



# Built to Adapt: Inclusive Financial Institutions in a Changing Climate

April 2026 • Peter Zetterli, Peter Gross, Michel Hanouch, and Sabaa Notta

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## EXECUTIVE SUMMARY

# Letter to the CEO

### Dear CEO,

Climate change is no longer a distant concern for your institution. More likely than not, it is already reshaping the lives of your clients and the risk profile of your portfolio. With your clients on the frontlines of these shocks, so are you. Each flood, drought, or cyclone now tests not only their resilience, but also the business model your institution was built on. This new reality requires a shift from reactive measures toward a deliberate approach that strengthens your clients' and your institution's resilience in lockstep.

The traditional way our sector has managed crises worked well enough for traditional shocks. But faced with larger, more frequent, and highly covariant events that can hit hard across large swaths of your client base, the old playbook will fall short and could end up deepening the crisis. As financial institutions pull back to reduce their risk exposure, clients are pushed into negative coping mechanisms that leave them worse off and less resilient to future shocks. Over time, this will simultaneously erode your portfolio, your addressable market, and your social mission. Doing nothing, or relying on ad hoc responses, is now itself a risky strategy.

Many inclusive financial service providers (FSPs) have started responding to climate change, but often in ways that only partly address the problem. Many are focusing on "green finance" as a new potential opportunity, with less reflection around adaptation and resilience. Some have undertaken climate risk assessments, often to satisfy regulators or investors. A growing number of FSPs are shifting capital away

from climate-exposed areas to protect the balance sheet. Many more are in "business-as-usual" mode, overwhelmed by day-to-day priorities like portfolio quality, digitization, deposit mobilization, and staff retention, and thus are unsure how to engage with a complex technical topic like climate.

Each of these responses is understandable. But taken alone, they can easily lead to lose-lose outcomes: withdrawing from the very communities that most need support; investing in climate action that does nothing for your clients' adaptation or your own resilience; or kicking the can down the road to deal with later. Each of these will be a losing strategy over time.

This Focus Note is written for you and your leadership team as an alternative: a practical way to move from reactive, piecemeal responses toward a deliberate, win-win approach that strengthens the resilience of both your clients and your institution. Done right, this can also create opportunities to develop new business lines and seize market share as competitors pull back or vacillate. Nothing builds loyalty from clients, old and new, like being there for them when they need it most.

This Focus Note will not tell you how to run your business—you already know how to do that. Instead, it highlights a set of high-impact decisions and tools you may wish to consider as climate risk grows. It is structured around four steps that an inclusive FSP can take, building on the systems you already have rather than asking you to reinvent them.

- First, this Focus Note invites you to build climate change into your core **strategy** by explicitly recognizing how climate risk intersects with your mission and core segments—and asking three simple questions that help you move toward a clear, prioritized roadmap anchored in your reality.
- Second, it suggests that you undertake **climate risk assessment** crafted as a decision tool rather than a compliance exercise. Too often, these can become tick-box reports that sit on a shelf or, worse, push you to exit entire regions or segments. Done well, they give you the right data for different parts of your institution, including strategy, product, and risk teams, to make the decisions they need to make.
- Third, it offers a new approach to **managing climate risk** on your balance sheet, relying less on blunt capital buffers that often are both economically inefficient and woefully insufficient as a main line of defense against climate shocks. It lays out a risk-layering approach to ensure both solvency and liquidity after a disaster. This method will enable you to continue lending responsibly in affected areas instead of retreating just when your clients need you most.
- Fourth, it describes what your clients need in the face of climate risk and how iterating on your **product** suite can better support their resilience. That includes ensuring that adaptation solutions work for women, who may be among your most loyal clients as well as some of the most climate-affected. It discusses how your existing products can be made more climate ready, then points to important innovations that you should consider actively exploring, such as recovery lending, contingent lines of credit, and anticipatory financing.

Throughout, this Focus Note draws on experiences from institutions like your own—including evidence from Pakistan, Ghana, the Philippines, Haiti, Malawi, Nepal, Colombia, and other markets—to show that climate-proofing inclusive finance is not a theoretical concept or distant ideal. Everything in this Focus Note has already been tested by your peers and has demonstrated a compelling case for both impact and profitability.

You are operating in an increasingly demanding environment, with limited management bandwidth and many competing priorities. This Focus Note is designed to meet you there. It does not offer a one-size-fits-all blueprint. Instead, it provides a structured way for you and your team to decide where to start, which risks and client needs to prioritize, and which instruments and partnerships deserve your scarce attention first.

We know you can't do it all alone. Investors, development funders, policymakers, and regulators have their own roles to play in providing financial institutions with the support they need to grow more resilient and help clients adapt to new climate realities. CGAP has written extensively about what they need to do and will continue to rally them around this cause.

The bottom line is this: If your institution was “built to include,” it now also needs to be **built to adapt**. The choices you make on climate resilience over the next few years will shape not only the future of your clients, but also the viability and relevance of your business. This Focus Note aims to help you get started on making those choices.

## CHAPTER 1

# Introduction

## Climate Change Is Reshaping the Inclusive Finance Landscape

Climate change is increasingly posing a threat to the hard-won gains in financial inclusion made over the past four decades. As climate-related shocks such as floods, droughts, and cyclones grow in both frequency and intensity (NASA 2024), low-income communities become even more vulnerable to economic instability. One in three adults in low-income countries now say they have been personally impacted by climate change, with more than two-thirds of them having lost income or assets as a result (see Figure 1).

Unlike other external risks, climate change is systemic, complex, and intensifying. Its effects are nonlinear and location-specific, often reinforcing existing inequalities and pushing excluded populations—especially women and rural clients—further to the margins. Moreover, shocks are often large and covariant, striking severe blows to very large groups of clients at the same time.

Inclusive financial service providers (FSPs), including microfinance institutions (MFIs) and inclusive retail banks, hence face a dual challenge: protecting their own portfolios from climate risk while also supporting clients who are often on the frontlines of these climate shocks. The financial sector's traditional response after a shock is to

manage human cost (i.e., staff and customers) as well as short-term portfolio

risk, aiming to reduce losses by intensifying collections and pausing lending operations in affected zones.

However, these actions can exacerbate the shock to clients and reduce economic activity in the medium term, thereby negatively affecting FSPs themselves.

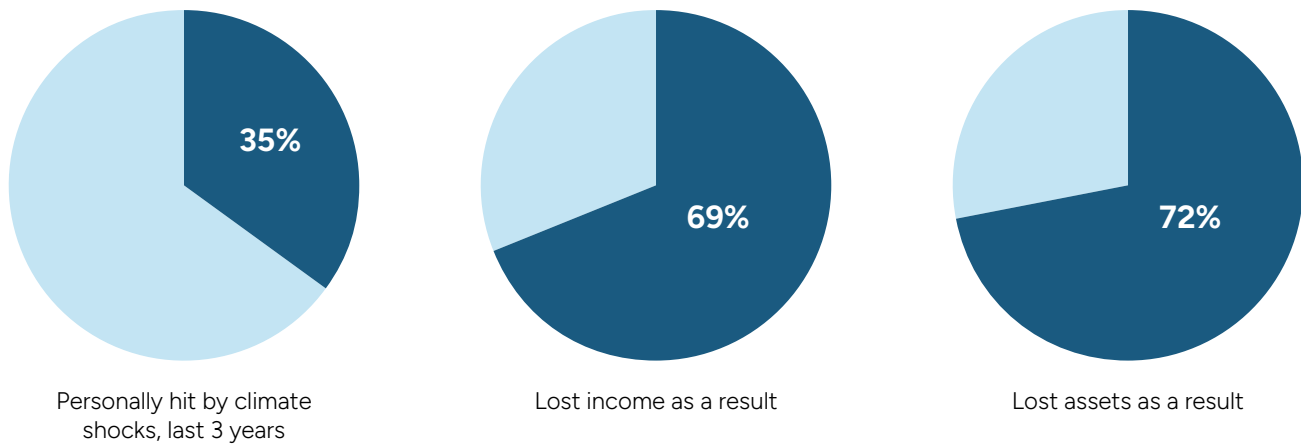
CGAP research highlights this tension. In Pakistan, for example, 40 percent of MFIs have reduced or stopped lending to climate-affected sectors (Notta and Zetterli

**1 in 3 adults in low-income countries personally suffered climate impact in the last three years.**

## Leadership Takeaways

- FSPs increasingly face the dual climate challenge of managing portfolio risk and supporting clients.
- Traditional post-shock responses can worsen outcomes for both clients and FSPs.
- Doing nothing is an active (and potentially costly) risk position—you need to have a plan.
- This Focus Note aims to help your senior team and board add a climate adaptation and resilience lens to existing strategy, risk, and product practices.

**FIGURE 1. Impact of Extreme Weather and Natural Disasters, Adults in Low-Income Countries, Percent of Those Personally Hit by Climate Shocks**



Source: Klapper et al. (2025)

2025), demonstrating a risk-averse approach that not only compounds client hardship, but also shrinks the local economy. As climate risk grows more widespread and intense, such a strategy will have significant consequences for institutions founded to expand economic opportunity in low-income populations. It creates profound stress between the core social mission and the financial viability of the business, ultimately jeopardizing both. This will particularly impact women, who make up a significant share of microfinance borrowers and often face even steeper barriers to recovery, given gender disparities in land ownership, access to credit, health impacts, and decision-making power (Notta and Zetterli 2023). Without adaptive financial strategies that account for these dynamics, climate change will deepen existing inequalities and push millions back into poverty.

