FOCUS NOTE

CGAP

CLIMATE ADAPTATION, RESILIENCE, AND FINANCIAL INCLUSION

A new agenda

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Cover photo by Allison Shelley for CGAP, 2017 (Santa Odongo, 39, collects cotton on the family farm in Adyaka town in the Lira district of the Northern Region of Uganda).

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EXECUTIVE SUMMARY

Financial inclusion should be a cornerstone of climate action

Financial inclusion[1] can play a critical role in enabling autonomous adaptation and building grassroots resilience to climate change. Building resilience against the devastating effects of a warming climate is impossible without access to savings, lending, payments, and insurance solutions that help households and businesses to prepare for, cope with, and recover from increasingly intense and unpredictable climate shocks and stresses. Financial inclusion can hence bolster climate resilience in low-income communities that are the least responsible for climate change emissions yet tend to be more exposed and vulnerable to their effects. Access to the right financial services can be particularly important in empowering women and girls, who, as a group, often play a critical role in the adaptation and resilience of communities but are more exposed and vulnerable to climate risk as well as more excluded from the tools needed to manage it.

By enabling the poorest and most vulnerable people to pursue their own resilience strategies, an inclusive financial system is a fundamental enabler of adaptation and an absolute necessity for a just transition.[2] It should be a cornerstone of action on climate adaptation.[3] CGAP is therefore outlining a new agenda for global collaboration on financial inclusion, climate adaptation, and resilience.

1 CGAP defines financial inclusion as the state where all individuals and enterprises have access to and are empowered to use affordable, responsible financial services—such as payments, savings, credit, and insurance—that meet their needs. For more on how we define key terms, please refer to the Glossary included in this Focus Note.

2 The term "just transition" is typically used to denote a set of principles, processes, and practices that aim to ensure that no people, workers, places, sectors, countries, or regions are left behind in the transition from a high-carbon to a low-carbon economy.

3 "Autonomous adaptation" refers to the adaptive measures spontaneously taken by individuals, households, and small firms as opposed to the planned adaptation response undertaken by government entities.

Financial services are not fully delivering for climate adaptation

Despite their potential for supporting widespread climate adaptation, financial services far from fulfil this role at the moment. The immediate reason is the gap between those with access to financial services and those without; despite the significant progress made over the last decade, 1.4 billion adults remain excluded from the financial system. More than 80 percent of them live in the most climate vulnerable countries, many of which also have few resources, minimal infrastructure, and limited capacity to withstand and recover from climate shocks (UNSGSA 2023).

Moreover, generic financial products and services may not be fit for responding to climate change. Even people with access to financial services mostly lack solutions specifically designed to bolster climate adaptation and resilience. The magnitude of harm the world's poorest and most vulnerable communities face means every opportunity to support them must be exhausted. Yet as revealed in the more than 100 interviews CGAP held with financial services providers, few offered or were trying to develop solutions designed for climate adaptation and resilience building.

Financial services providers cited a variety of reasons for their lack of effort on climate adaptation, including a poor understanding of client needs, lack of data, and weak organizational capacity on climate change. Many also raised questions about the business case, as adaptation investments can be hard to value, have lengthy time horizons, and often do not generate revenue that can be put toward loan repayments. Hence financial services providers need help developing a broader suite of solutions for climate adaptation and resilience. Identifying, testing, and scaling effective solutions will require more support and closer collaboration between stakeholders working on climate change and financial inclusion.

Women's needs must take center stage

Women typically play a major role in building climate resilience at the household level and beyond. Women and girls are also often more exposed and vulnerable to climate risk. For example, women disproportionately work in heavily climate-exposed livelihoods such as agriculture; girls are often the first to be taken out of school during times of economic hardship; and women and girls typically have less access to financial accounts, loans, and insurance products. At the same time, social norms and societal structures often result in women having less access to the tools they need to manage climate change, including financial services. As climate change worsens, it could also undermine the considerable progress made on women's financial inclusion, women's economic empowerment, and, by extension, the achievement of wider global development goals.

This underscores the importance of applying a gender lens to work on climate adaptation, resilience, and financial inclusion. Thus far, too little work has been done at the intersection of these topics. While large bodies of research now exist on gender and financial inclusion as well as on gender and climate adaptation, little academic or other work combines all three. Similarly, within development organizations, teams working on gender increasingly engage with those working on financial inclusion and climate change—but rarely both at the same time.

Climate change undermines financial inclusion

Inclusive finance centers on extending financial access to low-income, informal clients who are often challenging, expensive, and fundamentally risky to serve. As the effects of climate change grow more frequent, severe, and unpredictable, the costs and risks associated with serving these clients are now rising. Climatic shocks and stresses are damaging the homes, farms, and other assets normally used for collateral, undermining livelihoods and weakening the income streams used to pay for financial services, and at the same time increasing operational costs for providers. As a result, financial services providers will be forced to pull back from value chains and geographical areas that are particularly exposed and vulnerable to climate change as certain markets grow increasingly less viable. In fact, CGAP's research shows this is already happening in both high- and low-income countries.

Financial services providers also increasingly wrestle with climate risk of their own. Major weather events can force branches to close, prevent loan officers from seeing clients, take down digital channels, and disrupt agent networks. Lenders in areas affected by natural disasters may see substantial portions of their portfolios wiped out overnight. Replenishing the balance sheet after such an event requires investors to bear part of the burden, which they may not always be prepared to do. After the destructive floods in Pakistan, for example, financial services providers suffered major losses that raised difficult questions—not just for the present but for the future. As one CEO noted, "How can we continue operating unless we can insure ourselves against the risk of this happening again?"

Helping inclusive finance providers manage climate risk must therefore be a major priority for funders that care about either financial inclusion or climate adaptation. While much of the risk would ideally be transferred to international insurance markets, such solutions so far tend to be unavailable or unaffordable for financial services providers serving low-income segments. Beyond insurance, there is the need for blended finance solutions, credit guarantees, and other forms of risk-sharing by public and philanthropic capital for inclusive financial services providers to have the ability to keep serving poor people as climate risks and impacts rise.

Green finance efforts must prevent unintended exclusionary effects

Like direct climate risks, the necessary regulatory responses to climate change could also exacerbate financial exclusion if not carefully designed. CGAP's interviews with financial authorities[4] in 14 countries showed that many are developing new rules and strategies for climate change and the greening of the financial system. This effort is vital but could create unintended knock-on effects. For example, transaction costs associated with environmental due diligence may be disproportionately high for smaller loans, pricing out low-income clients.

Clients whose financial access is curtailed will be less able to invest in climate adaptation and resilience, which increases the vulnerability of the real economy and has ramifications for

4 For the sake of brevity, the term "financial authorities" is used here to refer to the combination of policy makers, regulators, and supervisors charged with ensuring financial system stability.

financial stability. This may create a downward spiral of shrinking financial access, falling climate resilience, and weakened financial sector stability. Very few of the financial authorities CGAP interviewed had considered these potential effects. Given the sense of urgency and momentum surrounding regulatory responses to climate change, this raises concerns that new rules and standards which unintentionally exacerbate financial exclusion could be rushed into place.

Yet it does not have to be this way; inclusive policy and regulatory action can instead create a virtuous cycle where expanded access to financial services helps more people manage climate risk, reducing climate impact on the real economy and increasing financial stability. This does not need to slow down the regulatory response to climate risk. It requires only that financial authorities explicitly consider the potential effects on financial inclusion and respond in a proportional manner.

Public and philanthropic capital have both direct and indirect roles to play

The development community has a crucial role to play in helping to make financial offerings more relevant for climate adaptation and resilience as well as in protecting and sustaining global progress on financial inclusion in the face of climate risk. By driving innovation and scale in climate-responsive financial solutions, public and philanthropic funders can help address the risks that climate change pose for financial inclusion while also developing new sources of opportunity for financial institutions and their clients around climate adaptation.

As always, the first priority should be to catalyze and extend commercial markets as far as they can reach by building capacity, supporting experimentation, sharing risk, and scaling models that work. By strategically deploying their resources using a market systems approach, public funders can mobilize private capital and entrepreneurial effort to meet the climate adaptation and resilience needs of millions. This is essential since the resources of governments and their development partners will not be nearly enough to finance necessary investments in climate adaptation, which the United Nations estimates at up to $340 billion by 2030 (UNEP 2022).

However, millions of people will remain too poor to afford fully commercial prices. It will fall on public and philanthropic capital to fill this gap and directly support low-income populations in accessing the financial solutions they need. This will require a range of interventions to bring down the cost of delivering and consuming the needed financial services. For example, extending insurance cover against major climate risks to the poorest and most vulnerable population segments will likely require subsidies. If appropriately deployed, such interventions could help drive economies of scale that expand the reach of commercially-provided products and services over time.

Governments and funders also need a new focus on using social protection systems to support climate adaptation. Social protection systems offer an existing mechanism to reach the most vulnerable and have many characteristics that make them well placed to deliver adaptation finance where it is most needed. But they will also need to be appropriately designed and resourced to deliver on climate objectives. Despite progress on this front, CGAP's review of the current state of adaptive social protection indicates there is still a long way to go in using such

systems to build longer-term climate resilience and support adaptation to slow-onset climate stresses. Integrating financial services as part of graduation-style economic inclusion efforts[5] can play a central role in this.

All of these strategies will require significant resources but should ultimately comprise a cost-effective approach to climate finance. It is well known in disaster risk finance that building resilience as a preventative step can reduce subsequent losses from a disaster by several multiples. In the context of global loss and damage debates that will only grow more vocal as climate change intensifies, spending money wisely today will likely prove a good investment tomorrow.

Toward a new agenda

To deliver all of these solutions, the global development community needs a new agenda that spans climate change and financial inclusion. This Focus Note highlights a series of complex challenges that are not easily solved in isolation. From developing the right analytical tools and frameworks to implementing specific policies, regulations, financing instruments, and financial services, much work lies ahead.

CGAP's early insights point to multiple opportunities for financial services providers and their investors, financial regulators and standard-setting bodies, governments and their development partners, civil society organizations, and philanthropic funders. All have important roles to play and need to collaborate effectively to rise to the challenge. Crucially, this includes learning to work more closely across financial inclusion and climate change, which may be easier said than done.

As CGAP research on funders has shown, even within a single organization thematic siloes are often so strong that cross-collaboration is rare and opportunistic rather than systematic and strategic. But recognizing and deepening the role of inclusive finance in climate adaptation is crucial—not only for financial inclusion practitioners but for researchers, policy makers, practitioners, and activists driving the climate agenda as well.

Based on a year of CGAP research, this Focus Note combines fresh empirical evidence, rigorous analysis, and a deep understanding of financial services to present a compelling call to action and a new agenda for each set of key stakeholders to consider.

5 See, for instance, Hashemi and Montesquiou 2011.

METHODOLOGY

THIS FOCUS NOTE SUMMARIZES THE FINDINGS AND CONCLUSIONS from an initial year of research by CGAP around the role of financial services in the climate adaptation and resilience of low-income populations.

The research took a broad view of the topic, exploring it from the respective vantage points of financial services providers (FSPs), financial regulators, government, development funders, and poor people themselves, with an emphasis on the needs of women.

The research probed the following central questions:

- How can financial services bolster the climate adaptation and resilience of poor people?
- To what extent is the inclusive finance sector fulfilling that role today?
- Is anything hindering the use of financial services for climate adaptation and resilience?
- What implications might climate change have for inclusive finance?
- What specific actions can various stakeholders take to render financial services a more effective tool for poor people, especially women, to adapt and grow more resilient to climate change?

