions, access to finance is a major barrier, which is further exacerbated by the under-development of markets for adaptation. *“Adaptation projects are typically small scale and context specific so they have high transaction costs, and SMEs and CSOs that implement them don’t speak financial language, so they can’t complete applications for funding at the level needed by financiers such as the African Development Bank or the GCF. ... There’s a mismatch in scale of what’s provided and what’s needed”* (Respondent 4).

The challenge of a mismatch between the type of financing provided by DFIs and the needs of project developers and communities on the ground is raised by Lipper, Cavatassi, Symons, Gordes, & Page (2021) who argue that DFIs should do more to target their funding for adaptation towards the needs of beneficiaries.

“For adaptation and resilience enabling solutions, e.g. early stage companies offering climate services, or digitizing access to private insurance ... in India and Africa for example they are booming... But still the issue is identifying these companies - from investor perspective, identifying a pipeline of bankable adaptation solution providers, having the investment capacity to invest in small tickets, let’s say [USD] 1-3 million instead of [USD] 30 million (which is the ticket size for many as the transaction costs are high), and then the risk appetite to invest in unproven solutions whereby the market uptake still needs to be incentivized. For example, you may have an early stage company offering a cool water technology with a smart meter, but if you don’t have incentives for uptake of measures then companies that are offering relevant solutions from a climate change adaptation perspective are not thriving because they don’t have commercial traction in the market” (Respondent 16).

A further barrier to MSMEs and project developers developing adaptation projects is the *“lack of project preparation funding, difficulty to access project preparation grants”* (Respondent 3).

“Adaptation projects require lot of preparation – feasibility, environmental and social impact assessment, risk assessment – these must be funded by public grants” (Respondent 7).

The issue of project preparation barriers is highlighted in the literature. Altamirano (2021) notes that for developing country institutions, “limitations in project preparation capacity may translate transaction costs into barriers to access” finance. The World Bank (2020) notes that the “public sector can play a critical role in project preparation support through the provision of technical assistance”.

4.3.3.3 Lack of an enabling policy environment for investing in adaptation

Several respondents noted the importance of an enabling policy environment to create incentives for the private sector to invest in adaptation, both at a national level, and at a global level. For example, the majority of developing countries do not require large corporates to disclose their climate change risk, although this trend is happening in developed markets (Richmond, Choi, Padmanabhi, et al., 2021).

“National and international regulatory bodies can require climate risk disclosure. It doesn’t immediately yield increase in private sector investment in adaptation but makes them think about climate risk in their portfolio and makes it more likely to drive investment” (Respondent 15).

Incentives could include disincentives for activities that contribute to climate change as well as incentives for activities that enhance resilience to climate change.

“Many governments including some developing ones are already imposing some kind of carbon tax or some levy. This is a disincentive that government must do as polluter pays principle is the ultimate solution. ... Incentives, for example so that private sector comes into the [climate risk] insurance business and covers the uninsured. There public policy can have an element of subsidy to promote insurance of poor people” (Respondent 2).

“Most countries with high adaptation needs don’t have fiscal policies to attract the private sector, for example tax incentives [for adaptation investments] in climate risky sectors, so they can get a return for taking risk, that is not taxed” (Respondent 8).

Respondents also noted that at a global level, there is currently no multilateral agreement that would create incentives for investments in adaptation at scale. For mitigation, such incentives were created by the market mechanisms under the Kyoto Protocol (UNFCCC, 2006), and will now be rekindled under Article 6 of the Paris Agreement (UNFCCC, 2015).

“For mitigation, there are various sources of finance, e.g. feed-in-tariffs, emission trading schemes, grants and concessional loans, NAMAs, voluntary carbon markets, and now from Glasgow COP26, Article 6 trading mechanisms. They are increasingly secure; if you are a mitigation developer you can be confident that in next 20-30 years you will be able to access finance for mitigation. No similar structures exist for adaptation. Donors haven’t provided for long term sustainable sources of adaptation funding” (Respondent 4).

4.4 Exploring the role of blended finance in addressing the adaptation finance gap

The second research question, “what is the role of blended finance in scaling up funding for adaptation and resilience to climate change?” was explored through two approaches, the expert interviews and the case study approach.

4.4.1 Findings from the expert interviews

All of the respondents interviewed acknowledged that there is a significant gap between the existing levels of adaptation investments, and the scale of investment needed to enable societies to adapt and build resilience to unavoidable climate change impacts. Furthermore, all respondents recognised that there is a role for private sector finance in bridging the adaptation finance gap, as public finance is not likely to ever reach the scale needed to fund the full range of adaptation investments required. Respondents differed in the scope of engagement that they saw as appropriate for the private sector. Some respondents argued that funding adaptation should remain primarily the responsibility of public funders, with developed country governments bearing the bulk of the responsibility to raise the funding needed for developing countries to adapt, given their historic responsibility to global emissions (e.g. Respondents 2 and 13). Others suggested that the private sector should eventually become the primary source of funding for climate change adaptation, with public funding playing an enabling role for those activities that might never be fully financially viable without public support (Respondents 5, 7, and 8).

The respondents reflected on the ways in which the barriers to private sector investment in adaptation could be overcome in order to bridge the adaptation finance gap, and in particular the role of blended finance in enabling this. The majority of respondents saw a clear role for blended finance approaches to crowd in private sector investment in adaptation. The interviews revealed two main ways in which blended finance can unlock private sector investment: i) through enabling interventions and ii) through de-risking interventions. However, interviewees

also noted a number of additional actions that are necessary to enable adaptation finance. These include i) definitions, data and metrics; ii) awareness, knowledge and capacity building actions; and iii) public policy, planning and coordination. These findings are discussed further below, and summarized in Figure 3.