These challenges are taking place against the backdrop of a climate finance agenda that is struggling to deliver financing for adaptation and resilience to those who need it most. Global funding flows have been growing,

**The traditional FSP climate response creates profound stress between the core social mission and the financial viability of the business, ultimately jeopardizing both.**

but are still overwhelmingly focused on reducing carbon emissions, with just 3.4 percent

dedicated to financing adaptation (Naran et al. 2025). Moreover, less than a fifth of that financing is focused on local communities (UNEP 2023), with the majority of adaptation funding flowing instead toward resilient infrastructure and other large adaptation projects. The bottom line is that vanishingly little financing for adaptation and resilience to climate change actually gets into the hands of the vulnerable households and individuals who most urgently need to do the adapting.

## **In This Context, the Inclusive Finance Sector Has an Enormous Role to Play**

With hundreds of millions of low-income and vulnerable clients across the world, the inclusive finance sector already serves as the first line of defense for them against risks of all kinds. By refreshing its offering to reflect the new climate realities, this sector can directly enable clients' personal adaptation and resilience strategies in ways that few others can. By financing investments that reduce risk and mitigate the impacts of shocks before they happen, it has the potential to vastly improve how clients are affected and recover during and after disasters—which is also the best way to protect the long-term viability of the sector itself.

The inclusive finance sector can also allow global climate funds to enable small-ticket financing, which the current climate finance architecture cannot do because it was built to finance projects, not people. The inclusive financial services systems built over the last few decades can crowd in up to \$1.5 trillion of private-sector capital for climate mitigation and adaptation—representing a significant opportunity to respond to and enhance economic activity (Wright et al. 2025). With growing awareness in the climate space around the need to vastly improve local access to financing for adaptation and resilience, there is an increasingly obvious opportunity for win-win solutions that leverage concessional climate funding catalytically to develop, derisk, cost-share, and finance new approaches to household-level adaptation through inclusive FSPs. These FSPs should be actively exploring these opportunities, adopting new approaches and product offerings. Without a deliberate response, FSPs risk reinforcing exclusion, failing their clients, abandoning their missions, or contributing to maladaptation that makes things worse.

## **By and Large, Inclusive FSPs Have Not Yet Responded to These New Tensions and Opportunities**

Despite growing concerns about the impact of climate change, most FSPs still lack the strategies, risk tools, and products needed to adapt their business models to a changing climate. CGAP's research over the past three years reveals that while many institutions are beginning to develop climate strategies, these are often focused on regulatory compliance, internal net-zero goals, or environmental, social, and governance (ESG)-linked funding opportunities for lending to low-carbon sectors rather than on embedding resilience and adaptation into their core strategy, operations, and product offerings.<sup>1</sup> Current product offerings are mostly unchanged and

concentrated on a narrow set of solutions with limited success in meeting the varying climate needs of different clients. Compelling innovations are emerging but remain nascent.

## **This Focus Note Aims to Help FSPs Adapt to this New Reality**

This Focus Note was written to support inclusive FSPs in starting to respond to climate change in ways that protect their financial viability, preserve their social mission, and live up to their unique and powerful potential to channel adaptation finance to the grassroots. By sharing insights from real-life examples, it will make the case that there are practical, iterative actions that inclusive FSPs can take across strategy, risk management, and product offering that can enhance both their customers' resilience and their own. The time to act is now—and FSPs that adapt will be better positioned to serve their clients, including women, in an increasingly volatile world.

## **How to Use this Focus Note**

This Focus Note is primarily for senior management and board members of inclusive FSPs. It aims to help them add a climate adaptation lens to existing FSP strategy, risk, and product practices. It focuses on additional steps FSPs can take to increase their own climate resilience and that of their customers. Crucially, it strives to identify opportunities to complement and augment existing practices and products rather than reinvent them. This Focus Note does not try to tell practitioners how to successfully run an inclusive FSP, but rather, it highlights potentially high-impact actions that practitioners should consider regarding climate change and its many implications. Many FSPs might be doing some or all of these already—or may have good reason not to.

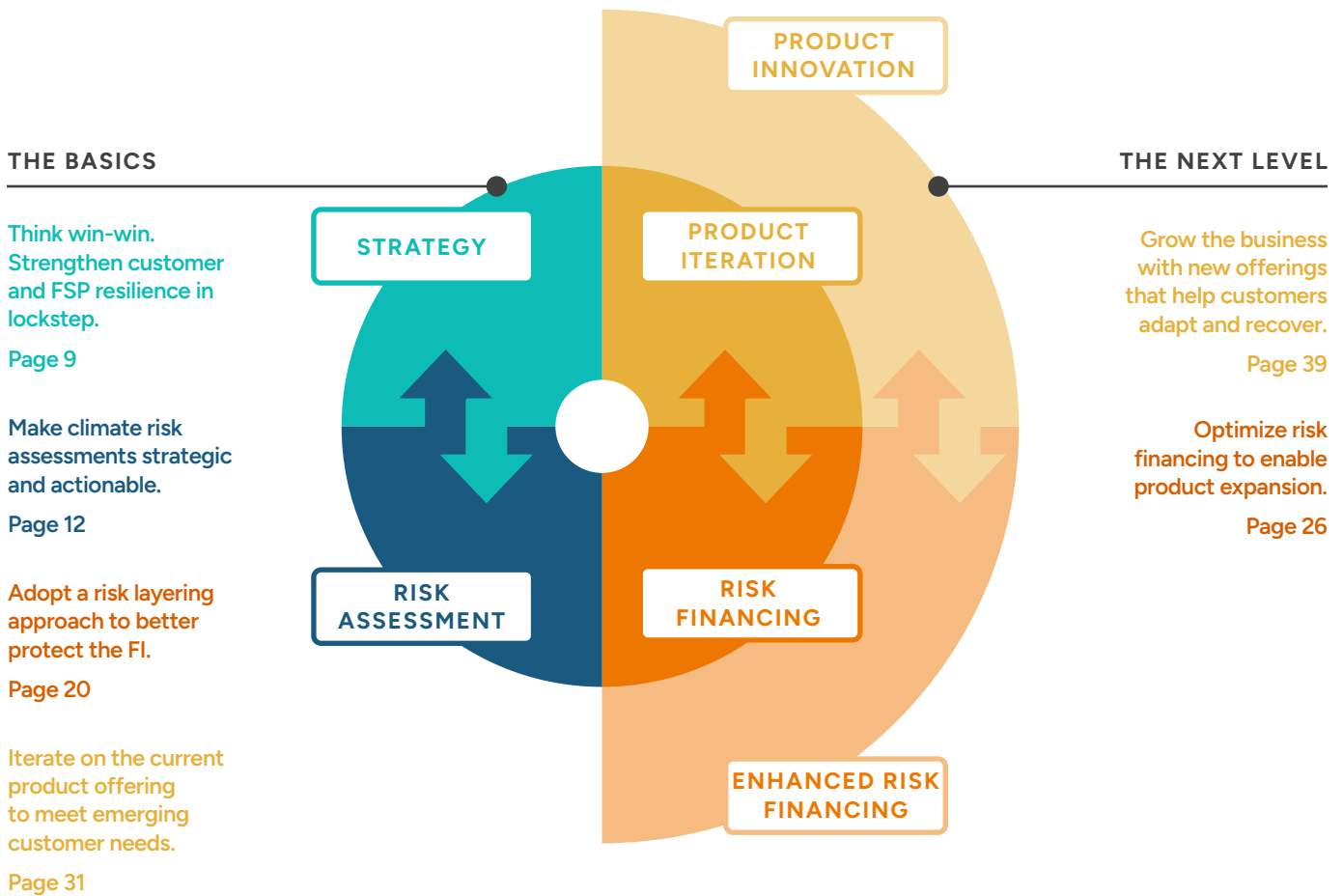
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<sup>1</sup> Includes desk research, interviews with over 100 FSPs, a community of practice with FSPs and their funders, and learning partnerships with select FSPs testing new solutions and scaling existing ones.

It does not offer conclusive answers or a one-size-fits-all solution; it offers the starting point for reflection and decision-making as inclusive FSPs embark on a critically important journey that will impact the future of the sector. This Focus Note also doesn't offer a detailed manual for how to do everything it suggests. Some of that will follow in more detailed deep-dive publications that CGAP is developing for publication in 2026.

This Focus Note is divided into multiple chapters and sections across two broad categories: the **basics** that we believe every inclusive financial institution operating in climate vulnerable environments should do in the next 12 months and the **next level** that they should start on thereafter. FSPs that have greater capacity or are further ahead on climate resilience may be ready to start the next level today. Figure 2 summarizes the main actions in each section and directs readers to where they can find more details.

FIGURE 2. Priority Actions and Relevant Section in this Focus Note



**THE BASICS**

The first step is to prioritize a win-win climate resilience model that strengthens customer and FSP resilience in lockstep, and to embed that model into the institution's core **strategy**.