Answering these questions involved a significant amount of desk research, including:

- Review of academic and grey literature exploring the links between financial services, resilience, and climate adaptation
- Review of strategy and policy documents of 29 major funders active in financial inclusion and/or climate change, including bilateral development agencies, multilateral development banks, development finance institutions (DFIs), philanthropic foundations, and impact investors
- Review of climate-related publications and guidance on financial regulation and supervision by key global actors like the Basel Committee on Banking Supervision, Bank for International Settlements, the Financial Stability Board, Task Force on Climate-related Financial Disclosures, and the Network for Greening the Financial System, as well as by local financial supervisory authorities in 16 emerging markets and developing economies (EMDEs)
- A landscaping of 100+ climate-oriented financial products and services that currently exist for vulnerable populations in EMDEs
- Review of the literature around adaptive social protection and a deeper assessment of programs in Burkina Faso, Dominican Republic, Ethiopia, India, Jamaica, Kenya, Niger, and the Philippines

It also entailed a large number of semi-structured interviews with key informants:

- 180 interviews with financial inclusion stakeholders, including 87 FSPs such as microfinance institutions (MFIs), commercial banks, fintechs, remittance providers, insurers and reinsurers, and digital FSPs
- Financial sector regulatory authorities in 14 jurisdictions across the Caribbean, Latin America, the Middle East, North Africa, Southeast Asia, and Sub-Saharan Africa
- Staff at 13 major funders, including bilateral agencies, multilateral development banks, DFIs, philanthropic foundations, and impact investors
- Key stakeholders in social protection, including the Gates Foundation, GIZ, G2Px, the Partnership for Economic Inclusion, and the World Bank's Social Protection and Jobs Global Practice
- Significant numbers of climate researchers and thought leaders, such as the United Nations Intergovernmental Panel on Climate Change (IPCC), the United Nations Environment Programme (UNEP), the World Resources Institute, etc.

Given a strong focus on people's lived experiences, CGAP also worked with Decodis and MicroSave[6] to conduct primary research with low-income communities:

- 48 in-person interviews and 259 remote interviews with cassava farmers and goat herders across the Nigerian states of Kano and Enugu
- 69 in-person interviews and 238 remote interviews with rice farmers and petty traders across Bangladesh's Khulna and Satkhira districts

Finally, CGAP developed multiple analytical frameworks, including:

- Conceptual framework for how financial inclusion bolsters climate resilience
- Taxonomy of climate-responsive financial products and services
- Framing of the linkages between climate risk, financial inclusion, and financial stability
- Tentative framework for analyzing the climate readiness of social protection programs

The research had a strong gender focus throughout, working with a gender specialist to examine the distinct ways women are impacted by climate change as well as inequities in their ability to prepare for, cope with, and adapt to the changing climate.

6 For more information on Decodis and MicroSave, see https://www.decodis.com and https://www.microsave.net, respectively.

SECTION 1

THE URGENCY OF CLIMATE ADAPTATION

AS THE INTERNATIONAL CLIMATE CHANGE AGENDA GATHERS momentum, global warming and its effects are already clearly on display across the world. July 2023 saw the hottest week humanity has ever recorded, although it is not likely to retain the title for long (Dickie 2023). Meanwhile, fresh estimates (Forster et al. 2023) indicate that in just three years, the world has spent more than half of the remaining carbon budget needed to stay below the 1.5°C ceiling on global average temperature increases.[7] In September 2023 the United Nations concluded that the world is not on track and that there is now a "rapidly narrowing window" to limit global warming to 1.5°C (UNFCCC 2023). Many climate scientists privately believe that the goal will not be met (Harvey 2022).

The consequences will be shouldered above all by the world's poor people, who are disproportionately exposed and vulnerable to climate change but have the least means to adapt and build resilience against it. The IPCC estimates that more than 3.3 billion people live in regions that are highly vulnerable to climate change and that the death toll from floods, droughts, and storms in such regions is 15 times higher than in regions with low vulnerability.

IPCC projections indicate that 132 million additional people could be pushed into extreme poverty, 150 million affected by flooding, 183 million become undernourished, and 800 million could experience chronic water scarcity in the

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BOX 1. **Mitigation vs adaptation**

Mitigation
In a climate change context, mitigation typically refers to human intervention to reduce global warming by curbing emissions or enhancing the sinks of greenhouse gases.

Adaptation
In human systems, adaptation is the process of adjustment to actual or expected climate and its effects in order to moderate harm or exploit beneficial opportunities.

Source: IPCC 2022a. Impacts, Adaptation, and Vulnerability, Annex II: Glossary

7 At the 2015 United Nations Climate Change Conference (COP21) in Paris, 196 countries agreed on an ambitious agenda to limit the increase in the global average temperature to well below 2°C above preindustrial levels and pursue efforts to limit the temperature increase to 1.5°C above preindustrial levels.

coming decades as a direct result of climate change.[8] Climate change is also causing widespread displacement; in 2020, climate shocks forced three times as many people to flee their homes as those displaced by war and violence (Guterres 2022). IPCC expects the number of people living in countries classified as most highly vulnerable to double by 2050.[9]

BOX 2. **Resilience**

CGAP defines resilience as the ability of individuals and households to reduce and mitigate risks, as well as to cope with and recover from various shocks, stresses, and life cycle events so as to minimize any reduction in short-term consumption or long-term well-being.

Source: McKay and Zetterli 2021

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These numbers illustrate the scale of what is at stake for the world's most vulnerable people, who have contributed little to the problem in the past and will do little to exacerbate it in the near future. The richest tenth of the global population is estimated to have been responsible for 48 percent of all global emissions in 2019, while the poorest half—comprising 3.8 billion people—was responsible for just 12 percent. The poorest half is already living well within the per capita carbon budget required to stay below the 1.5°C ceiling and is projected to remain beneath it in 2030, even with expected economic growth.

Although the carbon footprints of developing countries are likely to rise as their GDPs grow, unless they are adequately supported to undertake low-carbon development pathways their low-income citizens will continue to contribute very little to global warming. Meanwhile, the world's richest 1 percent is expected to have per capita consumption emissions in 2030 that are 30 times higher than the 1.5°C carbon budget (Gore 2021).

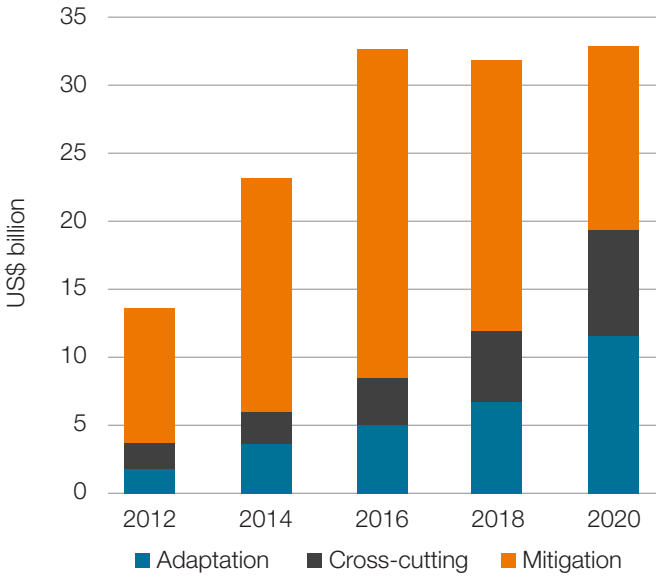
The upshot of these statistics is clear: while the global agenda for climate change mitigation is of monumental importance for the continued livability of the planet, efforts centered on poor people must make adaptation and resilience building an overwhelming priority in the near term. Over time, efforts to secure a green transition in low- and middle-income economies is vital to ensuring that they retain a small carbon footprint as they develop.

These efforts will, however, primarily center on the wealthier segments in these countries. For poor people, who are likely to continue contributing little to greenhouse gas emissions, every dollar spent on adaptation today can make a tangible difference in their lives as they already suffer the growing impact of a changing climate. This aligns with the priorities of developing countries themselves, nearly all of which consider adaptation the most urgent aspect of their national climate change response (IPCC 2022b).

But adaptation finance still falls far short of both promises and needs. At the global level, a mere 7 percent of all climate finance goes toward adaptation purposes while another 2 percent contributes to both adaptation and mitigation (IPCC 2022b). Bilateral climate flows to poor countries have grown more balanced in recent years but still favor mitigation (see Figure 1). While more than a third of climate finance to developing countries in 2020 was for adaptation, nearly half still pursued only mitigation objectives (UNEP 2022).

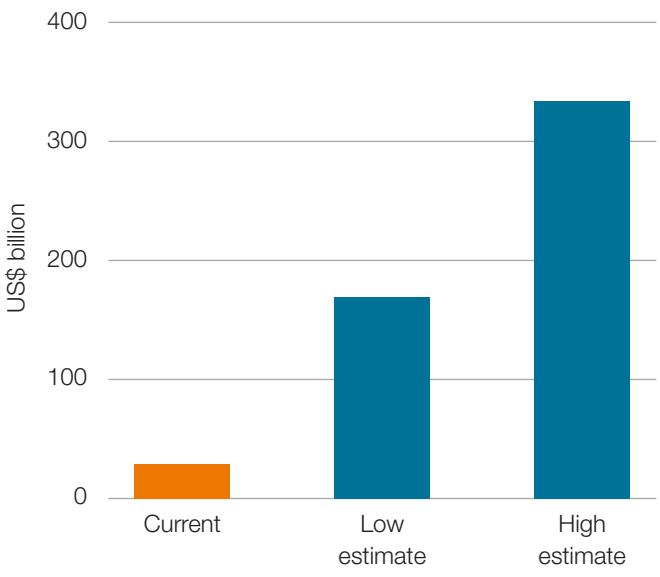
8 See, for example, IPCC 2022b.
9 See IPCC 2022b.

FIGURE 1. **Bilateral climate finance flows from developed countries to developing countries, 2012–2020**



Source: UNEP 2022

FIGURE 2. **Adaptation finance: Actual flows in 2020 vs needs in 2030**



Source: UNEP 2022

The bottom line is that total flows of adaptation finance to poor people remain woefully short of needs. UNEP (2022) estimates put climate adaptation needs in developing countries at $160–$340 billion by 2030, whereas current adaptation finance flows only amount to around $28.6 billion (see Figure 2). In other words, current funding for adaptation in low-income coutries is less than 10 to 20 percent of what will be needed in just seven years. Hence the global development community must step up its efforts on adaptation. Public funds will need to increase and be complemented by sizeable flows of private capital in order to meet needs.

Much of the attention on climate adaptation from governments and development funders thus far has centered on *planned adaptation*, which refers to deliberate and often anticipatory policy decisions or actions taken by governments or other public entities. It includes financing for large-scale investments like resilient infrastructure and disaster response capabilities. Less focus has been placed on *autonomous adaptation*, which refers to independent initiatives by individuals, firms, and other private actors in response to the effects of climate change (IPCC 2022a).

Financial inclusion is a critical enabler of autonomous adaptation as it empowers poor people to pursue their own resilience strategies. It can also facilitate certain types of planned adaptations, such as those involving recovery assistance payments to large numbers of people after disaster strikes—which is greatly facilitated by widespread uptake of accounts, large agent networks, and rapid payments systems.

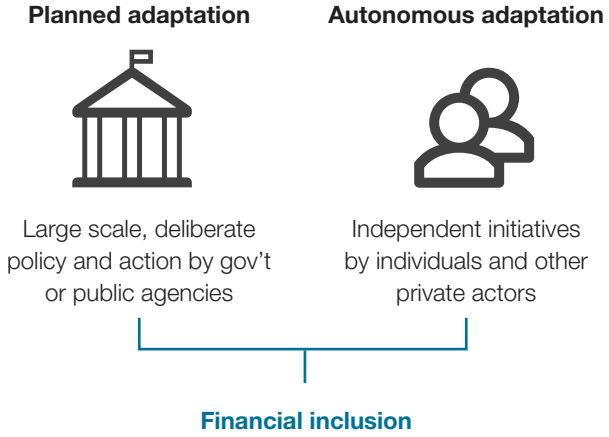
But financial inclusion's role in autonomous adaptation is particularly clear and compelling: almost every resilience and adaptation strategy people want to pursue

Financial inclusion is a critical and unique enabler of autonomous adaptation, empowering poor people to pursue their own resilience strategies.

involves some combination of savings, lending, remittances, and insurance products. Without access to these products and services, autonomous adaptation is very difficult to pursue.[10]

For that reason, financial inclusion has a central role to play in scaling and delivering on the adaptation agenda in a way that puts the choices and preferences of low-income populations first, enabling them to make their own adaptation decisions. While good decisions require many other elements, including education, information, and access to markets, ensuring access to a range of financial services that respond effectively to climate adaptation needs will make a major contribution to helping the most vulnerable to protect themselves from the ravages of a warming world.