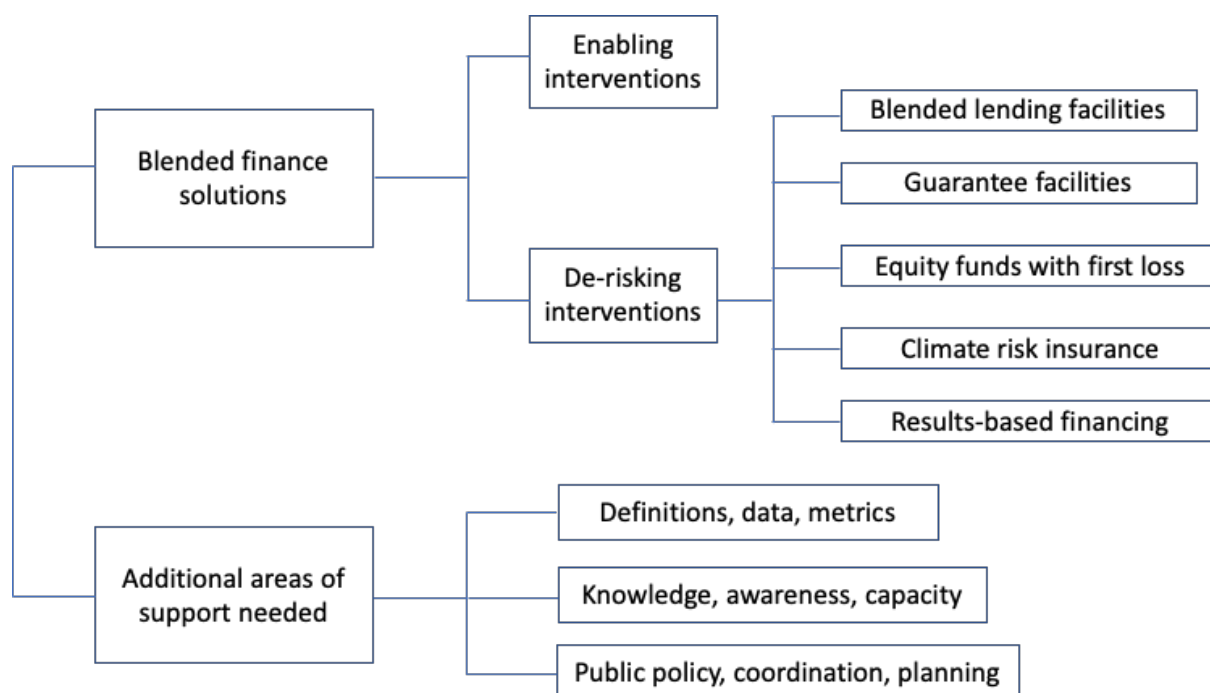


Figure 3: The role of blended finance in addressing the adaptation gap

4.4.1.1 Blended finance solutions for mobilising private investment in adaptation

Respondents interviewed were in agreement that there is a role for public sector finance in de-risking private investment in adaptation, and that to achieve this there is a need for innovation around blended finance instruments, structures and mechanisms that blend public and private finance to enhance the return-to-risk profile of adaptation investments for the private sector. These types of interventions are generally not new to the field of development finance, but their application to adaptation interventions is largely untested, or in the very early stages of being piloted. These kinds of public interventions that can crowd-in private sector investment into adaptation can be broadly distinguished into two main categories: enabling interventions and de-risking interventions, which are discussed further in the sections below. All of these interventions fit within the broad framing of blended finance provided by Convergence (2021) and are consistent with the principles of blended finance set out in OECD (2018).

4.4.1.1.1 Enabling interventions

Enabling interventions are those that use public funding, usually in the form of grants, to address some of the early stage risks and barriers that an underdeveloped market for adaptation might face. This includes technical assistance facilities that provide grant funding for activities like strengthening meteorological services and enhancing climate change data collection and dissemination, strengthening early warning systems, developing metrics for measuring adaptation results in specific sectors or industries, and building awareness and capacity of relevant actors such as MSMEs or local banks on climate change adaptation. In many cases, technical assistance facilities are included as part of a larger intervention which might also include de-risking facilities, with the grant component focused on addressing a specific set of barriers. For example, the private sector adaptation projects funded by the GCF typically include a technical assistance facility (for example GCF, 2018a, 2018b, 2018c).

Another type of enabling intervention is project preparation facilities, which provide grant funding to potential project developers for early stage activities such as feasibility studies, environmental and social risk assessments, economic and financial modelling (Respondent 7). By taking on this risk, public finance provides an opportunity for the private sector to explore and innovate new models and approaches. These facilities also help to address the challenge of inadequate project pipeline faced by climate funds and development finance institutions, as highlighted by one respondent:

“the problem at the GCF is the pipeline – they struggle to find private projects and to mobilise a pipeline of ready projects. Hence the need for project preparation support” (Respondent 7).

For example, CABI recently invested USD 5 million and mobilised additional donor funds for creating a Climate Change Investment Project Preparation Fund in response to the increasing frequency of climate induced natural disasters in Central America. It aims to enable potential project developers to identify and develop bankable projects that respond to climate change, so as to build up a pipeline of adaptation projects that CABI can invest in through its various other facilities (Respondent 10).

Other enabling interventions may include initiatives that identify and incubate early stage companies, project ideas or grassroots initiatives that advance adaptation and match them with potential funders. For example, the Climate Policy Initiative’s Climate Finance Innovation Lab (CPI, 2020) runs an annual call for innovative climate change solutions from around the world,

and works with proponents of shortlisted ideas to strengthen them and share them with its members, which include a wide range of philanthropic and development finance institutions.

“The Climate Finance Innovation Lab provides technical assistance but no seed funding. Post endorsement of ideas, they usually get funding from members” (Respondent 15).

4.4.1.1.2 De-risking interventions

De-risking interventions typically involve public capital provided by climate funds or development finance institutions on concessional terms to reduce the overall risk, or enhance the return, of an adaptation intervention, thereby enabling the private sector to engage in an activity that would otherwise have been considered not financially viable (Micale et al., 2018). These include a wide range of financial instruments and structures for sharing risk between different actors.

4.4.1.1.2.1 Blended lending facilities

One example is blended lending facilities, in which a public funder may provide a loan on concessional terms (e.g. lower-than-market interest rates, longer tenors or grace periods, or taking a subordinated position in the cash-flow waterfall). This funding is blended with funding from commercial investors or local financial institutions, either at the facility level or at the project level, enabling the facility to lend to its borrowers (which may be local financial institutions or MSMEs) on better-than-market conditions. An example of this is the DBSA’s Climate Finance Facility (GCF, 2018a), which received a concessional loan from the GCF which it on-lends to commercial banks who blend with their market terms, offering a better deal to the MSMEs that they on-lend to.