That strategy can only be developed in conjunction with a **risk assessment** that isn't a compliance exercise but generates actionable insights for all core parts of the business.

This deeper understanding of how climate risk will impact an FSP's clients and their business allows institutions to put in place a targeted **risk layering approach**, leveraging reserves, meso-level insurance and contingent finance tools to address different risks. This will ensure that the business is resilient even to significant shocks and can keep serving clients when they need it most.

In parallel, quick-win **product iteration** opportunities support the strategy and help to reduce the specific risks that FSPs' clients face. This could include longer tenors or more flexible repayment terms for existing loan products; post disaster loan management policies and practices; credit-linked insurance offerings; and non-financial services such as customer access to early warning information.

Source: Authors

**THE NEXT LEVEL**

Once the resilience of an FSP's portfolio and their clients has been adequately shored up, it is time to be more ambitious in growing the business by driving **product innovation**. This could include recovery lending programs, contingent lines of credit (CLOCs), and priority adaptation finance solutions (as locally relevant).

To enable this product expansion, FSPs should **optimize their risk financing** approach by mobilizing risk mitigation and innovation financing, alongside debt financing to drive scale. They should also structure risk financing more strategically, such as by anchoring a recovery lending program and CLOC for clients with a contingent financing instrument for the institution.

## CHAPTER 2

# Developing a Climate-Resilient Strategy

## Six Common Responses to Climate Change—and Why They Fall Short

Inclusive FSPs are reacting to climate change in a range of ways. They have varying levels of urgency and engagement, from business as usual to proactive exploration and innovation. The nature of their responses varies too, from risk averse and defensive to more offensive and opportunity oriented.

CGAP's interviews with over 100 FSPs and deeper engagement with dozens of them have surfaced six common responses to climate change that many well-run FSPs tend to pursue. Each response has some merit, but is typically insufficient on its own. If not coupled with a prioritized effort to bolster both

customer and institution resilience, each could be a distraction that inadvertently undermines resilience and ultimately the business. Recognizing these gaps is a first step toward building a win-win climate strategy. See Table 1 for an overview and Annex 2 for a longer discussion of each of these responses.

FSPs can employ aspects of multiple responses at the same time, but resource constraints also require them to make choices about where to prioritize. Whether some combination of the Table 1 options make sense ultimately depends on whether the strategy adequately incorporates and addresses the physical climate risks facing the FSP. It is one thing if an assessment finds climate risk to be low or already adequately managed. But if the absence of a coherent strategy on climate change is due to insufficient data, unclear strategic direction, or lack of prioritization, there is a clear risk

## Leadership Takeaways

- Piecemeal, reactive responses are not sufficient and risk resulting in lose-lose outcomes.
- Adding a climate adaptation lens to existing strategy requires recognizing the interdependence of customer and FSP resilience.
- Three questions can help your senior team prioritize:
  - » How, where, and to what extent are climate risks likely to impact the FSP and its customers?
  - » What are the priority gaps in the FSP's product portfolio and approach to risk management?
  - » What changes are required to balance the resilience of the FSP and that of its customers so that they are mutually reinforcing?

TABLE 1. **Six Common Responses to Climate Change**

Response	Description	Potential Gap
<b>Risk Avoidance</b>	Focus on collections and stop new lending.	Risks losing customer trust; counter to financial inclusion ambitions.
<b>Compliance</b>	Reactive to regulators and potentially investors.	Requires deliberate effort to ensure useful for FSP and customers; can lead to risk avoidance.
<b>Green Finance</b>	Finance solar panels and other mitigation assets. Driven by customer demand and availability of climate mitigation funding.	Does not prepare FSP or customers for climate risk or build adaptive capacity and resilience.
<b>Business as Usual</b>	Focus on core priorities such as portfolio quality, profitability, growth, and customer satisfaction.	Could downplay the linkages between climate risk and these other priorities.
<b>Net-zero Targets</b>	Along with large international banks, some inclusive FSPs have made net-zero commitments.	Does not prepare FSP or customers for climate risk or build adaptive capacity and resilience.
<b>Mission First</b>	Donor-funded debt forgiveness and indiscriminate ex post lending without ex ante risk management.	Self-sustainability implications if not coupled with sufficient institutional risk management.

Source: Authors

of underinvestment in adaptation and resilience that could ultimately prove costly. When the next flood or drought hits, underinvestment in FSP and customer resilience could become an existential question for the FSP—as some inclusive FSPs have already learned.

These strategic postures can also have distinct gender implications. Risk-avoidance strategies that pull back from climate-exposed sectors and portfolio realignments driven by compliance with climate risk reduction requirements may favor larger, formally registered businesses and male-owned farms over smaller, female-run activities that are harder to model but no less in need of support.

## Prioritize Customer and FSP Resilience—Toward a Win-Win Outcome

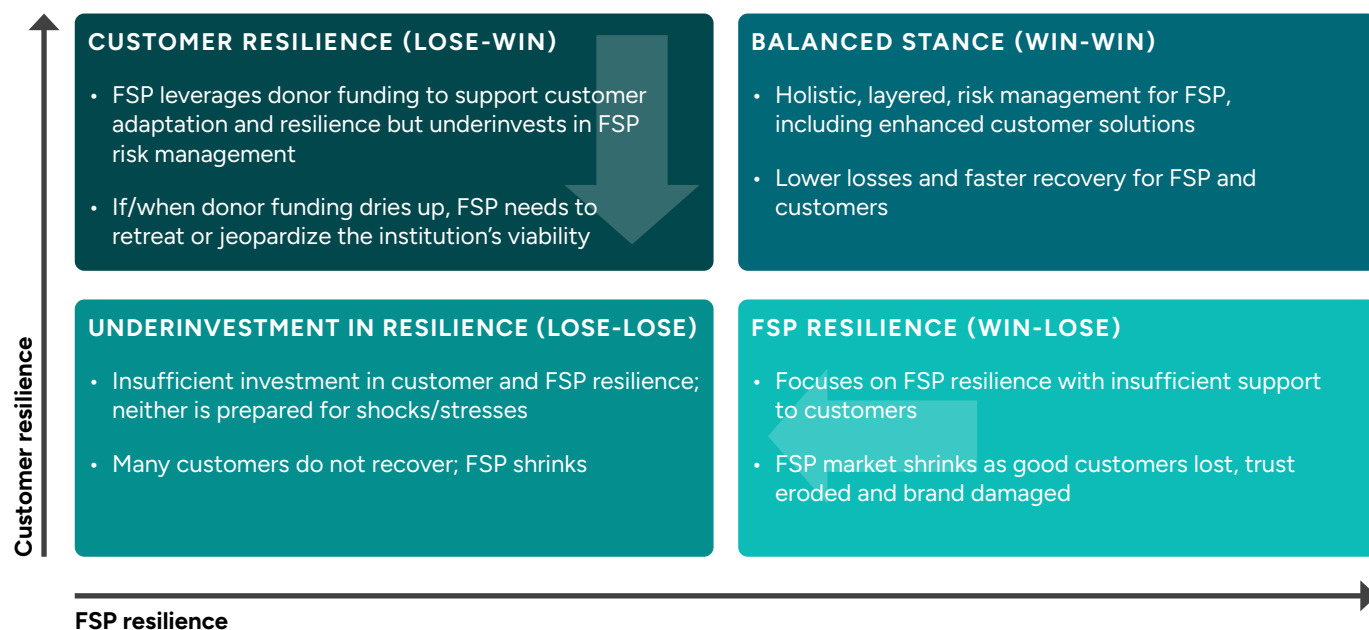
Stephen Covey's win-win framework is helpful in demonstrating the interdependence of customer

and FSP resilience. In short, it posits that anything less than a win-win outcome will damage the FSP-customer relationship in the long run, with both ultimately losing. In considering the common responses outlined in Table 1, it became clear that not enough FSPs are responding in ways that prioritized both customer and FSP resilience (see Figure 3).

A win-win approach is fundamentally about balancing customer needs with FSP viability and is as much art as it is science. There are two main components to achieving win-win. First, FSPs should offer customers the solutions they need to adapt and become more resilient to climate risks, which sounds obvious but is rarely straightforward. Second, they should adopt risk management tools that help the FSP itself adapt and become more resilient to climate risks,

**Anything less than a win-win outcome will damage the FSP-customer relationship in the long run, with both ultimately losing.**

FIGURE 3. Adapting Stephen Covey's Win-Win Framework to Stylized FSP Responses



Source: Adapted from Covey (2020)

while also enabling ongoing delivery of the customer solutions. Both components need to be delivered in a way that offers a clear impact case and a compelling business case for both the FSP and its customers. Because women are central to household risk management and often constitute a significant share of climate-exposed FSP customers, gender-responsive climate strategies can be win-win, important for both portfolio and customer resilience.