FIGURE 3. **Planned vs autonomous adaptation**



10 For definitions of planned and autonomous adaptation, see the Glossary.

SECTION 2

FINANCIAL INCLUSION IS A CRITICAL ENABLER OF CLIMATE ADAPTATION AND RESILIENCE

While this Focus Note is focused on climate adaptation and resilience, financial services are equally important for climate change mitigation and support for a just transition[11] to greener and more sustainable economies, which will be the subject of other CGAP publications.

Helping people manage risk and build resilience is one of the central functions of financial services. They enable customers to save for a rainy day; insure their homes, shops, crops, and cattle; borrow for investments in adaptation and climate proofing; and receive help from friends and family, government agencies, or humanitarian relief organizations when disaster strikes.

Savings in both formal and informal mechanisms play an important role as the most flexible instrument poor people have for risk reduction, coping, and recovery across a range of climate risks. For example, vulnerable households in rural areas have been shown to preemptively reduce climate risk by saving up to buy more climate resilient agricultural inputs and diversifying income beyond climate-sensitive crop production (IPA 2017). They also use savings during and after shocks to maintain consumption without the need for negative coping strategies such as taking children out of school, selling assets, or reducing food consumption (Sandri, Beckmann, and Robinson 2021).

The kind of farming we do here is that after planting we beg God for rain. We don't have water, we don't have a dam. We don't have borehole, nor a pumping machine. We do not have anything.

–MALE CASSAVA FARMER, KANO, NIGERIA

11 The term "just transition" is typically used to denote a set of principles, processes, and practices that aim to ensure that no people, workers, places, sectors, countries, or regions are left behind in the transition from a high-carbon to a low-carbon economy. More information can be found in the Glossary.

Households with greater savings prior to a natural disaster have been shown to avoid negative coping mechanisms and achieve a stronger recovery, with better food security and poverty outcomes afterward (Sandri, Beckmann, and Robinson 2021).[12] This does not necessarily mean saving in formal accounts. In fact, informal savings groups are often the first source of available funds during an emergency until more formal government support can be provided (Sandri, Beckmann, and Robinson 2021; Mulligan et al. 2017). Additionally, savings groups can offer a way for members to access information and other resources that help to increase their adaptive capacity (Venton, Prillaman, and Kim 2021).

BOX 3. **Rapid- vs slow-onset climate change**

Rapid-onset climate shocks
We define these as relatively short-term, unpredictable, and discrete events with a sudden onset and relatively clear beginning and end, such as a flood, cyclone, or extreme heatwave.

Slow-onset climate stresses
We define these as longer-term, more predictable, and continuous processes whose impact plays out over many years, such as rising average temperatures, sea level rise, land degradation, falling water tables, or desertification.

Source: CGAP

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Borrowing enables larger adaptation investments and can provide an important lifeline in times of crisis when savings run out, although it also comes with its own risks. Smallholder farmers have been shown to use formal credit to invest in equipment and purchase inputs, such as rainwater harvesting tanks and solar irrigation pumps, that help them prepare for dry seasons (IPA 2017). Informal credit groups are often a more popular and accessible source of lending among poor people. These groups use social capital as collateral for loans during and after climatic events to help members cope and rebuild, such as moving out of flood-prone housing into safer accommodation or repairing homes after storms and other extreme weather events (Panman et al. 2021).

As credit offers access to larger amounts than people can easily save for, it can play a crucial role in managing the risk of rapid-onset shocks like storms and floods. It is also crucial in responding to slow-onset climate stresses like chronic water scarcity and changing crop viability patterns by enabling more significant life changes, such as livelihoods diversification and relocation from disaster prone areas.[13]

Payments play a role in many aspects of adaptation but represent a particularly vital source of liquidity for smoothing consumption during a shock and recovering in the immediate aftermath. Remittances have been described as “the first responder” for many poor households in crisis, giving them rapid access to support from friends and family in times of need. Digitization has played a major role in bolstering resilience through payments; there is a growing body of evidence that people with digital accounts receive more financial support after a shock and are forced to cut back on consumption of basic goods much less than others.[14]

Emergency transfers from humanitarian organizations and government social protection systems are another critical form of payment that builds resilience during and after a shock

12 For example, Murphy, Hepworth, and Verkaart 2019; Gwinner, Kioko, and Karlyn 2018.
13 See, for example, Ströh de Martínez, Feddersen, and Speicher 2016; Panman et al. 2021; Daum 2023.
14 See, for example, Suri and Jack 2016; Blumenstock, Eagle, and Fafchamps 2016.

(Moore et al. 2019). Such payments can provide temporary support during periods of acute economic disruption by distributing money directly to affected people. Here, too, digital channels substantially enhance the ability to rapidly deliver payments on a large scale (Costella et al. 2021).

Insurance is directly geared toward managing risk but its vital role in climate resilience and adaptation is far from fully realized in low-income communities. Insurance offers partial compensation for losses, enabling policy holders to rebuild assets, homes, and livelihoods damaged by severe weather events. It can also offer a source of liquidity, helping poor people maintain consumption in the aftermath of a crisis without resorting to negative coping strategies such as selling assets and reducing food consumption (Janzen and Carter 2019).

Insurance also has powerful indirect benefits as it enables poor people to make larger investments in livelihoods that come with both higher risk and higher rewards, offering more powerful pathways out of poverty. For instance, use of rainfall index insurance has been shown to result in farmers making larger investments that increase productivity, income, and resilience (Karlan et al. 2014). Insurance can also directly help to reduce risks and losses if structured to reward appropriate adaptation investments (Linnerooth-Bayer and Hochrainer-Stigler 2015). In this way, access to insurance has been shown to improve recovery from shocks as well as increase investment in livelihoods, resulting in higher incomes.[15] Unfortunately, however, insurance penetration remains very low across the developing world, particularly in poorer segments of the population. Moreover, insurance can create disincentives to invest in adaptation since there is less perceived need to avoid losses that will be compensated by the insurer.[16]

Financial inclusion is a cornerstone of the global climate adaptation response and an absolute necessity for a just transition.

Access to these services is necessary but not sufficient for adaptation to take place. When available, financial services are neutral enablers of any resilience and adaptation strategy people want to pursue. But to make good choices, people need access to information, training, ancillary services, and markets. Much depends on intervention by governments and their development partners in the form of weather projections, extension services, etc. FSPs serving the poorest communities can play an important facilitating and educational role, as some already do by advising their clients on a range of day-to-day choices, including health, small business management, and women's economic empowerment.

Adapting to climate change and building resilience to the devastating effects of a warming world is impossible without access to savings, lending, payments, and insurance solutions—and the necessary ancillary services—to help households and businesses prepare for, cope with, and recover from increasingly intense and unpredictable climate shocks and stresses. This is true across the economy but particularly salient for low-income communities that tend to be more exposed and vulnerable to climate change yet have the least ability to protect themselves from it.

As a result, financial inclusion must be a cornerstone of the global climate response and is an absolute necessity for a just transition. By empowering poor people to pursue their own resilience strategies, an inclusive financial system is a fundamental enabler of autonomous adaptation.

15 See, for instance, Tanner et al. 2015; Hallegatte et al. 2017.
16 See, for instance, Annan and Schlenker 2015.

SECTION 3

FINANCIAL SERVICES ARE NOT FULFILLING THEIR POTENTIAL IN THE CLIMATE AGENDA

GIVEN THE DEMONSTRATED IMPORTANCE OF FINANCIAL SERVICES IN enabling climate adaptation and resilience, a closer look at the extent to which inclusive finance is currently meeting the needs of poor and vulnerable people is somewhat concerning.

The most immediate reason is that significant financial access gaps remain despite the major progress made over the last decade. According to the World Bank's Global Findex Database 2021, the share of people worldwide with formal financial accounts increased by a full 50 percent between 2011 and 2021, with three in four adults now having access to such accounts. This is an outstanding achievement. But of the 1.4 billion adults that remain financially excluded, more than 80 percent live in the most climate vulnerable countries. In fact, 41 percent of adults in those countries do not have a financial account, compared to 11 percent in less climate vulnerable countries (UNSGSA 2023). These statistics underscore the importance of continuing to invest in the inclusive finance agenda in order to put formal financial services within reach for more people in those countries.

Moreover, even the financially *included* do not have access to products and solutions designed to help them manage and adapt to climate change. This is of importance since adaptation responses and resilience strategies vary considerably by context, not least by the climate impact in question. Long-term adaptation to water scarcity for a cassava farmer in Northern Nigeria, for example, is very different from the urgent coping response to a cyclone by an urban market trader in Dhaka. The strategies each pursues are likely to be very different and require very different things from the financial sector: one may need a three-year investment loan to build a solar powered irrigation system while the other needs flood insurance, facilitation of inward remittances from family, and short-term working capital to rebuild damaged inventories after the storm.

Similarly, strategies will vary with the choices different people make in response to the same risk: Nigerian cassava farmers who respond to water scarcity by switching to new seed varieties will need a different set of financial services from those who respond by migrating to urban areas in search of non-agricultural livelihoods. Each will also need a different combination of information, training, markets, and ancillary services outside of financial services.

These days there is no place to even go and borrow money. Nobody has money to give you.

–FEMALE RICE FARMER, KANO, NIGERIA

Finally, the impacts of climate change often play out in a series of knock-on effects across not only income and livelihoods but health, education, nutrition, etc. The most pressing need for some in response to a drought or flood may not be weather insurance but a health savings account, store credit at a local shop, or a loan that allows them to keep children in school.

While the inherent flexibility of many financial services is a key source of their usefulness, it cannot be blindly assumed that generic financial products and services will be perfectly suited for tackling the climate crisis. In fact, there are several good reasons to suspect they are not.

The first is that business cases are harder to make for financing investments in adaptation than for the typical productive lending that inclusive FSPs offer to expand a small business. Many adaptation investments do not yield an immediate return but take years before the climate shock or stress they were aimed at managing actually materializes. Significant investments may be worthwhile to clients when discounted over that time but be a poor match for the 12–18 month maturities that lenders serving poor people rarely go beyond. More generally, adaptation investments do not lend themselves to easy cost-benefit analysis since resilience is ultimately about a counterfactual—the absence or reduction of damage as a result of the investment—and returns are hence harder to assess.

Finally, investments in things like flood walls, reinforcement of homes, and heat reflecting paint may be critical for adaptation but do not generate new revenue that can be used to service debt repayments. As a general rule, inclusive finance providers have focused on loans to expand, or in some cases establish, business activities—shying away from consumption-oriented loans that do not generate new revenue.

Some financial services can also present new risks that need to be taken into account. In particular, borrowing is often a default coping mechanism for poor people in dealing with crisis and can be important for smoothing consumption in the short term. But it may come at a high price as indebtedness can leave borrowers worse off in the longer term. It is even more of a concern in the context of climate shocks that erode people's capital asset base and income streams. There are instances where debt repayment ended up undermining the long-term ability of borrowers to cope with and adapt to climate change—a risk that must be avoided (Guermond et al. 2022; Sandri, Beckmann, and Robinson 2021).