“Our engagement with commercial banks revealed the need for credit enhancement including subordinated debt, first loss and long tenor loans which commercial banks have identified as key” (Respondent 3).

Another example is CABEL’s CAMBIOII project (GCF, 2018c), which aims to:

“Channel funds through a network of intermediary financial institutions who are accredited to CABEL, who will offer financial products for producers in the [Central American] region to invest in adaptation e.g. greenhouses, water systems. ... It also has a technical assistance component which offers technical assistance to ... financial institutions ... in order for them to create financial products with differentiated conditions” (Respondent 10).

4.4.1.1.2.2 Guarantee facilities

Guarantee facilities de-risk private investment in adaptation by covering some part of the credit risk (or in some cases, other types of risk) in the event of a borrower defaulting on its repayment. *“Guarantees have a critical role to play in de-risking”* (Respondent 1), as they can *“provide incentives for private sector banks to get involved [in financing adaptation] by covering some of their risk”* (Respondent 7).

In the case of another GCF-funded project led by CABI (GCF, 2021a), a respondent stated: *“The GCF is taking some of the default risk of these MSMEs and smallholder farmers to encourage a local bank to lend to them. Where previously farmers and MSMEs had low access to finance, now with the GCF guarantee, with this de-risking, they’re more likely to lend to them”* (Respondent 6).

However, it was also noted by the interviewees that the role of the public finance should be to de-risk, but not to crowd-out, the private sector. As stated by Respondent 10:

“The financial institutions have to take some risk. We’re looking to improve the risk profile but not to take all the risk. They [intermediary banks] have to have some skin in the game as they have to have ownership. ... Guarantees will cover some part of the total amount they lend to local financial institutions, but they have to take some risk. They will blend their own balance sheet. ... What we’re looking for is that they can see this is profitable business model that they can replicate in future.”

4.4.1.1.2.3 Equity funds with first loss position

In this type of structure, the public funder provides equity into a fund taking on a first loss position in the cash flow waterfall, which enables other commercial and institutional investors to invest in the fund while taking on less risk in the event of any losses. The GCF has recently funded a number of global equity funds for climate change adaptation, one of which is ARAF (GCF, 2018b) which is discussed in more detail below.

In these funds, the GCF *“will take on the losses, if there are losses, before the private investors. It de-risks the investment for them and attracts more private investment that would usually not be comfortable with riskier adaptation investments”* (Respondent 6).

These types of funds typically “invest in service provider companies ... which provide services to local populations rather than financing populations themselves ... which are generally more investment ready and able to take on institutional investors” (Respondent 6).

“For SMEs delivering adaptation solutions or climate services, we’re seeing a lot of equity fund structures focused in that space” (Respondent 15).

4.4.1.1.2.4 Climate risk insurance

“Adaptation projects are risky. For example, an investment in an agriculture project is at risk of climate impact. That limits private sector interest. ... Climate risk insurance does not exist in most African countries. It exists in developed countries and insurance pays out in case of floods etc.” (Respondent 7).

Public funds can enable climate risk insurance by “subsidis[ing] insurance premiums for climate disasters, for example where public sector is taking a first loss or underwriting those type of risks” (Respondent 11).

An example is a GCF-funded project in Tanzania with the CRDB Bank (GCF, 2021b) which “included a USD 10 million grant to develop a climate indexed insurance product with a local insurance provider. The grant is to help design products, address data collection issues, and cover a portion of the premiums that farmers have to pay to get the product off the ground, and will be phased out after 5 years” (Respondent 6).

4.4.1.1.2.5 Results-based financing structures

Results-based financing structures include a variety of models and structures that enhance the revenue streams that can be generated through investments in adaptation, by providing an incentive in the form of a grant or interest rate reduction on a loan in the event that certain predefined results are achieved. Several respondents cited results-based financing approaches as a means to address the challenge of limited revenue streams from adaptation. One example that was mentioned by Respondent 11 was the Green Outcomes Fund in South Africa, which is creating incentives for job creation in clean sectors through a results-based payment model (Green Outcomes Fund, 2019).

Another example cited by Respondents 4 and 9 is the Adaptation Benefits Mechanism which is being developed by the African Development Bank and is mentioned in Article 6.8 of the Paris Agreement (AfDB, 2020).

“The adaptation benefit mechanism (ABM) is one approach that is designed to provide a [results-based] instrument that enables donors and consumers in countries that can afford to do so to contribute towards costs of adaptation. It is designed to close the financing gap and crowd in finance and resources for adaptation in developing countries” (Respondent 4).

“[The ABM] is the only thing out there right now. It’s pathbreaking, although challenging to raise funds”. (Respondent 9).

“I see the ABM as becoming major instrument for financing adaptation. ... It’ll take a while to get it started but adaptation is a widening wedge of threat and cost ahead of us for decades and centuries. We have to find ways to finance adaptation for a long time to come. Mitigation costs are high now, but by 2050 we will have done most of the mitigation. But adaptation costs will grow and grow, not just for developing countries, but developed countries face huge adaptation costs as well and will have to find ways to channel funds to project developers and others that will implement adaptation. So I see it being around for long time and becoming very big.” (Respondent 4).

4.4.1.2 Additional areas of support needed to scale up adaptation finance

4.4.1.2.1 Definitions, data and metrics

4.4.1.2.1.1 Definitions

The challenge around defining what counts as adaptation finance is not easily resolved, as adaptation is by its nature complex and not fully distinguishable from other sustainable development objectives. As stated by Respondent 13,

“Adaptation is not simple. It’s really hard. If you oversimplify it then it won’t be done properly. And it’s costly, it requires lots of analysis ... Recognizing that climate investment in resilience is dealing with uncertainty is important”.

Despite this complexity, the view expressed by the majority of interviewees is that adaptation needs to be more effectively integrated into development planning and financing, rather than treated as a separate funding stream. This is generally consistent with the literature which calls for better mainstreaming of climate adaptation into development (Micale et al., 2018;

Richmond, Choi, Rosane, et al., 2021). One respondent argued that the issue of defining what counts as adaptation finance should be resolved at the country level, with each developing country setting out what it defines as its adaptation priorities.