## Three Questions Can Help FSPs Move Toward Win-Win Outcomes

### 1. How, where, and to what extent are climate risks likely to impact the institution and its customers?

For most FSPs, doing nothing is no longer an option. At the same time, most well-run FSPs will need to augment their existing strategy and operations with a climate lens rather than creating new, adjacent climate teams and processes. The physical climate risk assessment (PCRA), discussed in Chapter 3, is an important input for determining the level of climate risk the FSP and its

customers face, and to help the FSP think through the potential impact on both the business and mission. This can help the FSP to start working through how much human, financial, and other resources are required to bolster the resilience of customers and the FSP, and how much room might be remaining to invest in the types of common responses mentioned in Table 1 (beyond regulatory compliance, which is not optional).

### 2. What are the priority climate-related gaps in the FSP's product portfolio and approach to risk management?

Given the breadth of options available to FSPs, there is a risk of implementing many climate-related projects and being seen to be doing the right thing, without actually managing the core risks the FSP or its customers are facing. FSPs should use the PCRA for a gap analysis to identify the climate shocks that it is not yet adequately prepared for and the main customer needs that are not currently addressed by its product portfolio. Chapters 4 and 5 help readers prioritize risk financing and product actions, respectively.

3. **What changes are required to balance the resilience of the FSP and that of its customers so that they reinforce each other?** Figure 3 can help evaluate whether the management team is more inclined to underinvest in delivering customers the solutions they need to adapt and become more resilient, or to adopt the risk management tools the FSP itself needs to ensure it is able to continue offering customers those solutions after a shock or stress.

FSP and customer resilience are interdependent. Therefore, getting this balance right can lead to a virtuous cycle of a well-adapted FSP that supports customer adaptation and resilience, experiences limited portfolio losses, attracts more customers and funding, builds institutional resilience, and expands the customer product offering, thereby further reinforcing the virtuous cycle.

By contrast, an unbalanced approach would result in either a lack of supply due to insufficient capital or liquidity to continue delivering prioritized customer solutions, or a lack of demand as customers are not adapted or able to recover without FSP support. Either outcome can lead to a vicious circle. It is therefore important for FSPs to keep checking that both of these objectives are advancing in lockstep. Customer-centric approaches are critical in this process.<sup>2</sup>

Working backward from the need to advance FSP and customer resilience in lockstep and to close the related gaps, FSPs should identify priority actions as well as key metrics to monitor progress, while recognizing the complexity of climate adaptation metrics due to various subsectors and indicators. Beyond strategy, CGAP has identified three priority areas for action: assessing risk, financing risk, and adapting the product suite. The remainder of this Focus Note is organized by this structure.

It is worth noting two additional points up front. First, both FSPs and their customers create financial strategies within their existing reality, where climate is one of many factors competing for attention. This stresses the need for priority actions to add to existing ways of working and to account for the different starting points of each FSP. Second, both FSPs and their customers face imperfect information and limited financial resources that shape their response. As FSPs gather information and financial resources, a key objective is to ensure that as much information and financial tools as possible are passed through to customers. This is critical, given that one key element of managing the FSP's risk is making sure that its customers have access to the knowledge and tools they need to bolster their own resilience.

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<sup>2</sup> See CGAP's body of work on customer centrality in financial inclusion, available at <https://www.cgap.org/topics/collections/customer-centric-guide>.

## CHAPTER 3

# Risk Assessment

## What Are Climate Risk Assessments and Why Should FSPs Conduct Them?

As FSPs and their clients are increasingly affected by climate change, a PCRA provides a structured methodology for quantifying this risk and identifying strategic priorities for active risk management. With climate impacts growing steadily more destructive, these exercises are becoming part of the basic requirements for FSPs and their stakeholders who need to understand:

- Where are the main operational risks, and how do we ensure business continuity?
- What is our portfolio risk, and what financial risk management options do we have?

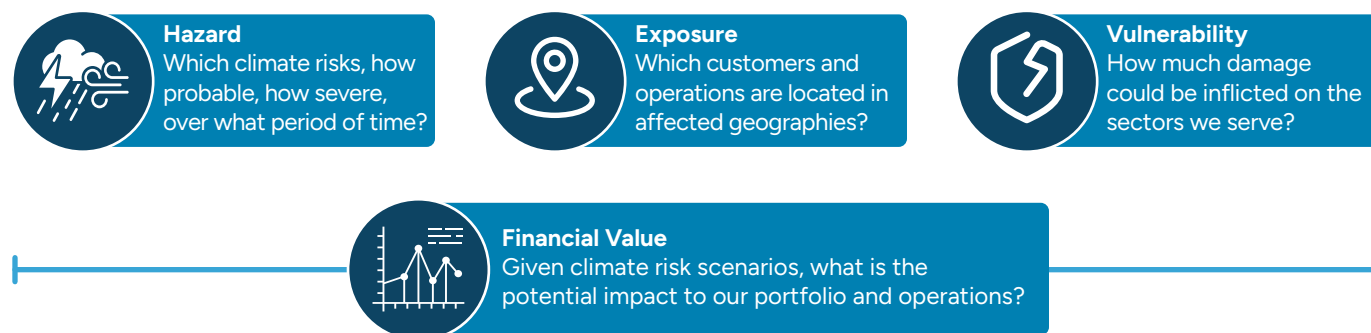
- What are the gaps in the product offering that leave our clients and portfolio exposed?
- How will all of the above develop over the next 10 years, and what does it mean for our business?
- Hence, what level of resources do we need to dedicate to climate risk, and how should we prioritize them?

While these kinds of exercises have traditionally been too expensive for the average inclusive FSP, an increase in open-source data has made them more accessible and valuable than even a few years ago. This chapter provides guidance to inclusive FSPs looking to increase value from a PCRA exercise, and Annex 3 presents some of the more prominent climate risk mapping tools and specialists that can provide support.

## Leadership Takeaways

- Too many physical climate risk assessments (PCRAs) are compliance or tick-box exercises that don't answer the key business needs of the FSP itself.
- Three simple questions can help your team design a more effective risk assessment:
  1. Why are we doing a PCRA?
  2. Who needs what from a PCRA?
  3. What will we actually do with our PCRA?
- A well-designed PCRA can catalyze strategic change and inform prioritized action across the FSP, such as enhancing risk layering and the product portfolio.

FIGURE 4. Key Elements of a Physical Climate Risk Assessment



Source: Adapted from World Bank Group (2022)

For global financial institutions, climate risk is usually assessed through three lenses: physical risk, transition risk (the impact of the shift toward a low-carbon economy), and liability risk (potential exposure to claims for compensation due to climate hazards).

This Focus Note will center on the assessment of physical risk, which is having the most direct impact on many inclusive FSPs and their clients. Transition and liability risks, by contrast, are currently less relevant for inclusive FSPs in the Global South.

A PCRA, which is a subset of a climate stress test, is structured around a consistent set of high-level questions on the probabilities of different climatic events and their implications (see Figure 4).

Done well, PCRAAs have the potential to be a significant strategic asset for inclusive FSPs grappling with the increasing threats that climate change poses. Yet our conversations with FSPs have found that all too often they are being conducted to minimal effect, as a mere tick-box exercise, or worse, they might unintentionally exclude vulnerable customers who need more, not less, support for adaptation and resilience.

For comprehensive guidance on conducting a PCRA exercise, a good starting point is the 2022 publication *Physical Climate Risk Assessment*<sup>3</sup> from the World Bank and the Network of Central Banks and Supervisors for Greening the Financial System (NGFS), and the 2025 *Climate Risk Management Toolkit for FIs* by British International Investment (BII).<sup>4</sup> Those diving deeper should consult UNEP FI's online Risk Centre hub<sup>5</sup> with its extensive resources and case studies.

**Done well, PCRAAs have the potential to be a significant strategic asset for inclusive FSPs.**

## Three Questions to Get the Most Value from a Physical Climate Risk Assessment

Inclusive FSPs should ask themselves three core questions to ensure that PCRAAs are neither tick-box nor harmful, but become strategic, proactive assets to support the resilient evolution of the institution (Gross 2025).

3 Available at <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099657511082325958>.

4 Available at <https://fintoolkit.bii.co.uk/climate-change/climate-risk-management-toolkit/section-1/>.

5 Available at <https://www.unepfi.org/risk-centre/resources/>.

## BOX 1. How Advans Ghana Used a Physical Climate Risk Assessment (PCRA)

### Context

Advans Ghana undertook a PCRA to better understand how climate hazards could affect its loan portfolio and to inform strategic decisions on adaptation and resilience investments. The assessment was designed to move beyond anecdotal evidence and provide a data-driven basis for prioritization.

### Approach

Advans conducted the PCRA in collaboration with Horus Development Finance. The assessment applied a forward-looking, “worst-case” climate change scenario to estimate potential impacts over a 15-year horizon, linking climate hazards to customer vulnerability and portfolio performance. Although the time horizon of the PCRA was medium to long term, Advans prioritized short-term action to fill the programming gaps that the PCRA identified.

### Implementation Steps

Advans followed a structured process:

1. **Identified relevant climate hazards** in its operating context, including river flooding, flash flooding, coastal flooding, rainfall variability, heat, wildfire, and landslides.
2. **Mapped customer exposure** to each hazard using geospatial and portfolio data (see page 17 and Annex 3 for PCRA resources).
3. **Selected a climate scenario and time frame**, opting for a worst-case climate change scenario over 15 years.
4. **Assessed vulnerability across customer segments and geographies**, recognizing that vulnerability varied by sector and location (e.g., urban retailers were more exposed to flooding, while farmers were more vulnerable to drought).