Conversely, there is ample evidence of climate resilience being strengthened as a result of loan-financed investments. In part, this may reflect differences in when and how borrowed funds are used. The current evidence shows that the same set of financial services can have a different impact on customers, depending on the context, but cannot fully explain why. Gaining a deeper understanding of these differences in order to design better products and policies is

an important agenda that takes on particular urgency in the climate change context.

I borrowed money, hoping that after harvesting we would pay back. But with what happened, I don't even know how to start paying back everything I borrowed. Truthfully, I don't know where to start.

–FEMALE CASSAVA FARMER, ENUGU, NIGERIA

The informal services many poor people rely on present their own risks and challenges in a climate context. Notably, savings groups are often ill-equipped for highly covariant shocks like extreme weather events, pests, or epidemics when many or all group members need to withdraw at the same time. Some groups force members to drop out if they cannot continue contributing or do not let members withdraw all of their savings without permanently leaving the group, which can present a significant cost and barrier to the effective use of savings in coping with shocks (Sandri, Beckmann, and Robinson 2021).

Similar dynamics can limit the availability of informal credit during and after a shock as potential lenders in the community face competing demands and may need excess liquidity for themselves. More prosaically, both cash and records in informal savings arrangements can be physically destroyed or washed away by extreme weather events. Hence, informal financial services may themselves have poor resilience to climate shocks, limiting their effectiveness in providing services to their members.

On a fundamental level, the inclusive finance community does not have a good understanding of which features and combinations of financial services help or hinder climate adaptation and resilience in poor and vulnerable communities. While compelling as a starting point, the current evidence base is still piecemeal and based on generic financial products and services. It does not substantially address the issues noted above nor explore how different financial services can complement one another to create a more powerful defense against climate risk for poor people. While a generic financial offering is surely helpful to an extent, the gravity of the risk faced by the world's poorest and most vulnerable communities means the effectiveness of financial services needs to be maximized in protecting their lives, livelihoods, and wellbeing. This is particularly true for women, for whom male-biased "generic" solutions are often a poor fit to begin with (see Chapter 4).

It is therefore concerning that the CGAP scan of the global landscape of climate-responsive financial products and services revealed a pool heavily dominated by a single product type: agricultural index insurance (Notta 2023). As important as such insurance products

TERMINOLOGY

BOX 3. **Green finance**

There is no universally accepted definition of green finance. Definitions by major organizations in the climate and development space tend to center on investments or other structured financial activities aimed at promoting sustainable development and better environmental outcomes.

Some organizations approach the definition in a top-down, conceptual approach based on a set of core principles while others approach it via a bottom-up, practical approach based on classifying or labeling activities in different ways.

The absence of a shared definition means considerable uncertainty about what different organizations mean when they use the term, which is a concern.

are, they do not by themselves come close to addressing the full range of needs of low-income communities pursuing climate adaptation and resilience. Most obviously, agricultural insurance does not help rural households in nonagricultural livelihoods. It also does nothing to protect the millions of poor urban households across the world that face different risks and implications from climate change and require other types of solutions, such as the pioneering heat index insurance SEWA is currently piloting for informal female workers in India (Dickie, Jessop, and Patel 2023).

Moreover, agricultural index insurance is largely ineffective against slow-onset climate impacts like desertification, soil salinity, and changing crop viability as temperatures rise. These trends could make agricultural insurance increasingly difficult to offer, as tried-and-tested livelihoods are replaced with experimental crops and techniques in response to changing conditions. More fundamentally, not everything is an insurance problem. Poor people need help to avoid and manage climate risk, not just transfer it. In fact, there is evidence to suggest that insurance can be an obstacle to climate adaptation by enabling people to remain exposed to climate risk for longer without taking adaptive action.[17]

The dominance of insurance in CGAP's scan of climate-responsive products is also noteworthy, given the well-known difficulties in gaining widespread insurance uptake in developing countries overall and low-income communities in particular. Even as mobile and digital channels have revolutionized access to formal financial accounts, savings, and lending products, insurance penetration remains excruciatingly low across the developing world: estimated microinsurance coverage ranges from 6 to 14 percent as a share of the population (Merry and Calderon 2023). Despite a decade of intensive fintech startup activity, very few poor people have insurance cover for any significant risk—let alone climate risk. This raises further questions about whether customers are getting the financial services they need in order to manage climate risk and adapt to changing weather conditions.

The most common climate actions providers take are to reduce their carbon footprints, analyze their own climate risk, and develop lending to the green economy – none of which bolsters resilience and adaptation for their clients.

From its initial exploration of these issues, CGAP concludes that considerably more research and innovation is necessary to better understand the climate adaptation needs of customers and offer solutions that better meet those needs. The answers need not be completely novel or overly complicated. For example, a solution could be as simple as ensuring that part of an insurance payout is made before a climate disaster strikes rather than after, which, even in modest amounts, has been shown to improve outcomes long after the shock has passed.[18] Another could be the routine bundling of climate risk insurance with loans above a certain size to clients in climate-exposed geographies or value chains, as certain providers are starting to do in order to reduce the risk of climate-induced over-indebtedness. Similar in some ways to credit life insurance, bundling may well become a standard feature of the inclusive finance toolkit as it avoids considerable hardship for borrowers and financial risk for lenders.

17 See, for instance, Annan and Schlenker 2015; Wang, Rejesus, and Aglasan 2021.
18 See, for example, Pople et al. 2021.

In interviews with 100+ FSPs, however, CGAP discovered fairly little concrete effort to make products more responsive to the climate adaptation needs of clients. While financial institutions are increasingly aware of climate change, they typically see it as one priority among many and are often unsure what they could or should do about it.

FSPs have so far tended to take three climate actions, none of which necessarily bolsters client resilience and adaptation. The first is reducing their carbon footprint in response to net zero objectives. The second is analyzing and managing their own climate risk, which is quickly becoming necessary for internal risk management as well as reporting and disclosure to investors and financial regulators. The third is exploring the opportunity to develop lending in sectors associated with the transition to a greener economy, such as renewable energy, electric transportation, and recycling.

Among the commercial banks CGAP spoke with, one third considered climate change a low priority. Most others thought of climate efforts largely in terms of greening bank operations through the use of solar panels in branches and ATMs, as well as new opportunities for lending to clean energy and similar mitigation efforts. The sense of urgency was higher among MFIs, which are increasingly aware of the impact of climate change on the lives of their clients. Yet many MFIs face pressing issues of core profitability exacerbated by external shocks like the COVID-19 pandemic, global supply chain disruptions, and rising inflation and struggle to put climate change at the top of their list of priorities.

Most of those interviewed noted that even if they were to make climate change a top priority, they would not be sure how to go about pursuing it. Many point to a lack of data and skills on climate change, noting that they have no climate experts on staff and would not know where to find them if they wanted to hire them. This ties in with underlying concerns with cost: most inclusive FSPs already operate on thin margins, which is part of the reason they offer a standard set of generic products and services.

The most common reason cited, however, was a perceived lack of customer demand. Providers say that since customers are not explicitly asking for products to manage climate risk, they do not know whether and how to respond. The striking dissonance between that perception and the reality of how climate change is impacting low-income clients points to a fundamental challenge the financial inclusion community needs to overcome in the years ahead: learning how to talk to vulnerable communities about climate change and develop solutions together. This is an essential part of any adaptation response but can be quite challenging when working with communities that may have a very different understanding of underlying climatological trends and what the future likely holds.

CGAP's research with low-income populations on the topic illustrates the challenge well.[19] Respondents across multiple geographies in Nigeria all spoke at length about how unpredictable weather patterns and extreme events were impacting their lives and livelihoods but were broadly unfamiliar with the term "climate change" and the idea of an inexorably warming world. Few connected the second- and third-order effects of climate change to the weather patterns they experienced firsthand. Many saw recent shocks and stresses as swings on a climatic pendulum, bound to eventually revert. One of the most common resilience

19 Mixed methods research with around 300 respondents in Nigeria and Bangladesh, ongoing as of July 2023.

strategies cited was some version of "patience" or "trust in God," based on the notion that if they could just muddle through the difficult period things would pick back up.

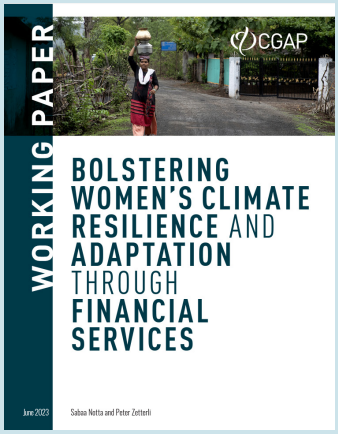
When asked about which financial services would help them manage climate risk better, they typically responded by naming the same solutions they already used. For example, despite insurance in principle being an important instrument for climate risk management, no interviewees suggested that insurance products could be helpful to them. This is likely due to the fact that no one had any experience with insurance in the past. Previous CGAP research with smallholder farmers across six African and Asian countries showed similar findings.[20] More than two thirds of smallholders surveyed said that weather had caused serious disruptions in their agricultural activities, but 80 percent had no plan to manage unexpected expenses arising from these shocks.

These responses convey the difficulty of exploring which financial solutions can better meet the climate adaptation needs of clients who have a limited understanding of climate change and a narrow range of experiences with the financial system. It is perhaps not surprising that FSPs do not perceive client demand for more climate-responsive offerings if clients have a limited understanding of what is coming or how financial institutions can help. Yet the need for better solutions is already apparent and destined to grow steadily as the effects of a changing climate intensify.

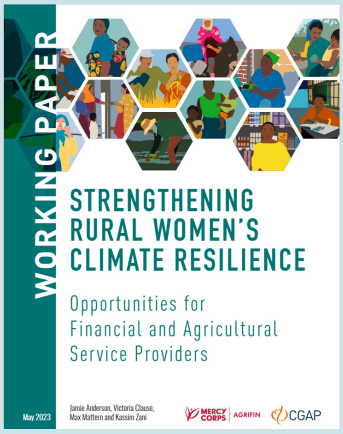
The global development community therefore faces an increasingly pressing need to help drive research, innovation, and scale of more climate-responsive financial products and services specifically, even as it continues the important work of expanding financial inclusion writ large. It is unclear whether a climate-responsive financial offering will look very different from existing ones because no one has extensively explored that question. What we do know is that business as usual will not suffice, since it has so far failed to reach vulnerable people with the services they need to manage climate risk—not least insurance—and there are good reasons to think building financial solutions for climate adaptation is a more challenging problem to tackle. Given what is at stake for billions of vulnerable people around the world, it is therefore well worth making a dedicated effort to improve the effectiveness of financial services in bolstering climate resilience.

20 CGAP research in Bangladesh, Côte d'Ivoire, Mozambique, Nigeria, Tanzania, and Uganda (CGAP 2018).

To learn more about the disproportionate effects of climate change on women and girls and the opportunities to bolster their resilience through financial services, read these CGAP Working Papers at CGAP.org/climate.



Bolstering Women's Climate Resilience and Adaptation through Financial Services illustrates how women are differently impacted by climate change and how financial services can play a better role in strengthening their autonomous adaptive capacities to climate change.



Strengthening Rural Women's Climate Resilience provides an overview of 10 opportunities for service providers, investors, and donors to improve rural women's climate resilience and share examples of innovative business solutions.

It is essential that this research and innovation go hand in hand with an effort to help their clients to understand and discuss the changing climate and what it means for their lives and livelihoods. Incorporating climate change into the educational efforts already undertaken by many socially oriented FSPs will engage vulnerable people in a much more productive discussion about adaptation responses and the financial services that support them. In order to do this effectively, the financial institutions in turn will need funding, technical assistance, and capacity development from their investors. Meanwhile, development funders, think tanks, and academics should expend greater effort developing robust, low-cost methodologies to understand climate adaptation and resilience building in ways that are easily replicable and comparable. Such efforts would foster faster and better collective learning on these increasingly urgent topics.