“Metrics are a huge barrier that puts everyone off, as interest is there but they don’t really know what it is. Countries have not come forward to say what their adaptation needs are ... Public sector in developing countries must create an enabling environment including articulating their adaptation needs, what adaptation means for them” (Respondent 4).

This approach would allow adaptation finance to be tracked according to whether it is advancing the stated adaptation needs of a country.

4.4.1.2.1.2 Metrics and methodologies to track adaptation finance

Notwithstanding the challenge around definitions, the importance of ensuring transparency in climate finance flows was emphasized by several respondents. This requires better metrics and increased harmonization at a global level to enhance the quality and comparability of estimates of adaptation finance flows. Better metrics and more standardization of metrics would also help to address the issue of quality of adaptation finance that was raised by a number of respondents, whereby poor articulation of the theory of change for an adaptation project can run the risk of leading to maladaptation (Respondents 13 and 16). There are a number of efforts underway to track climate finance including adaptation finance, including by the Climate Policy Initiative (Buchner et al., 2021, 2019), the UNFCCC’s Standing Committee on Finance (UNFCCC, 2016), and the OECD (OECD, 2021), but they use different methodologies.

Various ongoing initiatives and programmes are developing their own methodologies for measuring and tracking adaptation results. For example, the ARAF has developed *“a climate resilience scorecard”* (Respondent 5) to track the adaptation impact of its equity investments that are designed to build the climate resilience of smallholder farmers (GCF, 2018b), while the Adaptation Benefits Mechanism, a pilot initiative by the African Development Bank to create a market for adaptation, will require detailed adaptation methodologies setting out how results will be measured against a baseline (AfDB, 2020). In addition, one respondent noted work being done by the voluntary carbon markets, such as the Gold Standard Foundation and the Voluntary Carbon Standard, to measure adaptation co-benefits in mitigation projects:

“A useful crossover is that the voluntary mitigation market wants to also track co-benefits – they will come up with other standards [for adaptation] and the protocols will likely be the same” (Respondent 9).

4.4.1.2.1.3 Climate change data

The need for better climate change data, that is more accessible to developing countries, was highlighted as an imperative by several respondents.

This requires *“investment in climate information, early warning systems and hydrometeorological systems and services in developing countries”* (Respondent 1).

“We need to increase public sector focus on investing in climate risk data. Understanding the underlying climate risk against which interventions should be planned would be hugely useful to bringing in both public and private finance” (Respondent 15).

Improved access to climate data would enable corporates to better integrate climate change risk into their decision making. As stated by Respondent 4:

“Private sector entities with sophisticated supply chains are significantly at risk of climate change – they have a responsibility to invest in adaptation”.

For example, *“a few years ago, floods in Thailand wiped out the computer chip industry. This is an example of how industries that would previously have considered climate change not their problem, may have gained awareness climate change risk”* (Respondent 4).

As another example, *“large corporates that want to make their supply chains more resilient, eg big food companies getting supplies from Africa, Latin America, may not be getting a revenue benefit but they want to reduce risk and reduce losses in their supply chain”* (Respondent 12).

In order to take action, these companies need to have data to understand how climate change is affecting their supply chain, and how these impacts are projected to evolve in the future. This is consistent with the findings of Richmond et al. (2021).

Climate change data is also a requirement for accessing funding from international climate funds, which require a project to demonstrate a climate change rationale in order to access adaptation finance. In the Adaptation Fund and the GCF for example,

“an adaptation project must respond to an adaptation need caused by a climate change vulnerability” (Respondent 7).

Respondent 4 argued that the climate change rationale of climate funds should be more forward looking rather than focusing on historic climate trends.

“The GCF has a strong climate rationale which requires demonstrating the linkage between climate change impacts and project activities. This is inherently backward looking. E.g 30 years worth of historic data shows farmers can’t grow crops thus the project responds. The Paris Agreement wording in Article 2.1(b) talks about fostering climate resilience- that’s a forward looking activity. The international community needs to accept that it’s okay to say climate models predict X and we need to act to build resilience before disasters occur, based on the predictions of a climate model. That would open up the scope of [adaptation] activities” (Respondent 4).

Nonetheless, the accuracy of climate change projections is in itself dependent on the quantity and quality of historic climate data which is an input into the models.

4.4.1.2.2 Building knowledge, awareness and capacity

Generating awareness and understanding of climate change risks and adaptation options at every level is an important starting point for addressing the adaptation finance gap. For developing country governments, a better understanding of climate change risks and adaptation options across all levels of government and all sectors would result in better integration of climate change adaptation into development planning and budgeting.

“For mainstreaming climate risk into planning process – having climate experts at the table is important” (Respondent 15).

Another respondent highlighted the *“importance of involving ministries of finance in climate finance coordination and financial supervision”* (Respondent 1), which requires that these ministries have a reasonable level of understanding of the issues. This is also emphasized by Micale et al., (2018) and by Miller & Swann (2019).

For corporates, awareness and capacity relates primarily to the knowledge and expertise required to recognise climate change risks and opportunities for the business, and integrate these into decision-making. This is already happening in some industries. For example, the Global Shea Alliance, an industry association that brings together all of the major actors in the value chain for Shea butter (a major ingredient in the cosmetics industry, derived from the African Shea tree, *Vitellaria paradoxa*), is investing in building the climate and economic resilience of the communities in West Africa that cultivate Shea trees (GCF, 2020).

These industry actors clearly see the business rationale for making this investment:

“The business perspective is about building a supply chain relationship and investing in suppliers– building long term relationships with supplier, investing in the community and building win-win relationships. It’s also about ensuring availability of supply- there’s a realization that Shea trees are declining and not as healthy and thriving as they used to. They are struggling with climate change and [degradation of] the natural environment – it affects the availability of supply. There is also a corporate social responsibility perspective: socially responsible companies want to invest in the communities that they source from. ... There is quite a bit of willingness of the private sector to pay. It’s a model we’ve been implementing and testing with them for 8 years or so, so it’s familiar and makes sense to them from a supply chain perspective – it’s ensuring they have supply, deepening the relationship with communities. It’s a model that clients and brands can invest in” (Respondent 14).