5. **Linked exposure and vulnerability to portfolio size and value**, modeling potential impacts on nonperforming loans (NPLs), business losses, and overall portfolio performance by sector and geography.

### Outcomes

Based on the PCRA, Advans Ghana was able to prioritize the climate risks most material to its portfolio and customers. As the majority of its borrowers are MSMEs in nonagricultural activities, the assessment revealed that urban flooding affecting shopkeepers in major cities represented the highest priority risk for the institution. Critically, this assessment was complemented by customer interviews that highlighted the key needs of Advans’ clients who faced this risk and the financial products required to address them. As a result, Advans Ghana is currently piloting a recovery loan (called a Restart Loan) and insurance package to help urban shopkeepers restart their businesses after extreme weather events.

### Key Lessons

- PCRA can challenge prevailing assumptions about where climate risk is concentrated and the extent of exposure.
- Data-driven modeling enables more objective and defensible prioritization than does anecdotal evidence.
- Linking climate risk directly to portfolio metrics helps FSPs focus resilience investments where they are most material.
- PCRA can give different parts of the institution, in this case the product team, the data needed to focus its climate response in a customer-centric way.

Source: Authors, Advans International

## 1. WHY ARE WE DOING A PCRA?

Our conversations with FSPs found that they very often initiate a PCRA at the request of one of their stakeholders—and that the output can differ dramatically based on the origin of the request. Many PCRA exercises fall short of their potential for strategic impact because they only seek to respond to the requesting stakeholder, rather than assessing the full range of implications of climate risk and providing the answers needed by the financial institution itself.

Depending on where and why a PCRA is initiated, the exercise may suffer from blind spots. For example, a PCRA initiated for compliance or financial purposes, aiming to forecast portfolio exposure due to climate risk decades into the future, can miss the reality that climate change is already affecting the operation. This is why climate modeling must be complemented by stakeholder interviews and reviews of recent (and often well-known) climate risks in the geography and region. For example, one FSP with whom CGAP has worked in East Africa conducted a PCRA with geospatial data tools, but the FSP did not connect the dots to the droughts and floods already affecting the operation. Both sets of data (forecast modeling and ground-truthing) are essential to assess risk effectively.

However, a PCRA initiated as a response to a recent natural disaster can miss the longer-term implications for investment. If a large flood, for example, leads an FSP to conduct a PCRA to assess future flood risk without also consulting longer-term climate risk models that can model exposure to other hazards, such a PCRA can fall short of compelling the FSP to do a full review and strategic prioritization of climate adaptation and resilience needs.

Being aware of the blind spots inherent in a PCRA's origin can help organizations reduce the likelihood of missing out on strategically useful information. In general, PCRA's should aim to balance three strategic priorities over the short, medium, and long term: (1) operational implications of climate risk, (2) strategic

implications of climate risk, and (3) new business opportunities related to climate adaptation.

Hence the first step of any PCRA should be to identify the initial motivation for the exercise and explicitly consider whether this is sufficient or should be amended with additional objectives. For a deeper look into different motivations for PCRA's and what blind spots they may lead to, see CGAP's blog *Climate Risk Assessment: Three Questions FSPs Should Ask* (Gross 2025).

## 2. WHO NEEDS WHAT FROM A PCRA?

After thoughtfully identifying the motivations and goals for a PCRA, the FSP leadership must ensure that the exercise will actually provide all the information necessary to achieve those goals. A simple and effective way to do that is to engage a wider range of stakeholders who will bring different lenses on climate risk, then adjust the scope and details of the exercise to answer their most important questions.

For example, the Head of Risk may be focused on identifying geographies at risk of high probability, high-severity hazards (such as cyclone or flood), whereas the Head of Product may be focused on understanding the hazards that are most relevant to the largest share of customers, even if the risks are less severe (such as chronic desertification and/or drought). An effective PCRA will therefore ensure that both viewpoints are incorporated into the business requirements of the exercise, rather than skewing toward one perspective or the other.

Similarly, some stakeholders are more focused on reactive responses to protect today's assets, whereas others lean in more to proactive strategies for future adaptation and resilience. And some stakeholders naturally focus on the institution's needs, whereas others focus more on the customer. FSPs must achieve a healthy balance of competing priorities. A PCRA that fails to answer the most important questions for any of

these groups could be a missed opportunity that the institution will come to regret down the road.<sup>6</sup>

Notably, CGAP research found that the customer's view is rarely sought out explicitly in PCRA exercises. This is a real concern, since understanding customer perceptions of climate risk and how to respond to it is critical for designing effective products and hence for protecting the portfolio. For example, if a PCRA identifies high flood risk, but customers do not share that perception due to a lack of flooding in recent memory, flood-related interventions must take that gap into account by involving educational programming and/or ensuring that products provide short-term value. If clients want to shift away from livelihoods that are vulnerable to climate change, FSPs should consider developing lending products tailored to supporting this shift, which may require longer tenors and patient repayment schedules.

PCRAs must also identify any salient gender-based differences in climate exposure, vulnerability, resilience, and adaptive capacity. Women and men often experience different impacts from the same climate event. For instance, flooding may affect women's work more severely,<sup>7</sup> and droughts may force women and girls to spend additional hours collecting water, beyond the 200 million hours per day that they already collectively spend on that task (UNICEF 2017). Differential impact from heat stress already widens the income gap between female- and male-headed households in rural areas by \$37 billion a year (FAO 2024). Conducting separate consultations with female clients can reveal these crucial differences and inform more effective product design, supporting both higher uptake and better outcomes.

### 3. WHAT WILL WE ACTUALLY DO WITH OUR PCRA?

Once the goals have been clearly stated and the needs of key stakeholders identified, the leadership team can make sure there is clear line of sight to specific decisions and actions that will flow from the PCRA exercise.

CGAP's conversations with FSPs have found that PCRAs are too often filed away after completion, leading to little follow-up. Compliance-driven PCRAs can be especially susceptible to inaction. Asking the simple question of what we will actually do with the PCRA helps to shape its design toward action and practical usefulness: the PCRA is no longer an end in itself, but rather an enabler of other goals that are well thought through and clearly articulated ahead of time.

Crucially, it is not enough for the PCRA to simply identify risks. It must be designed to also provide the necessary information

for developing responses to those risks. If the answer to the third question is merely

**Asking what we will actually do with the PCRA helps to shape its design toward action and practical usefulness.**

"add climate risk scores to the credit assessment process," the PCRA may just end up being a form of climate "red-lining" of entire areas or segments that are determined to be exposed to climate risk, as we've seen in Pakistan (Notta and Zetterli 2025). This would not only be failing clients, but also undermining the long-term market for the financial institution.

Whatever the original motivation for conducting a PCRA, its true value lies in its capacity to catalyze strategic change (see Chapter 2) and support concrete decision making throughout the institution regarding risk financing (Chapter 4) and products (Chapter 5).

<sup>6</sup> For a list of notable PCRA stakeholders and their main areas of interest, see (Gross 2025).

<sup>7</sup> One FSP in Ghana found that male clients run businesses in fixed locations that were mostly affected by high-intensity floods, while women's businesses were more likely to be in the open air and therefore more affected by low-intensity flooding, which is harder to anticipate. These market women were therefore more likely to be out with their stock in the street when floods occurred, leading to serious damage.

## Getting Started: Resources for a PCRA

A decade ago, conducting a PCRA exercise was expensive, often involving global consultancies and proprietary data sets. Today, thanks to the rise of open-source climate risk data, PCRA can be conducted far more affordably.

This shift has spawned a wide range of tools and partners to support inclusive FSPs—but navigating this landscape can be daunting. Many of the resources require specialized skills in geospatial analysis or climate modeling, and with more than 120 open-source PCRA tools now on the market, it can be hard for inclusive FSPs to determine which ones will be best for their needs.

For FSPs with narrow climate risk questions, Caribou Digital's Space for Development<sup>8</sup> can be a good entry point. The site's helpful "GeoPlatform Finder" tool allows visitors to select a risk to assess, then narrow by topic and geography, before recommending one or two relevant online resources, with guidance on using them.

Beyond this tool, the landscape broadens quickly, potentially overwhelming the PCRA novice. CGAP has identified three types of resources (see Figure 5) that inclusive FSPs may want to consider based on their PCRA objectives, technical capabilities, and budget. A few of the most common and useful resources are highlighted in the following paragraphs, and a fuller list of options in each category is available in Annex 3.

### 1. OPEN-SOURCE CLIMATE RISK TOOLS: NONTECHNICAL

Most FSPs who are new to PCRA would benefit from reviewing open-source platforms that do not require technical climate data skills. These resources provide a high-level understanding of portfolio risk, helping inclusive FSPs incorporate climate risk into management

decisions. ThinkHazard is a useful first stop for many FSPs to understand city-level risk by severity.

### 2. OPEN-SOURCE CLIMATE RISK TOOLS: TECHNICAL EXPERTISE REQUIRED

To dive deeper into more complex climate risk data sets, the second option for inclusive FSPs is to work with an expert to leverage more technical open-source platforms. While this approach enables FSPs to assess risk on a more granular level than nontechnical platforms allow, it usually requires funding to hire a contractor with technical expertise in geospatial data analysis and climate modeling. Examples include CLIMADA, which models estimated damage from natural disasters, and OS-Climate, which facilitates stress testing.