SECTION 4

THE **NEEDS** OF **WOMEN DEMAND SPECIAL ATTENTION**

CGAP'S INITIAL RESEARCH ON THE INTERSECTION BETWEEN financial inclusion and climate resilience underscores the importance of examining these topics through a gender lens. With some variations in cultural and socioeconomic context, women[21] and girls tend to be disproportionately affected by climate change and its effects for several distinct reasons.[22]

The first reason is how, in many contexts, women have *higher exposure* to climate change. A major contributing factor is that they are more likely than men to depend on agriculture. In fact, a full 79 percent of economically active women across low-income countries engage in agriculture as their primary economic activity (Quisumbing et al. 2014). Yet agricultural livelihoods are also among the most climate-exposed sectors as they are impacted by rapid-onset shocks like flooding, storms, and unpredictable rainfall, as well as slow-onset climate stresses like water scarcity, desertification, and changing crop viability due to rising average temperatures.

Second, women often experience *greater vulnerability* to many of the implications of climate change. Due to gendered social norms,[23] women typically experience unequal access to knowledge, tools, assets, and financial capital. As a result, they have lower average productivity than men and less ability to adapt to new climate realities (Katz 2020). They are more likely to suffer domestic violence in the context of elevated stress in the household and more likely to bear the brunt of negative coping mechanisms. For example, women and girls often eat last when food is in short supply, are the ones walking longer distances to get water, and are the first taken out of school when education costs need to be cut.

Third, women tend to have access to fewer resilience tools and strategies to manage climate risk, including financial services. The most recent World Bank Global Findex survey found that

21 It is well noted that the terms "women," "men," "girls," "boys", "female," and "male" do not denote homogenous groups but contain considerable variation. This paper takes that into account when making statements that refer to these groups.

22 See, for instance, Garner and Compos 2017; Hallegatte et al. 2017.

23 Informal rules and norms that exist in societies, or "social norms," influence the access, usage, and benefits of financial services. Gendered social norms are a subset of social norms and are defined as the collectively held expectations and perceived rules for how individuals should behave based on their gender identity (Burjorjee, El-Zoghbi, and Meyers 2017).

FIGURE 4. **Key dimensions of gender inequity in climate change adaptation and resilience**

Source: Notta and Zetterli 2023.

while the gender gap was shrinking, it is still evident. Across developing countries, 68 percent of women have formal financial accounts compared to 74 percent of men. In many countries the gap is much larger. Similar gaps exist for the use of savings and credit products, with some regional variation. Women also find it more difficult to access money in an emergency, with 10 percent saying they could reliably come up with emergency money within 30 days compared to 14 percent of men (Klapper, Singer, and Ansar 2021). In agriculture, women are less likely to have formal identification documents, land titles, and other documentation typically required to obtain loans and insurance products. Beyond financial services, social norms and domestic responsibilities often limit women's options in life, including for livelihoods change, migration, and other adaptive responses. Sociocultural norms may also prevent women from learning crucial skills like swimming, which can put them at greater risk in crisis situations.

Hence, women are often more exposed and vulnerable to climate risk and also more excluded from the tools needed to manage it. CGAP's research over the past year underscored how these inequities compound each other in ways that aggravate climate risk for women. As a result, women are more likely to suffer harm from climate change, both directly and indirectly. For instance, women experience higher rates of climate change-driven mental health issues like depression and post-traumatic stress, in part due to household responsibilities in caring for vulnerable family members (Rothschild and Haase 2022). Women are also more likely to be financially excluded as FSPs start withdrawing from climate risky segments (as outlined in Chapter 5).

It is therefore notable that CGAP's scan of the climate-responsive product landscape found almost no such products designed and marketed specifically with women in mind. Only one in five products explicitly identified women as a target segment, and just a single product was specifically designed for female users.

Many FSPs will not address this gap on their own. Interviews with 100+ providers revealed that gender tends not to be a primary consideration in their thinking on climate change. A mere fifth of providers that have developed a strategy for climate change said their strategy makes a distinction between male and female clients. Only a slightly larger proportion of providers indicated that they see climate change as having a differential impact on men and women.

Although innovative financial institutions are making strides in designing products that are relevant for women (Anderson et al. 2023), plenty of effort is still needed to better incorporate women's needs and preferences into their offerings. The complexities of climate change now add to this challenge.

SECTION 5

CLIMATE CHANGE IS UNDERMINING PROGRESS ON FINANCIAL INCLUSION

CRUCIALLY, THE LINK BETWEEN CLIMATE CHANGE AND FINANCIAL inclusion also runs in the other direction. Inclusive finance is inherently about serving people with small and volatile incomes who are challenging, expensive, and fundamentally risky to serve. The inclusion agenda pursued for decades by CGAP's members and other stakeholders has aimed at pushing the boundaries of formal finance ever further down the income spectrum by demonstrating that poor clients can be profitable, and by driving innovation to cut costs, enhance revenues, and bolster the commercial viability of marginal clients.

As the effects of climate change grow steadily greater and more unpredictable, these clients become riskier still. Climate shocks and stresses are damaging homes, land, cattle, and other assets used for collateral, which low-income clients typically need to secure financing even from inclusive lenders. Extreme and unpredictable weather is disrupting production and weakening income streams that can be used to repay loans and pay for other financial services. Slow but inexorable changes in average temperatures, water tables, pest and disease patterns, etc. are undermining traditional livelihoods and changing the economic structures people have relied on for generations.

Climate change presents a clear and present danger for re-excluding poor people across the developing world from financial services.

As climate risk grows and becomes more tightly managed by financial institutions, it therefore becomes harder for them to serve certain clients. The seemingly inevitable result is providers starting to pull back from value chains and geographical areas that are particularly exposed and vulnerable to climate change. This will not require policy decisions; it is the direct implication of prudent risk management processes that are central to the sustainable provision of financial services. But it is likely that policy decisions will follow that simplify and

operationalize climate risk management in loan portfolios by designating some areas and value chains out of bounds.

> ***How can we continue operating unless we can insure ourselves against the risk of this happening again? And there just aren't any insurance products we can buy to do that.***
>
> –MICROFINANCE CEO, PAKISTAN

CGAP's interviews with providers provide evidence that this is already happening. For instance, the chief commercial officer of an MFI in Nigeria stated that as flooding becomes a more regular problem and exposed clients struggle to repay, the MFI no longer lends to clients in certain parts of the country: "We don't want to expose our funds to people living in those areas. So we advise them to move to a safer area in order to get a loan."[24] Among all the inclusive finance providers interviewed, there was broad agreement that this dynamic will be difficult to avoid as climate change intensifies, although its precise nature and timing will vary across geographic and economic contexts.

This should not come as a surprise since the same effect is on prominent display in wealthier countries. Two of the largest insurance companies in the United States recently stopped selling home insurance in the entire state of California, citing the rising cost of wildfires driven by climate change (Freedman and Bomey 2023). Meanwhile, four insurers have left the hurricane-prone state of Florida just this year (Bogage 2023). Similar decisions are taking place for different climate risks across the country. If a fundamental financial product like home insurance is being pulled from the market in two of the largest and wealthiest states in the United States, it takes little imagination to see the danger for financial retrenchment facing poor people across the developing world.

Climate change also threatens our progress on financial inclusion in another way. CGAP's interviews revealed that some FSPs are themselves struggling to manage climate risk. One aspect is operational, where extreme weather events can be very disruptive for financial institutions, preventing staff from getting to work and loan officers from meeting clients, forcing branch closures, taking down digital channels due to outages in power grids and telecommunications infrastructure, disrupting and displacing agent networks, etc. This leaves clients unable to access their savings, loans, or insurance payouts when they need them the most. It creates costs for providers and starts to erode margins that were typically already thin. Financial institutions may also struggle to secure sufficient liquidity to satisfy simultaneous withdrawal demands from large numbers of clients, potentially triggering a run on accounts like the one that occurred during the 1998 floods in Bangladesh (Linnerooth-Bayer and Hochrainer-Stigler 2015). Liquidity shortages can similarly limit institutional ability to offer catastrophe loans in the aftermath of a crisis.

Arguably, however, the more important aspect is financial: when large portions of a client base are simultaneously impacted by a climate shock, that translates into reduced portfolio quality, increased write-offs, and, ultimately, compromised balance sheets. Lenders in areas affected

24 For clients living outside the most flood-prone areas, the MFI was working with insurance companies to bundle climate risk cover with loans—a promising example of how to iterate on the product offering as discussed earlier.

by natural disasters may have substantial portions of their portfolios wiped out overnight and could even see their viability jeopardized if an event is significant enough. Replenishing the balance sheet after such an event requires investors to bear their share of the burden, which they may not always be inclined to do. The COVID-19 pandemic offered both positive and negative examples of the willingness and ability of the funder community to support their investees through a major external shock. It also showed the critical importance of debt moratoria and other forms of leniency for both clients and financial institutions—and the difficulty of creating consistent and predictable structures in that area.

Unless FSPs can adequately manage both the operational and financial risk of operating in environments exposed and vulnerable to climate change, it is likely to precipitate new strategic decisions about where they can operate. Banks and MFIs may be obliged to retreat from local areas or entire countries that repeatedly suffer major climate events unless they are able to learn how to manage and cover such risk to their operations, assets, and balance sheets. Over time, the end result could be the wholesale withdrawal of inclusive FSPs from parts of the world where the risk is deemed too great for the companies and their investors.

Such reflections have begun to take place. As the CEO of a microfinance provider in Pakistan remarked after the floods in 2022 wiped out a sizable portion of its balance sheet, "Even if our investors are willing to recapitalize us, which is far from given, how can we continue operating unless we can insure ourselves against the risk of this happening again? And there just aren't any insurance products we can buy to do that."

The entirety of the previous discussion underscores the importance of investors, development funders, and other inclusive finance stakeholders in helping to develop new ways for FSPs to manage their own climate risk exposure—if they are to continue operating in parts of the world that are heavily impacted by climate change. Climate change will force both FSPs and their investors to make crisis response a standard part of their operational toolkits, with greater predictability for everyone involved, including clients. Much of the risk would ideally be transferred to international insurance and reinsurance markets, but such solutions tend to be unavailable or unaffordable to FSPs serving low-income communities so far.

Developing climate risk insurance that inclusive providers can afford should therefore be a priority for development funders, for the sake of end customers as well as for their own balance sheets. However, it will require socially oriented investors, including development finance institutions, to shoulder some of the risk and agree on more predictable processes for recapitalizing balance sheets after significant climate events. In many ways, investor response to the COVID-19 pandemic presents a model for what is needed and what needs to be done better.

SECTION 6

REGULATORY RESPONSE TO CLIMATE RISK CAN CREATE EITHER VICIOUS OR VIRTUOUS CYCLES

FINANCIAL AUTHORITIES[25] HAVE BEGUN TO PAY INCREASING attention to the potential risks climate change may pose to the financial system. A growing list of supervisory practices and standards is being assembled by global standard-setting bodies like the BCBS[26] and implemented by national financial authorities.

CGAP's interviews with financial authorities in 14 countries revealed that many are developing new rules and strategies for climate change and the greening of the financial system. While this effort is absolutely necessary, it poses its own risks for financial inclusion through unintended knock-on effects. These interviews as well as CGAP's extensive desk review of climate-related guidance from standard setting bodies makes it clear that such risks are often not considered.