For financial institutions, there is a need for enhanced capacity around understanding and stimulating the market for climate change adaptation through the financial products they offer. This requires an understanding of climate change adaptation opportunities in the market, the financing barriers faced by potential borrowers, and the capacity to conduct credit risk assessments and other due diligence on companies and projects in these sectors (Respondent 10).

For MSMEs and project developers that are providing climate change adaptation solutions, such as technologies to enable climate resilient agriculture, platforms that give smallholder farmers access to climate change data or services that improve ecosystem function, there is a need for greater awareness on what adaptation is and how to integrate it into the products and services that they provide. There is also a need for expertise in project development and

business model development that would enable these actors to more effectively engage with potential funders and investors. As stated by Respondent 4:

“For private sector in developing countries ... we need to build their capacity and understanding on how to develop adaptation projects”.

For grassroots communities, including farmers’ cooperatives and community based organisations who face the challenge of protecting their livelihoods while responding to climate change impacts, there is a need for a greater awareness and capacity to design and implement interventions that build resilience to the climate risks they face. There are some examples of initiatives that have worked with communities to build this understanding and capacity. For example, Respondent 11 made reference to the Small Grants Facility implemented by SouthSouthNorth (SSN, n.d.) which included interventions to enhance the capacity of local communities to respond to climate change risks in two localities in South Africa. But these are isolated examples, and to build this capacity systemically there is a need to integrate awareness at a more systemic level, for example,

to get the Department of Education, and agriculture schools to embed it in their training, to provide training for agricultural extension officers” (Respondent 11).

For public funders of climate change adaptation, including development finance institutions and climate funds, respondents noted the need for capacity enhancement relates primarily to a better understanding of the context, needs, and priorities of the ultimate beneficiaries of adaptation funding, as well as the capacity to innovate and offer financing that meets the needs of these actors. This is supported by Lipper et al., (2021). As noted by Respondent 13, the principles for locally-led adaptation which were recently adopted by over 50 institutions globally (IIED, 2021), provide a good framework for funders to review and enhance their approaches for funding climate change adaptation in ways that are better aligned to the needs on the ground.

4.4.1.2.3 Strengthening public policy, planning and coordination

4.4.1.2.3.1 Integrating adaptation into development planning and budgeting

An important pre-requisite for a developing country in mobilising adaptation finance is having clarity and transparency on what adaptation interventions are needed. This requires that developing countries conduct climate vulnerability assessments, identify required adaptation actions, and develop the plans and strategies to implement these actions, through a

multistakeholder process. This insight supports the findings of Richmond et al. (2021) who argue for a more coordinated approach by governments on adaptation planning.

“[Developing] countries have to come forward and say what their adaptation needs are. ... One place to start is national adaptation plans that lay out what they need to help them adapt to climate change. Development strategies talk about development needs, NDCs talk about mitigation needs. It’s up to countries to say we’re considering this as development and this as adaptation. ... We need to be transparent about what we consider the adaptation needs to be” (Respondent 4).

This planning approach would enable governments to identify their priority adaptation needs and to integrate them into their national budgets where appropriate, or to communicate them to various funders and potential private investors.

“There’s need for intergovernmental coordination, a whole of government approach, that involves all stakeholders to develop a country programme [on adaptation]” (Respondent 1).

4.4.1.2.3.2 Integrating adaptation into development planning and budgeting

Once the priorities are clearly defined, respondents noted that it is important to have strong institutional arrangements and systems for overseeing their implementation and tracking progress, bearing in mind the multi-sectoral dimensions of climate change adaptation. This includes strong multi-stakeholder coordination at the national level (Respondent 15), systems for *“inclusive monitoring, evaluation, and learning and effective project management”* (Respondent 13) as well as systems for monitoring and reporting on adaptation activities, and communicating progress in to the international community through the UNFCCC (Respondent 4).

4.4.1.2.3.3 Enabling policies, regulations and incentives

The importance of an enabling policy environment was raised by several respondents and includes a set of factors that incentivise economic actors to engage in activities that advance adaptation while discouraging those activities that undermine it. This could include regulations that require companies to disclose their climate change risk, thereby enhancing transparency and awareness of these risks (Richmond et al., 2021), as well as fiscal incentives such as tax deductions for activities that enhance resilience:

“[Governments could] make investments in blended finance or carbon bonds income tax deductible” (Respondent 2).

It could also include strengthening the more general elements of the enabling environment for investment that are not specific to adaptation, such as ensuring clear land tenure regulations and enforcing property rights:

“Land tenure is very important: property rights, water extraction rights” (Respondent 12).

It could also include fiscal disincentives, such as a tax on carbon with a portion of the proceeds ringfenced for adaptation actions (Respondent 2).

“Climate change is the biggest market failure. Economics must correct the market failure by internalizing the externality. The polluter pays principle is the best way to internalize the externality that is imposed on society” (Respondent 2).

National accounting approaches and macroeconomic statistics that take into account the value of natural assets and ecosystem services, such as conducting annual natural resource accounts, and integrating them into estimates of GDP would also encourage economic decision makers to recognise the value of resilient ecosystems and would encourage private investment in nature-based solutions and ecosystem restoration (Respondent 8).

4.4.1.2.3.4 International cooperation and coordination

In addition to enhanced cooperation and coordination at the national level, several respondents emphasized the need for greater collaboration at a global level, to enhance knowledge sharing across countries and institutions, to build partnerships that maximise collective impact, and to put in place international systems and rules that would stimulate demand and raise funding for adaptation. This is supported by Altamirano, (2021) who argues for stronger partnerships at the international level.

“There are lots of opportunities for collaboration. There are many initiatives out there. But why must every actor have its own thing? We need to work together” (Respondent 16).

Several respondents suggested the need for internationally agreed levies for raising adaptation finance, such as a *“financial transaction tax”* (Respondent 4), or a *“mandatory corporate social investment levy on corporate revenues”* (Respondent 2). This perspective has some support in the literature, including (Khan & Munira, 2021).