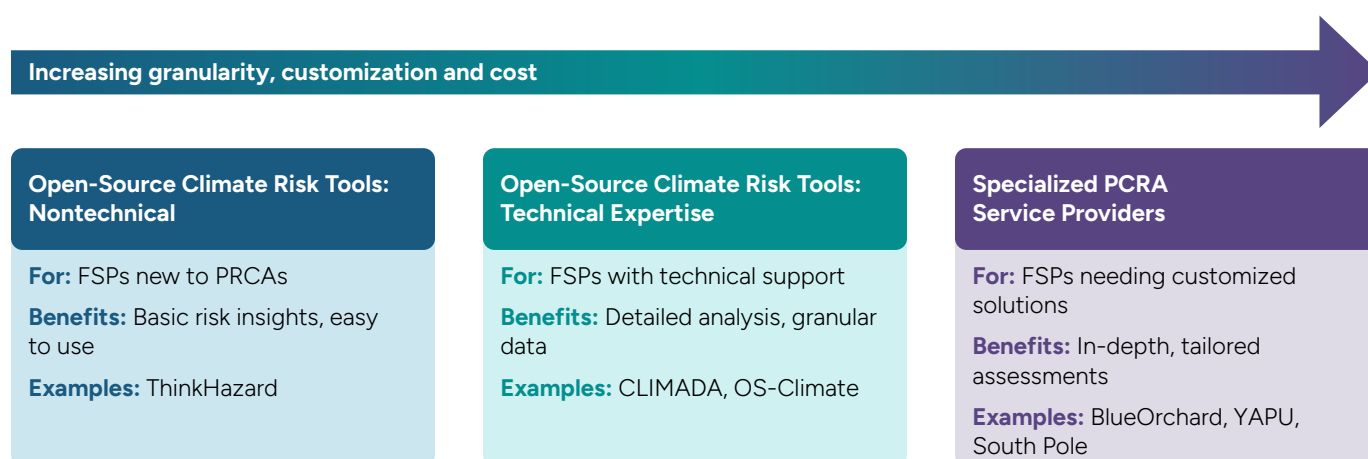
### 3. SPECIALIZED PCRA SERVICE PROVIDERS

The third option, for FSPs who have access to more significant PCRA funding and require the most customized view of climate risk, is to work with a specialized PCRA service provider. Thanks to the increase in available climate risk data, these specialist providers are able to produce PCRA for inclusive FSPs at a standard that was only available to a Tier 1 bank a decade ago, yet can now be tailored to the inclusive FSP context. These providers include BlueOrchard Analytics, YAPU Solutions, South Pole, and Syvl Earth.

For the purposes of this chapter, we're highlighting providers that are more typically associated with inclusive FSPs. Large, global FSPs may also want to consider global providers that primarily serve Tier 1 banks such as Climate X or First Street, climate risk assessment arms of ratings agencies Moody's and S&P, or global management consulting firms such as EY or McKinsey. Additionally, large FSPs looking for risk management and risk transfer solutions as the primary outcome of a PCRA may want to engage reinsurers like Munich Re or AXA Climate,

<sup>8</sup> Available at [www.spacefordevelopment.org](http://www.spacefordevelopment.org).

FIGURE 5. Types of PCRA Resources



Source: Authors

or specialists such as Celsius Pro,<sup>9</sup> which can also conduct core elements of PCRA.

In addition to considering the above resources, FSPs may also consider contacting their national meteorological agency, which can advise them about experts and funders that are already active in PCRA exercises in the country. National or regional research universities may be willing to contribute technical expertise or access to information that can further a PCRA exercise, and regional Development Finance Institutions (DFIs), as well as an FSP's own investors and funders, are also likely to have recommendations based on their own portfolio-based PCRA.

## The Bottom Line

Ultimately, there are a wide range of tools now at the disposal of FSPs looking to embark on PCRA. Choosing the right ones based on the FSPs' resources and end goals is a predictor of success—but FSPs must also be realistic about what climate mapping tools today can and cannot do for them. Eventually there will be open-source PCRA tools with high-resolution, all-risk, short-term forecasts that can help FSPs develop client-specific adaptation and resilience solutions—but the existing tools are not there yet.

The good news is that PCRA are no longer limited to large banks with deep technical teams. With an expanding set of service providers and open-source tools, FSPs that are most at risk of the impact of climate change are increasingly able to quantify and respond to it.

<sup>9</sup> Available at <https://www.celsiuspro.com/>.

## CHAPTER 4

# Risk Financing

Inclusive FSPs in the Global South operate in a high-risk environment by default; CFOs must maintain a healthy balance sheet while managing diverse risks, both external and internal. The diversity of risk, and the need to have a balanced response, was an important focus for the traditional risk management frameworks<sup>10</sup> that accompanied the establishment and early growth of microfinance.

Regulators require inclusive FSPs to maintain higher capital adequacy ratios than traditional banks to account for the higher level of risk in their portfolios; however, as detailed in this chapter, many FSPs now maintain capital reserves far higher than the regulatory requirement and, more importantly, higher than the prudent level of reserves. While they may assume that those higher reserves can cover their climate risk, higher reserves may, in fact, make the FSP more vulnerable, not less, by allocating capital inefficiently.

Climate risk is uniquely problematic, in that it is highly destructive, multifaceted, and covariant (i.e., affecting wide swaths of geography and population)—and it is growing worse. Typically, such risks are passed to insurers, and insurance does have an important role to play. However, commercial insurance cannot be the only or even the primary tool that FSPs use to manage climate risk: fully insuring climate risk is simply too expensive for a single FSP to afford and remain competitive, especially in the absence of a public-sector insurance mandate and/or subsidy.

As a result, inclusive FSPs must develop a novel approach to maintain solvency as well as liquidity in the event of serious portfolio impairment due to a natural disaster.

This chapter aims to help inclusive FSPs construct an appropriate and accessible financing approach by

## Leadership Takeaways

- Climate change increasingly demands new approaches to risk financing for FSPs like yours.
- Risk layering that combines reserves, contingent finance, and meso-level insurance can offer an effective and financially efficient approach.
- The central questions for management are which risk-layering tools to deploy, how to optimize their combination, and how to ensure that each is used in ways that reinforce the resilience of both the institution and its customers.

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<sup>10</sup> For examples, see (Churchill and Coster 2001)

layering different risk and resilience instruments based on the severity and frequency of a loss event. Risk layering, explored in more detail below, is designed to support both solvency and liquidity after a climate event, enabling an FSP not only to defensively absorb losses but also to continue lending responsibly after a shock in order to reduce negative coping mechanisms by clients and support their swift recovery.

## Risk Layering

The primary goal of risk layering for inclusive FSPs is not to indemnify it (fully account for a financial loss) against all risks, but rather to protect both the provider's solvency and its ability to continue operating against a range of risks in a cost-effective manner.

The three layers of protection, which are outlined in more detail in Figure 6, are<sup>11</sup>:

- **Layer 1: Optimal Reserves**—the initial layer of protection that ensures that the bank can manage common, small-scale risks.
- **Layer 2: Contingent Finance**—prearranged finance that an FSP can access in the event of a predefined medium-scale shock. Contingent finance can take two main forms, depending on the nature of the shock: **contingent debt**, which addresses short-term liquidity constraints by rapidly releasing loanable funds; and **contingent capital**, which addresses solvency risks by replenishing or protecting the institution's balance sheet after significant losses.
- **Layer 3: Meso-Level Insurance**—a risk transfer policy the FSP purchases in order to recapitalize its balance sheet in the case of a large-scale, existential shock.

Reserves (Layer 1) are necessary to manage small-scale portfolio volatility. But these reserves are insufficient for severe shocks like natural disasters; such rare events are more efficiently managed by risk transfer

mechanisms such as insurance (Layer 3). However, insurance is too expensive for inclusive FSPs to cover every mid-sized shock, such as a localized flood affecting a single branch. Depending on the extent of the damage caused in such events, the FSP would do better to access contingent debt or capital (Layer 2), which cost much less than equivalent insurance protection.