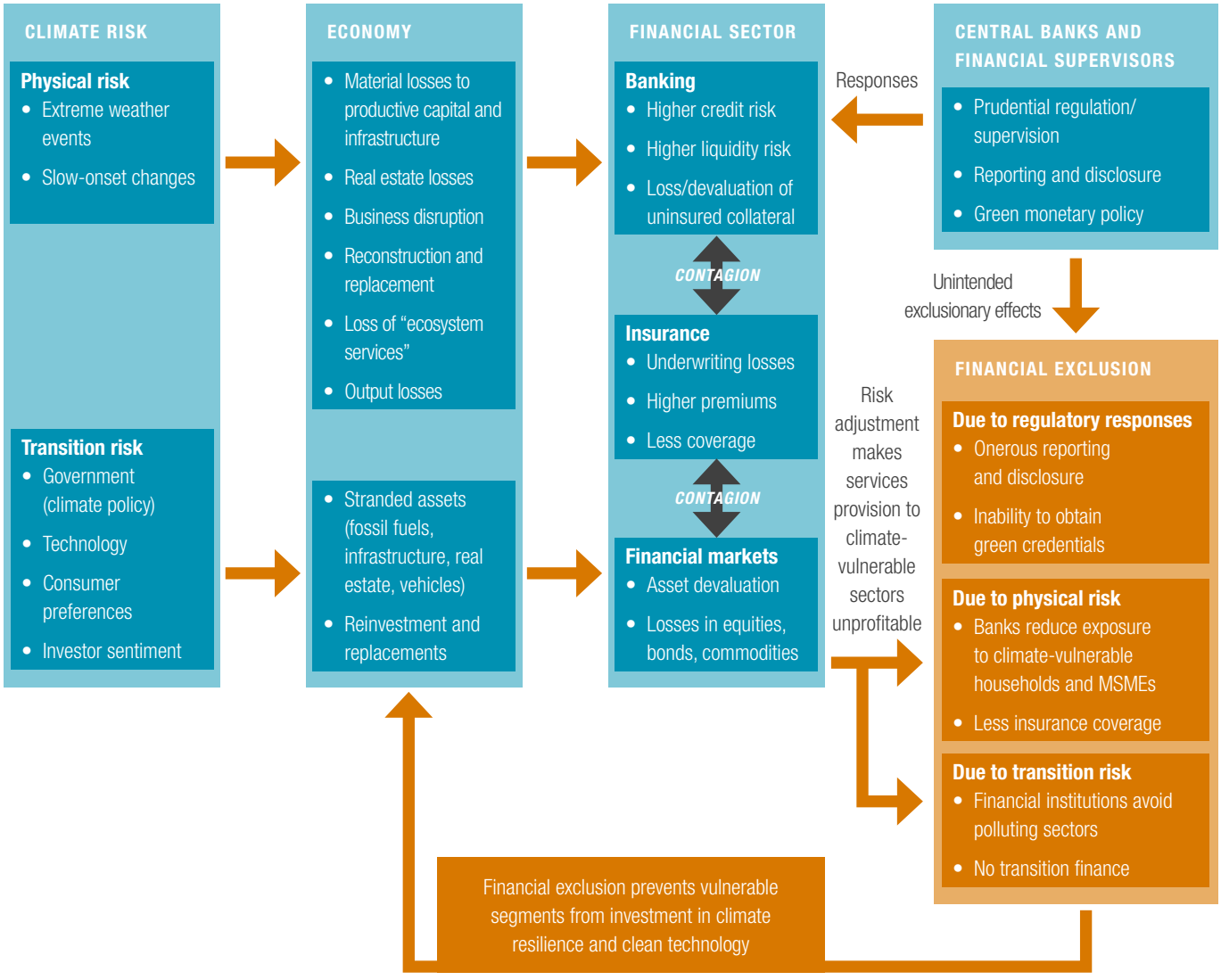
Climate change and environmental degradation can affect financial inclusion through three distinct channels (see Figure 5). First, as Chapter 5 outlined, physical risk may drive the financial sector away from the most climate-exposed sectors of the economy. The material effects of climate shocks and stresses on the real economy are transmitted to the financial system as financial institutions reduce their exposure (i.e., financing) to climate vulnerable borrowers. Since poor households and micro, small, and medium enterprises (MSMEs) tend to be low-margin customers and are more exposed to climate impacts, they will likely be the first affected by this shift, exacerbating financial exclusion. Empirical evidence across more than 70 countries shows financial institutions starting to "price in" climate risk in ways that reduce access to finance for small firms vulnerable to the effects of climate change (Kling et al. 2021).

25 For the sake of brevity, the broad term "financial authorities" refers to the combination of policy makers, regulators, and supervisors charged with ensuring financial system stability.
26 See, for instance, BIS 2022.

Second, transition risk may have similar effects for different reasons. Changes in environmental policies, consumer preferences, and investor sentiment reverberate throughout the real economy. The fast pace of innovation in green technology means some business investments in older technology will not pay off, leading to stranded assets. Faced with heightened credit, liquidity, and market risk that derives from such transition risk as well as the reputational and liability risk of supporting high polluting sectors of the economy, financial institutions have an incentive to reduce their exposure to these sectors.

The turn away from polluting sectors is crucial, but it must be remembered that poor people face greater difficulties in pursuing the shift to low-carbon and environmentally sustainable technologies. Tax breaks, subsidies, and other financial incentives to use specific technologies can put those using older technologies or those without access to those tools at an additional financial disadvantage. Without appropriate policy measures in place, it could worsen inequality and drive an unjust transition to a low-carbon economy.

FIGURE 5. **The nexus between climate risk and financial exclusion**



Sources: NGFS 2019; BIS 2021; Knaack and Zetterli 2023.

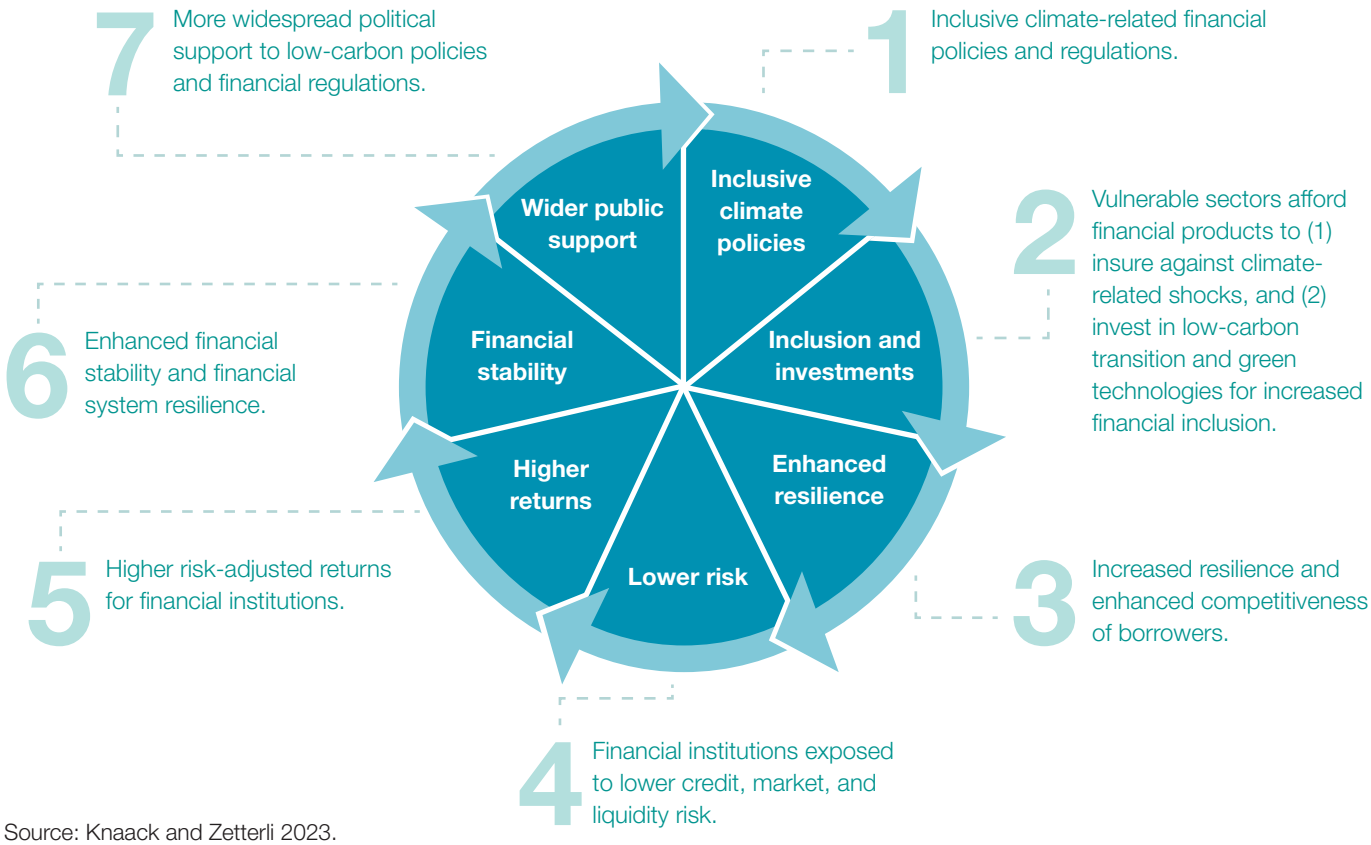
Third, while new reporting and disclosure requirements are important for seeing and acting on climate risk exposure, they also introduce new transaction costs into the financial system. If such measures are indiscriminately applied, transaction costs will further erode the already meager business case for serving low-income clients.

The risk financial authorities run by not considering potentially exclusionary effects in their efforts to manage climate risk is that they contribute to a vicious cycle of spiraling vulnerability. If financial institutions withdraw from certain clients to reduce climate exposure, those clients are left more vulnerable to that climate risk, which in turn threatens to exacerbate the climate vulnerability of the real economy and has negative repercussions for financial stability (see Figure 5). Even financial authorities exclusively concerned with financial stability have reason to pay attention to these linkages.

On the other hand, inclusive climate regulation and policy can drive a virtuous cycle of growing resilience (see Figure 6). If economic actors at the margins of the financial system can access the services necessary to insure themselves against shocks, invest in green technology, and adapt to climate change and environmental degradation, they will increase their resilience. A more resilient real economy in turn reduces the risks the financial sector faces and enhances financial stability.

While regulatory action is needed to mitigate the climate and nature risk financial institutions face, it is therefore also important that this action be carefully designed to minimize unintended exclusionary effects for the sake of stability *and* inclusion. However, hardly any of the financial authorities interviewed considered these potential effects as they developed their own

FIGURE 6. **The virtuous cycle of green resilience and supporting policies**



Source: Knaack and Zetterli 2023.

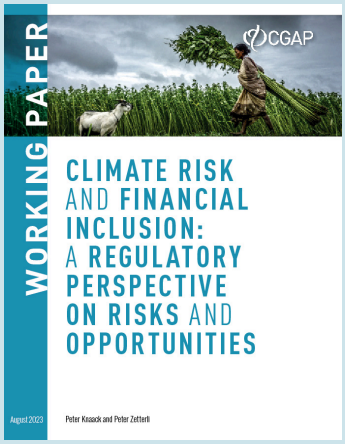
responses to climate change. Few indeed had reflected on the negative implications climate change could more broadly have on financial inclusion objectives.

The considerable momentum and sense of urgency that surrounds the idea of protecting the financial system from climate risk raises the stakes of omitting this perspective from regulatory responses. The closest historical precedent may be the anti-money laundering/combatting the financing of terrorism (AML/CFT) measures taken after the September 11 attacks on the United States in 2001. Under considerable pressure to act, standard setters and national regulators established new rules and mechanisms to limit illicit financial flows. Unfortunately, some of those rules also created significant new barriers to financial inclusion by establishing customer due diligence standards that hundreds of millions of poor people in low-income countries were unable to meet. They also created second order effects that became just as complicated, including a movement by major banks to "de-risk" operations by exiting entire markets as a way to wholesale avoid their risk of triggering AML/CFT concerns rather than managing risk through appropriate and proportionate rules and processes. It took years of sustained advocacy by CGAP and other inclusive finance champions to introduce proportionality into these rules, for example, the Financial Action Task Force endorsing risk-based customer due diligence in its recommendations in 2012 (CGAP 2023b). This change then took several more years to translate into national regulation and supervisory practice. Ultimately, it was recognized that the financial exclusion resulting from the original rules in fact compromised the ability of countries to track money laundering and terrorist financing by relegating vast numbers of people and transactions to the untraceable world of cash (Lyman and Noor 2014). In the end, the decision to adopt risk-based approaches allowed central banks across the developing world to permit mobile money operators and other nonbanks to offer financial services to low-income customers, spawning over 1.3 billion accounts and ushering in a new era of financial inclusion.