4.4.2 Findings from the case study

The case study approach is used to complement the findings of the expert interviews. The selected case study, ARAF (GCF, 2018b), is one of the few existing facilities that uses a blended finance approach to enable private sector investment in adaptation. An analysis of the approach offers insights into the potential use of blended finance mechanisms for adaptation.

4.4.2.1 Overview of the case study approach

The ARAF was established in 2018 by Acumen Fund, Inc., an impact fund that specialises in providing financing to small and medium sized enterprises that serve low-income communities in sub-Saharan Africa and south Asia (GCF, 2018b). It was the first blended finance facility for adaptation to be funded by the GCF, and the first such mechanism globally (although some earlier blended finance mechanisms may include adaptation among a set of objectives, the ARAF is the first to focus primarily on adaptation):

“[ARAF is] the first equity fund to invest in agricultural start-ups that help farmers adapt to climate change” (Respondent 5).

The challenge that ARAF is designed to respond to is the threat of climate change to the livelihoods and productivity of smallholder farmers in sub-Saharan Africa. Smallholder farmers produce the majority of the world’s food, but are highly vulnerable to climatic shocks such as flooding and drought, and have limited capacity to adapt due to their lack of access to insurance and limited savings (GCF, 2018b). ARAF, which received anchor investment from the GCF, responds to this challenge by investing equity and quasi-equity into early and growth stage agribusinesses that enable smallholder farmers to build resilience and adapt to climate change impacts, thereby increasing agricultural production and farmers’ incomes (GCF, 2018b). Its focus is specifically on supporting aggregators that can bundle climate resilience solutions for smallholder farmers, as well as companies that provide technological and financial solutions to these farmers that enable them to boost their resilience to climate impacts. To date, it has invested in six such companies in Kenya, Nigeria and Tanzania, with ticket sizes of USD300,000 to USD 4 million (Respondent 5).

4.4.2.2 Analysis of respondent interviews

The thematic analysis of the respondent interviews revealed a number of key insights on the ARAF case study. Although the ARAF is still a relatively new facility which has only been

operational since 2019, there are a number of preliminary insights that can be derived from the case so far. ARAF set out to solve a problem of access to finance faced by MSMEs that are providing adaptation solutions in Africa.

“One of the major challenges in the region is that cost of working capital is high. Extremely high. For example we invested in a company that develops and sells solar power irrigation systems. If they are borrowing at 12-14% on the dollar, by the time they sell product to farmer, with payment in instalments over 2 years (as farmers can’t afford to pay upfront), the financing cost for farmer will be 20% over 2 years. That is for irrigation, infrastructure. That farmer will be paying cost of capital 3 to 4 times more than a European or American farmer paying to install irrigation systems. That high cost of capital for that farmer slows down adaptation of technology, practices, equipment, hence slows down closing the yield gap. The yield gap in Africa is enormous” (Respondent 5).

The case study interviews revealed three major innovations that have enabled the ARAF model to overcome some of the barriers described in Section 4.3 above, in order to mobilise private investment into adaptation. These are i) the use of public funds to de-risk private investment into an equity fund, which helped to overcome the barrier of lack of finance to de-risk adaptation investments for the private sector; ii) a technical assistance facility, which helped to overcome the barrier of limited awareness and capacity on adaptation; and iii) innovation around metrics for measuring resilience, which helped to address the barriers of lack of adaptation metrics and distinguishing adaptation from development. These interventions are discussed further below.

Interestingly, the ARAF case did not attempt to respond to the barriers of lack of an enabling policy environment and weak coordination, planning and institutions. When asked about the importance of policy, interviewees noted that the policy environment has some impact on the where the fund could successfully invest, noting that the most important factors were property rights and access to water for small-holder farmers.

“Land tenure is very important. Property rights, water extraction rights are important” (Respondent 12).

However, they also noted that ARAF has been able to make investments in MSMEs despite a less-than-perfect enabling environment.

“We do business in Africa. Government intervention is always there. Sometimes governments interfere in ways that will affect your business, in many cases in ways you’re not hoping” (Respondent 5).

4.4.2.2.1 De-risking private investment

Acumen established an equity fund with USD23 million equity investment from the GCF (GCF, 2018b). Critically, the GCF agreed to take a first loss position in the cash flow waterfall with the same rate of return requirements as other investors. This concessional anchor investment gave confidence to other investors, who were willing to come into the fund on commercial terms. The fund reached first close in 2019 and final close in 2021, raising USD 58 million - USD 8 million above the target. As stated by a respondent:

“We utilised blended finance: a first loss layer provided from GCF helped us go out to market and raise funds from institutional investors like Proparco and FMO and family offices. Once that happened we could then can raise funds from those that saw it as interesting but too risky. ... All of our investors expect commercial terms. GCF is concessional when it comes to first loss, but returns are equal amongst all investors. First loss means that if things don’t go well, GCF will take the risk. But if things go well, they are all equal ... GCF funding was critical. Without it, the programme would not have been possible” (Respondent 5).

This observation was supported by another respondent who stated:

“GCF is an anchor investor in this fund. Other investors want to see these funds have bit a track record. We’re taking on an early stage role and junior equity position so we’re taking on first loss which makes the private sector more comfortable” (Respondent 6).

For the entities that ARAF invests in, it addresses the key challenge of access to finance to develop and scale their businesses. As stated by a respondent:

“It’s terribly difficult to raise a lot of money for a start-up. You have to be content with small money and you have to adapt strategy to fit requirements of people who are interested in what you’re doing. ... What you need is anchor investors. If you can get some good anchor investors such as Acumen on board, then you can bring in others. Getting Acumen onboard was the kickstarter to getting others involved. ... Acumen was prepared to put money in like venture capital. More than average return but high risk.” (Respondent 12).

4.4.2.2.2 The technical assistance facility

In addition to its anchor equity investment, the GCF provided a grant of USD 3 million which was used to establish a technical assistance facility within ARAF, which provides funding for a range of activities that build capacity within the broader ecosystem that the ARAF seeks to support.