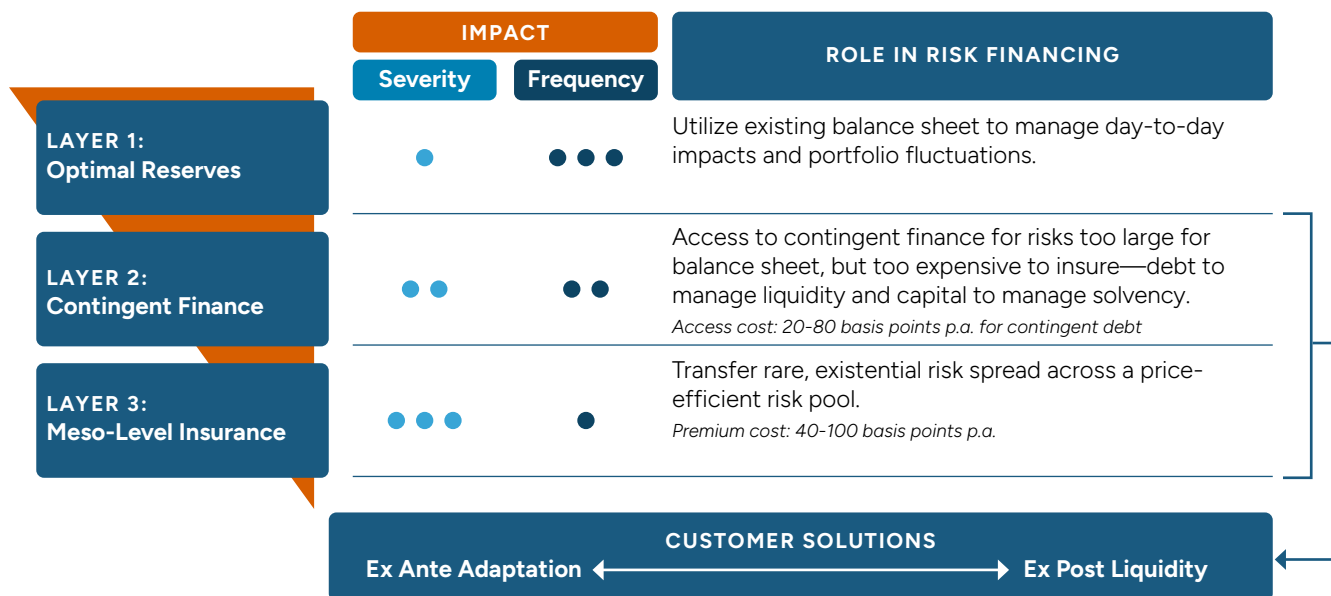
An analogy to small business finance may help to illustrate the relationship more clearly. A well-managed business has liquid savings in reserve to deal with small day-to-day costs like a broken window or a flat tire on a motorbike. But it should not keep so much cash on hand that it could rebuild from scratch if the entire business burns down—that would significantly hamper investment in staff and inventory, undermining the growth and viability of the business. Insurance is a more efficient instrument for such risks with low probability and high impact. However, if the business bought insurance for every asset it owned and every risk it faced, the premiums would be unreasonable. For mid-sized shocks, the business would be better off securing access to a line of credit that could be drawn upon as needed, while using cashflow to grow the business.

Climate resilience initiatives for inclusive FSPs are increasingly combining these tools in a layered risk management approach. Programs like the World Bank's Resilient and Accessible Microfinance (RAM) in Pakistan, VisionFund's African and Asian Resilience in Disaster Insurance Scheme (ARDIS), and the InsuResilience Investment Fund offer various packages of debt, equity, and insurance to strengthen FSP balance sheets and enable the FSP to extend locally relevant products and services to end customers.

**Risk layering enables an FSP not only to defensively absorb losses but also to continue lending responsibly after a shock.**

<sup>11</sup> Refer to CGAP's upcoming reading deck, which dives deeper into contingent financing for FSPs to support climate adaptation and resilience.

FIGURE 6. A Risk-Layering Approach for FSPs



Source: Authors

Designing an efficient risk-layering strategy is also critical for client outcomes. The breathing space and liquidity that it gives FSPs after a shock should be used for offering relief and support to clients through temporary repayment moratoria, rescheduling and restructuring, and extending fresh financing through responsible recovery lending on affordable terms (see Chapter 5). Making these pass-through mechanisms explicit is an important part of responsible product and balance sheet design.

Most inclusive FSPs operating in environments exposed to climate shocks should adopt a layering approach to climate risk and explore what combination of instruments is appropriate for their circumstances. In designing and deploying each risk-financing layer, they may want to consider the following.

## Layer 1: Optimal Reserves

FSPs rely on capital reserves to cover standard portfolio volatility. Historically, inclusive FSPs and regulators have worried about undercapitalization; however, many have overlooked that over-reserving can also cause problems. Excessive reserves

constrain growth, efficiency, and investor returns (Olorunfemi Akande, n.d.). In a study of 625 MFIs across 40 countries, Afrifa et al. (2019) demonstrate a statistically significant relationship between excessive capital reserves and poor financial performance. However, inclusive FSPs' annual reports regularly report capital reserves far above the regulatory minimum as "robust" or "sound." For instance, average capital reserves for MFIs in Rwanda and Malawi in 2024 were more than double the regulatory requirement. In some cases, maintaining reserves well above the regulatory minimum reflects an accurate evaluation of the level of risk—but there are downsides that also must be considered.

In the context of climate risk, the financial inefficiency of excess capital reserves is exacerbated. Due to the covariant nature of climate risk, a given shock can damage extensive portions of the portfolio at the same

**Historically, inclusive FSPs and regulators have worried about undercapitalization; however, many have overlooked that over-reserving can also cause problems.**

time. As a result, the capital reserves required to fully cover the risk is prohibitively high.

For example, an analysis of FSP performance in the wake of the Pakistani floods of 2022 in Sindh province found that losses far exceeded the buffer capital held by financial institutions and that additional risk management mechanisms were essential. Incremental NPLs of MFIs and microfinance banks reached USD 271 million—more than half of total industry capital reserves—and in many cases exceeded individual institutions’ buffers entirely (World Bank 2022).

While excessive capital reserves may feel like a warm blanket to CFOs, in many contexts they are likely to prove insufficient for managing the existential risk that climate change represents. FSPs may better boost resilience by optimizing their capital and investing in more efficient risk management and risk transfer instruments.

## Layer 2: Contingent Finance

Contingent finance includes a range of financial instruments that are prearranged and can be activated when a predefined trigger is met. These instruments are designed to respond to events that disrupt FSPs’ balance sheets or cashflows, providing rapid support when standard funding channels are too slow.

Contingent finance can take two main forms, depending on the nature and severity of losses:

**contingent debt** provides liquidity support through a preapproved line of credit that the FSP can draw down rapidly when repayments are delayed but borrowers are expected to recover, and **contingent capital** provides solvency support through precommitted, equitylike capital that replenishes or protects the institution’s capital base following more severe losses that erode equity and threaten regulatory capital adequacy.<sup>12</sup>

Unlike insurance, contingent finance does not transfer the risk of a disaster event to a third party: the FSP still bears the risk. Rather, this set of tools enables the FSP to manage the event with increased access to timely financing, maintaining liquidity and solvency while responsibly deploying fresh capital to support customers (see the section on recovery lending in Chapter 5). With this support, borrowers can recover faster and with fewer negative coping mechanisms—like selling productive assets—that undermine their future incomes. This in turn strengthens these customers’ repayment capacity and bolsters the portfolio quality of the FSP.

Access to a contingent debt facility does not affect regulatory leverage caps, such as debt-to-equity or debt-to-asset ratios, because it sits off balance sheet. Further, since contingent debt is only recognized as a liability once it is drawn, the facility does not constrain the FSP’s ability to finance its core operations with other debt.

Contingent finance, particularly contingent debt, reliably responds to more frequent, lower-impact risks than insurance is designed to address. For example, due to the El Niño phenomenon in Colombia during 2023, 161 municipalities issued disaster declarations, including 1,631 forest fires, 21 droughts, and 274 water shortages (IFRC 2024). The following year, flooding affected 181 municipalities. These events, of course, caused a range of damage, from minor to severe. An insurance policy covering all of them for minor damages would be prohibitively costly, but a contingent debt facility triggered by a range of disaster events would enable FSPs to support customers as needed, without trapping equity. The trigger element and speed of access to a contingent debt facility are key to ensuring that the FSP has access to the liquidity when needed; the lender is contractually obligated to extend the debt when an event is triggered.

<sup>12</sup> Contingent finance for FSPs as described here is similar to but distinct from the contingent line of credit (CLOC) described in Chapter 5. Throughout the paper, contingent finance, capital, and debt are used to refer to contingent financial instruments accessed by an FSP and CLOC to refer to a similar mechanism accessed by an end customer.

A contingent debt facility is much cheaper on a year-to-year basis than an insurance policy for minor events, with more efficient support for limited impairments. Contingent debt facilities attract commitment fees in the range of 0.2–0.8 percent based on the lender and portfolio share desired, but the wide scope of the facility provides a balance sheet backstop, ensuring access to liquidity without the narrow terms of insurance.

Contingent debt facilities are contracted with a wholesale lender with agreed-upon triggers, credit volumes, terms, and costs. Contingent debt can be unlocked within hours or days of a trigger having been activated, with the FSP drawing down funds as needed and paying interest only on funds drawn. The facility typically has a 24–48 month term and often requires covenants on how the funds are to be used. For example, FSPs may not be permitted to pay dividends while the facility is being utilized.

To leverage the potential of contingent finance, FSPs should model how they expect to use contingent debt and contingent capital facilities (see Chapter 5 for potential uses via recovery lending or contingent lines of credit [CLOCs]), how much to draw down based on the type and size of a disaster, and how quickly they can assess client needs and deploy capital as a bridge for resilience. Further, FSPs should set clear lending parameters to ensure efficient capital deployment, establish loan management standards to support existing customers and avoid unduly harsh collections activities, and closely monitor portfolio at risk (PAR) in disaster-affected regions to manage potential losses. With these preparations in place, contingent finance can be a fast and cost-effective source of liquidity to respond to small-to-medium-scale climate shocks, while also reinforcing institutional resilience when losses are more severe.