The current moment bears some similarities to the post-9/11 time period, although the differences are clear. Just like then, there is today powerful global momentum driven by a strong sense of urgency among financial authorities. Similarly, the discourse is largely shaped by voices focused on "hardcore" regulatory issues, in this case financial stability (back then, integrity), whereas "soft" concerns like financial inclusion are seen as marginal—if they are considered at all. And just like then, unintentionally or willfully ignoring such concerns could likely harm not only financial inclusion but the core objectives of the effort.

In response, financial policy makers can develop climate responses that are both green and inclusive across three broad areas. These should not be considered conclusive but rather a starting point for deliberations on what an inclusive policy response to climate change should look like. Some interventions come with their own cost and risk considerations, including competition for limited fiscal resources.

To learn more about the potential for policy and regulatory responses to climate change for creating both vicious and virtuous cycles, read this CGAP Working Paper at CGAP.org/climate.



Climate Risk and Financial Inclusion: A Regulatory Perspective on Risks and Opportunities outlines how inclusive green finance policies can help reduce regulatory risks, creating a more stable and resilient real economy.

The first area is to adapt existing risk mitigation instruments for green purposes or to design new ones. Providing MSMEs and the agricultural sector with financial services has always entailed significant risk. Financial authorities have devised a range of instruments to cover some of that risk, incentivizing financial institutions to offer services to these sectors. Such instruments can be redesigned to address climate-related and environmental risk. Loan guarantee schemes, for example, can prioritize climate-vulnerable businesses and projects (Calice 2021). Promoting development of climate insurance beyond agriculture should be an integral part of a broader insurance market development framework.

The second area is to make green finance more widely available and affordable. Monetary policy authorities can develop targeted refinancing operations at low interest rates that reward banks for lending to vulnerable sectors. Making transition funds available for MSMEs in polluting sectors can help address both transition risk and financial exclusion. DFIs can provide green financing lines in a similar manner, as well as fund capacity building for financial institutions to expand their lending in climate-exposed sectors (Shishlov et al. 2017).

The third area is to reduce transaction costs of climate and environmental regulation, including client information costs. Obtaining information on clients' exposure to physical and transition risk from climate change is essential to safeguarding the financial system—but it is costly. Financial institutions differ significantly in their capability to obtain and make use of information about their clients and to absorb the cost of such efforts. Financial sector authorities can help smaller institutions with less sophisticated information management capabilities by simplifying risk management and reporting requirements, making them proportional to loan size,[27] or offering capacity building measures. Financial authorities can also consider building a green finance database, accessible to all financial institutions, where low-income clients can obtain their green credentials at no or low cost.

27 Bangladesh Bank, for example, only requires extensive economic and social risk management for loans above a certain de minimis threshold. See Bangladesh Bank 2017.

SECTION 7

SOCIAL PROTECTION WILL BE INSTRUMENTAL BUT MUST BE FIT FOR PURPOSE

WHILE THE EFFORT TO MOBILIZE PRIVATE CAPITAL AND EXTEND the reach of financial services in managing climate risk is crucial, it is important to recognize that millions of people will remain too poor to afford commercial solutions. As previously discussed, the most severe effects of climate change disproportionately fall upon the poorest and most vulnerable individuals, who already live with low and fragile incomes, frequent food insecurity, weak personal safety nets, etc. These households have the least ability to prepare for shocks and are the most likely to adopt negative coping strategies that erode longer term well-being by eating less, selling productive assets, and taking children—often girls—out of school.

Social protection systems offer an existing mechanism to reach those most vulnerable and will more broadly have a critical role to play in resilience building and adaptation finance. These systems already serve to protect vulnerable communities from various forms of hardship. In fact, 2.5 billion people are covered by such systems today, including 650 million in the poorest quintile globally. Even without an explicit climate objective, well designed and implemented social safety net systems support climate change adaptation to some extent. By reducing poverty, they inherently make people more resilient and able to invest in risk preparedness, including to climate shocks, and reduce the need for negative coping strategies. As the COVID-19 pandemic demonstrated, social protection systems can also be adapted to quickly deliver assistance in response to new shocks, improving welfare outcomes.[28]

At the macro level, these systems also provide a readily available conduit that can channel adaptation finance at scale. Because they aggregate poor and vulnerable individuals, social protection systems may make targeting and delivery of climate adaptation interventions easier and cheaper. With global financing for adaptation needing a substantial increase (as outlined in Chapter 1), this readiness is likely to grow increasingly attractive for development funders. From a

28 See, for instance, Cho et al. 2021.

financial perspective, there may be efficiency gains in allowing some adaptation finance flows to "ride the rails" that social protection systems have already laid down. Taking advantage of these systems can therefore be seen as quick wins in global and national climate efforts targeting poor people.

Integrating climate adaptation into social protection systems, including cash transfers and public works programs, is highly feasible and increases resilience to climate change.

–IPCC 2022B

In addition to financial aspects, social protection systems can play a role in helping recipients by sharing information about their exposure and vulnerability to various climate risks as well as sending early warning signals when a shock is about to occur. Some systems already estimate beneficiary climate exposure although they do not always share that information with the beneficiaries themselves.

These reasons summarize why social protection systems are likely to play an important role in climate adaptation and could prove essential to the wellbeing of millions of vulnerable people across the world. An increasingly active effort to develop adaptive social protection is already underway and examples exist of national and regional systems starting to successfully adapt to incorporate climate risk.

Yet a note of caution is warranted. Systems must be appropriately designed and resourced to bolster their chances of delivering on climate objectives, which may involve significant differences in scope, targeting, approach, and instrumentation than their initial set-ups contained. Not all countries have sufficiently developed social protection systems and payments architectures additionally capable of shouldering climate adaptation mandates. Systems that are given an expanded mandate without corresponding tools and resources could struggle to deliver both new and original mandates.

Digital delivery mechanisms offer important advantages and CGAP has extensively written about them (World Bank 2022). However, these mechanisms require widespread access to the "digital trinity" of formal ID, accounts, and mobile phones, as well as a low-cost national payments infrastructure. Countries with low digital trinity scores are likely to face challenges in the digital delivery of social safety net payments. It may, therefore, be in the interest of the climate adaptation agenda to make additional efforts to build out these enablers of broad-based digital access to services.

Another central question is one of scope. CGAP's review of the state of adaptive social protection suggests that most efforts to date have taken a relatively narrow scope, focused primarily on disaster response. Several systems have begun to make additional payments to beneficiaries impacted by climate shocks and other natural calamities, which is of critical importance. However, to effectively bolster climate change adaptation, these systems must be leveraged to also build the long-term adaptive capacity of recipients. As important as it is to offer relief payments to compensate for lost assets and income, helping to minimize losses ahead of time must be a central aspect of any strategy for building climate resilience in vulnerable communities. It must notably include fostering adaptation to slow-onset climate stresses that may enormously impact livelihoods, settlement, and migration patterns.

Social protection systems need to evolve to deliver on their significant promise to support climate adaptation and resilience in the world's poorest and most vulnerable communities. In addition to building system capacity to quickly deliver payments in the wake of a climate shock, these systems must be leveraged to build resilience before shocks hit and support longer term adaptation, including to slow-onset climate stresses. This can be supported with stronger linkages to inclusive finance to deploy, for instance, long-term savings or microinsurance products and services in conjunction with social safety net payments.

The effort may include helping recipients understand their current and future climate risk exposure as well as their options for managing and adapting to it. In some contexts this likely involves changing and diversifying livelihoods away from vulnerable sectors. It could involve helping those who wish to relocate to less vulnerable areas to do so, which some social protection systems today unintentionally hinder. It should include efforts to help recipients build more resilient assets, perhaps including community asset building projects such as those adopted by public works programs. Economic inclusion approaches such as the graduation programming pioneered by BRAC in Bangladesh could prove instrumental (Hashemi and Montesquiou 2011). Ultimately, investment in these skills and capabilities will support intergenerational adaptation to climate change.

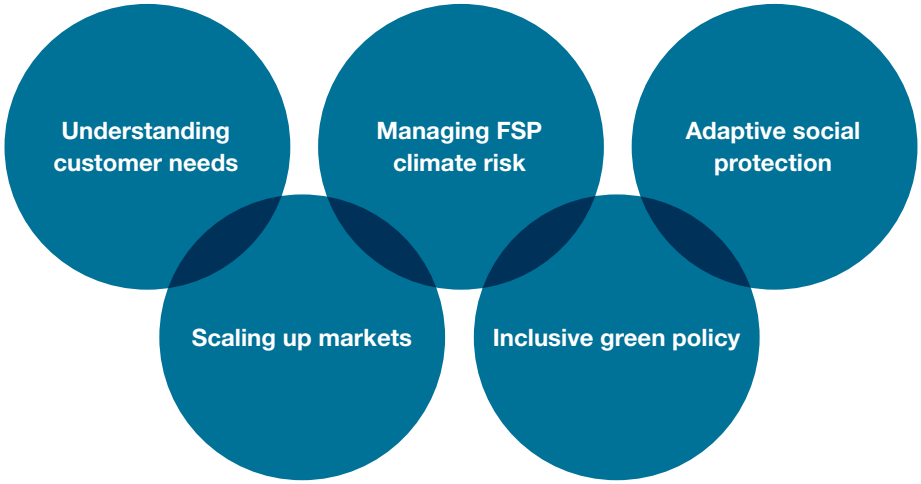
While some efforts will require new research, considerable knowledge exists on many individual pieces needed for this evolution of social protection. However, it is spread across various disciplines that do not always interact and may use different frameworks, approaches, and language. Implementing this bold vision for social protection requires stakeholders to work together on social protection, disaster risk management, climate change, and financial inclusion. It requires effective collaboration, bringing together knowledge, and charting a new dimension to the future of adaptive social protection systems.

SECTION 8

PUBLIC FINANCE HAS AN ESSENTIAL ROLE TO PLAY

AS THIS FOCUS NOTE ILLUSTRATES, PUBLIC AND PHILANTHROPIC capital has a critical role to play in addressing both the risks and opportunities for financial inclusion as it relates to climate change. CGAP's initial findings point to multiple areas where governments, development funders, and social impact investors can and should work to enhance the role of commercially available financial services in climate adaptation and resilience, as well as directly support poor and vulnerable individuals. Potentially pivotal interventions from funders fall into at least five distinct areas.

FIGURE 7. **Five key categories of funder interventions**



The first priority area is financing more and better research on what poor people, particularly women, actually need from the financial system to effectively pursue climate resilience and adaptation. Gaining a more granular understanding of which features and combinations of financial products and services are most effective for different climate risks, resilience strategies, and customer segments will be important. Finding, sharing, and synthesizing this type of research can lay the foundation for the development of better solutions.

The second area of intervention is catalyzing, facilitating, and scaling up markets for necessary products and services. It involves developing and testing new products and services, de-risking learning and experimentation, investing in FSP capacity, creating enabling environments and market infrastructure, and scaling solutions by crowding in private capital. In some cases it likely requires various forms of subsidy to extend the reach of commercial providers as far as possible into low-income segments without undermining market performance and sustainability.