“The Technical Assistance Facility is key to the work we are doing. Any start-up has things it would like to do but does not have cash to do, as it does not immediately effect commercial operations, such as training farmers, or establishing enterprise resource planning systems. We accessed funds in form of grants from GCF and deploy in form of grants” (Respondent 5).

For the start-ups, this technical assistance enabled putting in place some of the capacities needed to grow the business, as well as the approaches and metrics for tracking adaptation impacts. One of the businesses that ARAF funds provides training to small-holder farmers on sustainable agriculture and uses a cluster model to help farmers to access markets for their produce.

“Acumen ... provided access to grants for training... ARAF supported us with the first classroom facilities” (Respondent 12).

4.4.2.2.3 Innovations in measuring adaptation impact

The ARAF responded to one of the key challenges for investing in adaptation, that of the lack of widely agreed metrics for tracking impacts, by developing its own metrics:

“To claim you are doing something, need to be able to assess, to measure it. Measuring climate resilience of smallholder farmers, there are no standards. We had to develop a tool to measure climate resilience of farmers. ... We have developed a climate resilience scorecard which we report on to investors. We track 3 measures: farmers’ access to enablers, their capacity to absorb climate shocks, and their capacity to adapt to climate shocks. ... From that we have a portfolio score for climate resilience” (Respondent 5).

This has allowed ARAF to track the impacts of its investments in a transparent and structured way that allows for comparison, despite the fact that its intervention represents an entirely new way of financing climate adaptation.

4.4.2.3 Summary of the ARAF case study

The findings of the ARAF case study are largely consistent with the observations made by the other expert interviewees regarding the challenges faced in mobilising private investment in adaptation, and the ways in which they can be overcome. Although ARAF is just one example

of a blended finance structure, it includes several of the elements that have already been identified as important for de-risking private investment in adaptation, in particular the combination of concessional funding (a first loss equity position) from a public fund (the GCF) combined with a technical assistance facility to address some of the upfront capacity barriers faced by MSMEs in the agriculture sector. It also makes use of the grant funding from the GCF to develop a way to address the barrier of adaptation metrics.

4.5 Conclusion

This chapter provided an overview of the findings of the research, including the barriers to financing adaptation identified through conducting semi-structured interviews, and the ways in which blended finance can address some of these challenges, as well as some additional solutions. It further discussed the ARAF as a case study of a blended finance approach for financing adaptation and identified the key factors that enabled this case.

Chapter 5: Conclusions and Recommendations

5.1 Introduction

The purpose of this study was to explore the role of blended finance in addressing the adaptation finance gap. It made use of semi-structured interviews with experienced experts in the fields of adaptation, climate finance and blended finance to respond to the first research question, “what are the barriers to financing adaptation, for the public and private sectors?”. It made use of expert interviews and a case study, the Acumen Resilient Agriculture Fund, to explore the second research question, “what is the role of blended finance in scaling up funding for adaptation and resilience to climate change?”.

5.2 Summary of findings

The study identified the key barriers to public and private sector investment in adaptation. Three barriers were specific to the public sector, namely i) the funding provided to developing countries by developed countries for climate adaptation is insufficient; ii) developing countries are failing to use their public budgets strategically; and iii) there will inevitably be a lack of adequate public funding, as the scale of the need is much higher than what the public sector can mobilise. This latter observation implies an important role for the private sector. Several barriers were identified which affect both the public and private sectors, notably: iv) the challenge of defining adaptation and distinguishing it from development; v) the lack of climate data and metrics; vi) lack of awareness and capacity at multiple levels to invest in adaptation; vii) the economics of adaptation and ongoing failure to address climate change as a market failure; viii) weak coordination, planning and institutions for adaptation. In addition, a number of barriers that are specific to the private sector were highlighted, in particular ix) a lack of clear revenue streams from adaptation; x) lack of access to finance to de-risk private investment; and xi) lack of a conducive policy environment to invest in adaptation, both at national and international levels. Overall, the findings from the interviews were largely consistent with the literature, but they enabled a more in-depth exploration of the barriers to adaptation finance that can add to the existing body of knowledge on the topic.

The study also explored the role of blended finance in addressing these challenges. It identified a number of ways in which blended finance can play a crucial role in scaling up private sector investment in adaptation, through i) enabling interventions, such as providing technical assistance grants for capacity building, and providing project preparation facilities; as well as

ii) providing de-risking interventions. The study identified five specific types of blended finance interventions that can de-risk private investment in adaptation, and provided examples of each type that are currently being piloted globally. The five types of intervention are i) blended lending facilities, ii) guarantee facilities; iii) equity funds with a first loss position; iv) climate risk insurance; and v) results-based funding structures. These findings add to the body of knowledge around blended finance for adaptation, as although these instruments have been described in the literature, there are limited examples of their application in the context of financing adaptation. One such example that describes a range of instruments for financing adaptation, and the sectors in which they may be relevant, is provided by Richmond, Choi, Padmanabhi, et al., (2021) and is consistent with the findings of this study.

In addition to these blended finance solutions, the study identifies three sets of additional actions that are needed to scale up public and private investment in adaptation, which are i) harmonisation of definitions and enhancing metrics and data on climate change to inform adaptation interventions; ii) building awareness, knowledge and capacity at a wide range of levels and actors; and iii) strengthening public policy, planning and coordination to enable adaptation investments. These findings largely support existing literature which has strongly pointed to the need to overcome barriers related to definitions and metrics (Tippmann et al., 2013), awareness and capacity (Druce et al., 2016; World Bank, 2020), and policy and planning (Trabacchi & Mazzo, 2015; World Bank, 2020).

The case study, ARAF, provided insights into one of the few existing examples of a blended finance facility for adaptation. In this case study, three of the key enablers identified are i) the use of public funds to de-risk private investment in an equity fund in the form of a first loss equity position taken by the GCF, which enabled other investors to invest on the fund on commercial terms; ii) a technical assistance facility that provides capacity building and product enhancement support to investees of the ARAF; and iii) innovation around metrics for measuring resilience that allows ARAF to track the impacts of its investments despite the lack of existing standard metrics for projects of this type. The findings of the case study are largely consistent with the findings of the expert interviews and the literature.

5.3 Recommendations

The study has emphasised the importance of engaging the private sector in financing adaptation in order to address the significant gap that exists between current adaptation funding flows and

the investments needed to adapt to climate change. In order to scale up private investment, the following key recommendations are made to public sector policy makers and funders:

5.3.1 Invest in awareness and capacity around adaptation

Building awareness and capacity around adaptation and resilience to climate change impacts includes investing in training and capacity building for public and private sector actors on understanding climate change vulnerability and how to integrate climate change risks into decision making and investments. It further includes developing metrics for measuring adaptation impacts across various sectors (e.g. agriculture, water, infrastructure, ecosystems, health and sanitation, etc). This can be done at a national level, but in the absence of a national taxonomy of climate adaptation measures it can also be done at an institution or project level, as the case study of ARAF has shown.

5.3.2 Develop an enabling policy environment

Creating an enabling policy environment is the role of governments and involves identifying adaptation priorities and targets, integrating them into national planning and budgeting processes and identifying the areas that require private sector investment. It also requires establishing incentives for adaptation investments through regulations and fiscal policy, and integrating the value of resilience into metrics of economic success, for example through natural capital accounting and green GDP measures.

5.3.3 Develop blended finance approaches that use public funds catalytically to enhance the return to risk profile of adaptation investments for the private sector

The catalytic use of public funds includes identifying the instruments needed to de-risk adaptation investments across different sectors and designing facilities and approaches that use concessional public finance strategically to de-risk investments for the private sector, such as guarantee funds, structures in which public funders take first loss positions, project preparation funds and results-based funding instruments. Although the design of such blended finance instruments may be led by private sector actors or specialised think tanks or consultancies, ultimately it is public funders such as governments or DFIs that must be willing to take some risk in order to de-risk investments for the private sector.

5.4 Avenues for future research

This study represents an explorative approach to enhancing the knowledge of the role of blended finance for scaling up investment in adaptation. As this is still a fairly new area of work and there is limited experience with such approaches globally, further research will be needed to explore the impacts of the various pilot blended finance facilities for adaptation which are still in early stages of implementation. In addition, further research will be needed to refine the understanding of which type of funding models work best for specific sectors and across different regions and countries. This study also revealed a number of further challenges related to financing adaptation that could warrant further research, including the challenge of getting finance for adaptation to the local level, as well as the challenge of how to measure adaptation impacts and results. In addition, there is scope for exploring lessons from other programmes and mechanisms that have attracted private sector investment into areas previously viewed by private actors as too risky or offering inadequate returns, such as the CDM for climate change mitigation, to identify whether similar approaches could be applied for adaptation.

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Appendix 1: Interview Consent Form

Participant name:

I volunteer to participate in a research project conducted by Louise Brown as partial fulfilment of the requirements for the Master of Commerce in Development Finance Degree at the UCT Graduate School of Business. I understand that the research is designed to gather information about scaling up investment in climate change adaptation using blended finance solutions and that I will be one of approximately 10-15 people being interviewed for this research.

Objective(s) of the research

This study aims to propose possible solutions for scaling up financing for adaptation using blended finance approaches to attract additional investment in climate change adaptation. Through a series of expert interviews, it will distil the barriers to financing adaptation and explore ways in which these barriers could be overcome. Through a case study evaluation, it will explore ways in which blended finance approaches have been deployed to successfully attract investment in climate change adaptation, and extract lessons for replication and scaling up. Based on the findings, it will propose ways in which blended finance approaches could be applied to scale up investment in climate change adaptation, and set out the role of public policy and finance in enabling the uptake of such approaches. Finally, it will set out a number of recommendations for public and private actors interested in scaling up finance for adaptation.

Ethics approval

The ethical clearance for this study was approved by the UCT GSB Research and Ethics Committee on 02 November 2021.

Participation and confidentiality

I understand that my participation in this research is voluntary, that I will not be compensated and that I may withdraw at any time. The interview will take approximately 60 minutes to complete and will be audio recorded.

I understand that I will not be identified by name in any reports using information obtained from this interview and that my confidentiality as a participant in this study will remain secure.

Subsequent uses of records and data will be subject to standard data use policies which protect the anonymity of individuals and institutions.

Should you have any questions or concerns please contact Louise Brown at BRWLOU006@myuct.ac.za or her supervisor Latif Alhassan at latif.alhassan@gsb.uct.ac.za.

Consent

I consent to participate in this interview, based on the terms outlined above and subject to the following additional condition of my own (if any).

Signed by interviewee

Date

Signed by Student

Date

Appendix 2: Interview Questions

PART A: Interviews with subject area experts for research question 1 (What are the barriers to financing adaptation?) and research question 2 (What is the role of blended finance in scaling up funding for adaptation and resilience to climate change?)

Section 1: Demographic information

1. Gender of respondent
2. Institutional affiliation
3. Public or private institution?
4. Current role in institution
5. Number of years' experience

Section 2: Interview/Survey questions

6. What is your understanding of the scope of adaptation finance?
7. What are the barriers to financing adaptation for the public sector?
8. What are the barriers to financing adaptation for the private sector?
9. What are the potential solutions to address these barriers?
10. What is the role of public policy in enabling the solutions?
11. What is the role of public finance in enabling the solutions?
12. What role if any do you see for blended finance in scaling up adaptation finance?
13. Any other insights you wish to share?
14. Anyone else you recommend I speak to?

PART B: Interviews with case study experts for research question 2 (What is the role of blended finance in funding adaptation and resilience to climate change?)

Section 1: Demographic information

1. Gender of respondent
2. Institutional affiliation
3. Public or private institution?
4. Role of the institution in the case study?

5. Current role in institution
6. Number of years' experience

Section 2: Interview/Survey questions

7. What is your understanding of the term “blended finance”?
8. Please could you give a brief description of the design of the case study intervention and the role that your institution plays in it?
9. What are the barriers/challenges that the case study intervention has sought to address?
10. How has the case study intervention addressed these barriers?
11. From your perspective, how successful has the approach been?
12. What could be improved/ done differently in future?
13. Based on your experience, what role do you see blended finance playing in scaling up funding climate change adaptation?
14. What is the role of policy in enabling this?
15. Any other insights you wish to share?
16. Anyone else you recommend I speak to?