Given the long-standing controversy around subsidies in inclusive finance,[29] this second area of intervention could spark some degree of soul-searching among funders used to a market orthodoxy that may require reconsideration due to the climate crisis. At the same time, access to climate risk insurance for agriculture has long been extensively subsidized across many wealthy countries as well as prominent middle income countries like Brazil, China, and India.[30]

The third intervention area is helping FSPs manage their own climate risk to avoid retrenchment of financial inclusion as climate impacts intensify. This likely requires new insurance solutions, investments in stronger reinsurance markets, more risk-tolerant public capital, and tempered expectations from investors in lenders that suffer balance sheet losses due to climate events.

The fourth intervention area is ensuring inclusive policy action around climate risk and the greening of the financial system. It includes support to national financial authorities and global standard setting bodies on regulatory agendas, as well as thoughtful approaches in funders' own strategies and investments in green finance (e.g., the use of earmarking and exclusion lists to promote climate and other environmental objectives). Developing clearer and more consistent language around green finance (see Box 4) will be a key aspect of this work. The green finance label, which currently is liberally used to refer to a wide range of disparate interventions, in some cases hinders rather than helps transparency and understanding.

The fifth intervention area for public finance is helping evolve and substantially scale up climate adaptive social protection that builds long-term climate resilience and adaptation for vulnerable communities, including to slow-onset climate stresses. This requires thoughtful programmatic design that applies the strengths and experiences of traditional social protection approaches together with those from other areas, including disaster risk management, economic inclusion, climate adaptation, and inclusive finance.

Delivering on these ambitious agendas will ask a great deal of governments and their development partners. For one, it requires significant financial resources. Spending those resources, however, may ultimately be a cost-effective approach to climate finance. It is well known in disaster risk finance that resilience building *ex ante* reduces losses *ex post* by a higher multiple.[31] Together with the development of climate risk insurance and reinsurance markets, this can be important in reducing the post-disaster liabilities that ultimately fall on governments and their development partners. In the context of potential global loss and damage obligations that will only grow as climate change intensifies, spending money wisely today is likely to reduce losses, and hence compensation claims, tomorrow.

29 See, for instance, Morduch 2000.
30 See, for instance, Mahul and Stutley 2010.
31 For instance, the World Bank estimates that each (U.S.) dollar invested in more resilient infrastructure is estimated to yield close to a four dollar benefit in avoided disaster losses. See Hallegatte, Rentschler, and Rozenberg 2019.

It will also require new forms of collaboration between stakeholders across financial inclusion, climate change, gender, and other spaces. CGAP's initial research on both climate and inclusion funders consisted of interviews with key staff as well as a desk review of financial sector development and climate strategy documents. Understanding how the two sets of funders engage with one another and incorporate each other's objectives and approaches in their own agendas was a central objective of this research.

We found considerable room for progress in this area (Baur-Yazbeck 2023). All of the funders studied see climate change as a top priority and while many see a link to financial services, it is rarely articulated in their strategies or incorporated into programming.

Only one of the five climate funder strategies CGAP reviewed explicitly mentioned how financial services contribute to climate adaptation and resilience. None offered a narrative or theory of change articulating the linkages between access to finance and climate goals. This significant missed opportunity needs to be rectified.

Financial inclusion funders were more likely to embed climate objectives in their strategies—but with a particular twist. Of the 12 dedicated financial inclusion strategies reviewed, five referenced climate change. However, four of those five were DFIs that primarily identified climate change as a risk for their investees. Little intentional thinking emerged about the role of financial inclusion in climate adaptation and no discussion ensued about the risk climate change might pose for inclusion objectives.

The review also found little deliberate and systematic action to link climate change and financial inclusion operations. Funders rarely connect parts of their organizations that work on each of the two topics. Projects are often implemented in isolation by separate teams that rarely interact and struggle to work in a cross-cutting manner. CGAP found only a few instances of formal coordination mechanisms, shared work programs, or joint initiatives across teams. Those that did tended to be *ad hoc* and driven by individual personalities.

This lack of structured collaboration or deliberate pursuit of synergy has multiple consequences, including missed opportunities to further progress objectives on multiple sides, slowing the achievement of organizational goals. But it can also result in a lack of coherence in the vision and approach pursued, for instance when financial services elements are built into adaptation efforts developed and driven by actors that do not specialize in inclusive finance. Such efforts may not incorporate current best practices and could repeat mistakes financial inclusion practitioners have learned to avoid through hard-won lessons. More broadly, they may result in fragmentation of financial sector efforts on climate change and failure to build the wider inclusive financial system necessary to deliver climate-responsive financial services at scale.

SECTION 9

A **NEW AGENDA** FOR **GLOBAL COLLABORATION**

AS OUR WORK SHOWS, INCLUSIVE FINANCIAL SERVICES CAN BE critical tools for autonomous adaptation and empowering poor people to pursue their own resilience strategies. But it does not yet fully play that role due to a lack of attention, deliberate effort, and collaboration between the climate and financial inclusion sectors. There is reason to believe that pro-poor FSPs cannot reach their potential to support their clients' climate adaptation without receiving support themselves. Moreover, climate change itself poses a direct threat to financial inclusion and is likely to undermine progress unless both financial institutions and their clients can manage the growing climate impact. Financial authorities must also ensure their climate regulation avoids unintended exclusionary effects that could weaken both financial inclusion and financial sector stability.

For inclusive finance to negotiate these challenges and fulfil its critical role in scaling grass-roots adaptation, CGAP sees a new agenda spanning climate change and financial inclusion that applies a strong gender lens. Based on the initial year exploring these topics, we propose the outline of such an agenda as follows.

Financial services providers

- Proactively explore the climate adaptation needs of clients, notably women, by incorporating climate adaptation into customer education efforts, engaging clients on their adaptation choices, and linking to stakeholders that can help pursue adaptation strategies.
- Iterate on product offerings by developing and testing financial solutions that better respond to the diverse climate adaptation and resilience needs of different clients.
- Embed financial inclusion objectives at the core of climate risk management processes for early identification of when risk and inclusion goals might come into conflict.
- Establish standard operating procedures for how to react to a major climate shock, ideally including industry standard practices on, for example, loan moratoria.
- Accelerate collective learning by systematically sharing concerns, experiences, and best practices with funders and policy makers, as well as other FSPs that serve poor people.

Funders and investors

- Effect deliberate and sustained efforts to integrate climate change and financial inclusion agendas at the strategic and operational levels to further both sets of objectives, including through more systematic collaboration across departments and organizations.
- Identify how inclusive financial systems can best support global and local climate adaptation goals and systematically invest in the enabling environments, market infrastructure, and policy frameworks to realize those goals.
- Strategically invest in expanding access by building and scaling commercial markets for relevant financial services, notably including climate risk insurance and reinsurance.
- Offer research, funding, technical assistance, and capacity building for financial institutions to better understand and respond to the climate adaptation needs of their clients, notably women.
- Support the development of scalable, effective financial offerings for climate adaptation and resilience through product innovation, business model development, piloting, risk sharing, and private capital mobilization.
- Help financial institutions manage their own climate risk by supporting the development of insurance solutions, risk sharing arrangements, and predictable investor responses to FSPs impacted by major climate shocks.
- Support thoughtful and inclusive policy action on climate risk and the greening of the financial system, avoiding unintended exclusionary effects that could ultimately reduce financial access, economic resilience, and financial stability.
- Support the evolution and expansion of adaptive social protection as a key channel for adaptation finance and as an instrument for bolstering the climate resilience of the most vulnerable, including through more open, scalable delivery infrastructure.

Financial regulators and policy makers

- Ensure that efforts to manage climate risk and green the financial system are free of unintended exclusionary effects, not least those that can undermine economic resilience and financial stability.
- Reduce climate-related and environmental risk to the financial system by adapting existing risk mitigation instruments for green purposes or designing new instruments to that end.
- Make financing for investments in climate adaptation and the green economy more widely available and affordable to support a just transition and reduce overall transition risk.
- Using a risk-based approach, strive to limit the transaction costs introduced by climate regulation for financial institutions serving poor clients.
- Build an enabling environment for innovation in the financial sector, including close dialogue with FSPs aiming to address climate change.
- Gather evidence and conduct research on the impact of climate change as well as of climate-related regulatory and supervisory measures on financial inclusion, including any resulting effects on stability.

Researchers and think tanks

- Agree on common definitions and metrics for climate adaptation and resilience as well as a shared vocabulary and understanding of key concepts across researchers working on financial inclusion and climate change.
- Develop robust, low-cost research methodologies to study climate adaptation and resilience building in low-income populations in ways that are easily replicable, scalable, and comparable.
- Research the effectiveness of features and combinations of existing financial products and services on the climate adaptation and resilience of poor people.
- Deepen the evidence base around differences in client impact from the same financial services, depending on variance in various aspect of usage and contextual factors.
- Research the impact of climate-related regulatory and supervisory measures, including on financial inclusion, and any effects on financial stability.
- Contribute to the development, piloting, and evaluation of new financial solutions, customer education approaches, business models, and operational models with a view to both effectiveness and viability.

GLOSSARY

Adaptation (to climate change)

In human systems, the process of adjustment to actual or expected climate change and its effects in order to moderate harm or exploit beneficial opportunities. Source: IPCC 2022a

Autonomous adaptation (to climate change)

Adaptation in response to experienced climate change and its effects without planning explicitly or consciously focused on addressing climate change. Also referred to as spontaneous adaptation. Source: IPCC 2022a

Financial authorities

Policymakers, legislators, regulators, and/or supervisors responsible for the financial system. Source: CGAP 2023a

Financial inclusion

The state where all individuals and enterprises have access to and are empowered to use affordable, responsible financial services—such as payments, savings, credit, and insurance—that meet their needs. Source: CGAP 2023a

Green finance

There is no universally accepted definition of *green finance*. Definitions by major climate and development organizations tend to center on investments or other structured financial activities aimed at promoting sustainable development and/or better environmental outcomes. Some organizations approach the definition conceptually via top-down principles while others approach it by classifying or labeling activities in a bottom-up, practical way. Perhaps the most widely cited example of the latter is the EU taxonomy for sustainable activities, a classification system for economic activities that align with the European Union's climate and environmental goals. The absence of a shared definition for green finance means considerable uncertainty about what different organizations mean when using the term. Source: European Commission, n.d.

Inclusive finance

The responsible provision of financial services that are intentionally designed to contribute to sustainable development for all, including disadvantaged or underserved groups such as low-income households, women, smallholders, and micro and small enterprises (MSEs). Source: CGAP 2023a

Just transition

A set of principles, processes, and practices that aim to ensure that no people, workers, places, sectors, countries or regions are left behind in the transition from a high-carbon to a low-carbon economy. It stresses the need for targeted and proactive measures from governments, agencies and authorities to ensure that any negative social, environmental, or economic impacts of economy-wide transitions are minimised, while benefits are maximised for those disproportionally affected. Source: IPCC 2022a

Mitigation (of climate change)

A human intervention to reduce emissions or enhance the sinks of greenhouse gases. Source: IPCC 2022a

Planned adaptation

Adaptation that is the result of a deliberate policy decision, based on an awareness that conditions have changed or are about to change and that action is required to return to, maintain, or achieve a desired state. Source: IPCC 2007

Rapid-onset climate shock

A short-term, unpredictable, and discrete event with a sudden onset and relatively clear beginning and end, such as a flood, cyclone, or extreme heatwave. Source: CGAP 2021

Resilience

The ability of individuals and households to reduce and mitigate risks, as well as to cope with and recover from various shocks, stresses, and life cycle events so as to minimize any reduction in short-term consumption or long-term well-being. Source: McKay and Zetterli 2021

Slow-onset climate stress

A longer-term, more predictable, and continuous process whose impact plays out over many years, such as rising average temperatures, sea level rise, land degradation, falling water tables, and desertification. Source: CGAP 2021

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