## Layer 3: Meso-Level Parametric Insurance

Parametric insurance pays out upon a trigger of a high-impact, low-frequency event such as catastrophic winds or major flooding. This model avoids the high costs of individual underwriting and loss assessment in traditional insurance as well as the slow processing of claims, since payouts are (in theory) approved automatically once the triggers are reached.

Parametric insurance includes weather-index and yield-index cover and, in the inclusive finance context, has primarily been sold at the retail level, insuring individual customers—often smallholder farmers. Unfortunately, parametric insurance has repeatedly struggled to scale due to a few well-documented and consistent challenges, including basis risk, product complexity, trust, and affordability; these challenges are explored in more detail in Chapter 5.

Despite these difficulties, insurance is still an essential financial tool for FSPs to manage high-severity, low-frequency risks, such as some of those posed by climate change. Risk transfer allows banks to convert unpredictable, potentially catastrophic losses into predictable expenses spread across and shared by a broader risk pool.

In recent years, a handful of programs have pivoted away from utilizing parametric insurance at the retail level, preferring instead to use a meso-level policy that protects the FSP's ability to remain solvent in a crisis. Early programs in Peru and the Philippines<sup>13</sup> demonstrated the use case, leading to initiatives such as ARDIS, launched in 2018 by VisionFund in partnership with Global Parametrics and the InsuResilience Investment Fund, as well as the Resilient and Accessible Microfinance (RAM) project in Pakistan approved by the World Bank in 2025 (World Bank 2022). One key reason for the interest in meso-level

13 For example, refer to ENSO (Skees and Murphy 2009) and EENIPE (Global Ag Risk, n.d.) in Peru and CLIMBS in the Philippines (Yasmin and Kurian 2020).

## BOX 2. VisionFund's ARDIS Program: Meso-Level Disaster Risk Financing for MFIs

### Context

VisionFund developed the African and Asian Resilience in Disaster Insurance Scheme (ARDIS<sup>a</sup>) to address the recurring challenge MFIs face in accessing rapid, affordable liquidity after climate and disaster shocks. The program aims to enable timely recovery lending while protecting MFI stability in post-disaster contexts.

### Approach

Launched in 2018, ARDIS is a risk-financing initiative that blends meso-level parametric insurance with contingent debt. The program was developed by VisionFund in partnership with Global Parametrics and KfW, drawing on both academic research by Global Parametrics' founders and VisionFund's operational experience with recovery lending following Typhoon Haiyan in 2014 (VisionFund 2024).

ARDIS is structured around four complementary layers:

1. **Contingent debt**, arranged at predisaster interest rates and released based on agreed-upon disaster triggers, enabling MFIs to rapidly deploy recovery loans.
2. **Parametric insurance**, linked to the same weather indices, is similarly designed to enable recovery lending plans of VisionFund MFIs, especially when the contingent debt is not required.
3. **Climate data and analytics**, used for trigger design and to inform MFI lending decisions and client farming practices.
4. **Technical assistance**, supporting MFIs to prepare for disasters and to understand when and how to deploy recovery lending, including from their own balance sheets.

a By 2020, the program expanded its name to reflect its broader geographic coverage. It is now known as the *African, American and Asian Resilience in Disaster Insurance Scheme*. Its acronym remains ARDIS.

Source: Authors, VisionFund (2024), Favre (2025)

### Outcomes

By 2020, ARDIS covered VisionFund clients in 15 countries against five disaster types: drought, flooding, earthquake, excess rainfall, and cyclone. That year, the program triggered four times, providing liquidity to support recovery lending for approximately 675,000 active borrowers. As of 2025, ARDIS insures more than 4 million people across 22 countries, with expansion planned in additional geographies, including the Amazon Basin. For VisionFund MFIs, ARDIS helps to prevent disaster-driven liquidity shortfalls and costly emergency borrowing, while enabling the business to continue lending and even grow during challenging times.

### Key Lessons

- Meso-level risk financing can play a critical role in enabling rapid recovery lending after disasters, even when end clients are not directly insured.
- Affordability remains a key constraint for MFIs with limited operating margins, particularly for instruments that may not trigger every year.
- Trigger transparency and clear communications on when they do and do not trigger are essential for trust and scale.
- Donor support has been more readily available for micro-level insurance than for meso-level approaches, despite their systemic benefits.

As a first mover, ARDIS represents an important step toward scalable climate resilience for inclusive FSPs, while highlighting the need for continued iteration and learning across the sector.

insurance is that it can be purchased for a price around 100 basis points or 1 percent of the portfolio covered; as a result, it can be accessed by more inclusive FSPs than retail-level parametric insurance, which usually costs three to five times more and often requires subsidies to deploy.

Whereas a retail parametric insurance policy insures individuals, a meso-level policy insures the FSP itself, providing a cash infusion after a trigger is breached but leaving the individual loan and customer management to the FSP. The FSP may use the meso-level payout to cover impaired loans, enable short-term payment moratoria, extend fresh lending, cover operational costs or other interventions. Because the FSP is usually on the ground after the event, the FSP is able to identify which customers require the most support and utilize the insurance payout to enable procustomer interventions.

Key distinctions of meso-level parametric insurance from retail microinsurance include:

- **Cost:** Pricing of meso-level parametric policies are often 60–80 percent lower than retail policies, due to reduced operational expenses and a smaller percentage of the PAR.
  - **Balance sheet protection:** In the case of micro-level parametric policies, individual customers are insured, meaning they receive insurance payouts or loan forgiveness directly regardless of how impacted they actually were. With meso-level policies, the FSP's balance sheet is insured, meaning the FSP receives the payout and can use the increased liquidity to support customer-centric loan management and lending decisions as appropriate for each customer's situation.
  - **Simplicity for end customers:** Parametric insurance is notoriously challenging to explain, especially to customers with low levels of education. A meso-level policy operates in the background and doesn't need to be explained and sold to each customer, who can benefit from the insurance without even knowing that it is there.
- **Reduction of basis risk:** Parametric insurance eliminates the need for loss assessment, which drives down cost. This creates a new challenge in the form of basis risk: the fact that actual losses experienced by customers do not match the losses measured by an index, meaning that some clients who had no losses got payouts and vice versa. This is a major challenge for retail index insurance. Meso-level insurance helps to reduce this problem, since the FSP can decide who to deploy fresh capital to based on the impact on and needs of its clients, which it needs to assess regardless. Hence, clients have fewer expectations that can go unmet, while the FSP can allocate capital more appropriately based on the actual impact on different clients. And since customers need to repay the loan, moral hazard is reduced.

For FSPs looking to design a meso-level parametric insurance policy, a few success factors are worth consideration:

1. **Payouts must be designed to be sufficient to maintain liquidity in a large-scale shock.** The FSP should look back to previous shock events, identify the NPL ratio and liquidity constraints at the time, and create scenarios that model future probabilities.
2. **Meso-level parametric insurance should be designed to trigger somewhere across the portfolio every few years to build trust and operational familiarity for FSPs new to the concept,** although the trigger would be set for an event that takes place only every 15–40 years in any given locale. VisionFund International (VFI) buys its meso-level insurance policy at the group level. Historical modeling from its original partner, Global Parametrics (now Celsius Pro), indicated that the designed product would pay out roughly every two to three years somewhere across the global VFI portfolio. Individual countries, however, might only experience a payout every decade or two.
3. **Insurers should make triggers transparent and communicate consistently** both when triggers go off and when they do not. The technical complexity

of parametric insurance can otherwise lead to confusion and conflict between the parties. One FSP who had bought parametric insurance in Africa told CGAP that one year, it did not receive a payout when it was absolutely sure there had been a qualifying loss; and yet the next year, they suddenly received an insurance payout for an event they had not been anticipating. Another FSP in southeast Asia shared that the exact details of the trigger were not clear to them, leading to a mistaken expectation of a payout and a dispute with the insurer. With parametric insurance, the trigger must be an objective measurement agreed by both parties. The insurance company should either provide access to the data source by which the trigger will be determined or provide regular communication to the FSP regarding trigger thresholds—including when the trigger is close but is not tripped—to avoid confusion.

## Financing Climate Risk Reduction Efforts

Programs from DFIs and impact investors are emerging that can help inclusive FSPs to not only manage but also reduce the risk they face due to climate change. These initiatives can lower the cost of capital and risk transfer, further bolstering FSPs' ability to meet the climate challenge. Many of them focus on interventions

that help clients adapt and grow more resilient to climate change, including by enhancing and scaling up the solutions that FSPs offer (as discussed in Chapter 5).

Whereas risk layering on the balance sheet is primarily intended to facilitate liquidity *after* a climate shock, risk reduction financing is designed to invest in adaptation solutions *before* a climate event, helping to bolster the resilience of customers.

Whereas risk layering on the balance sheet is primarily intended to facilitate liquidity *after* a climate shock, risk reduction financing is designed to invest in adaptation solutions *before* a climate event, helping to bolster the resilience of customers. Many involve a blended-finance component, where philanthropic funding is utilized to mobilize private capital toward climate adaptation.

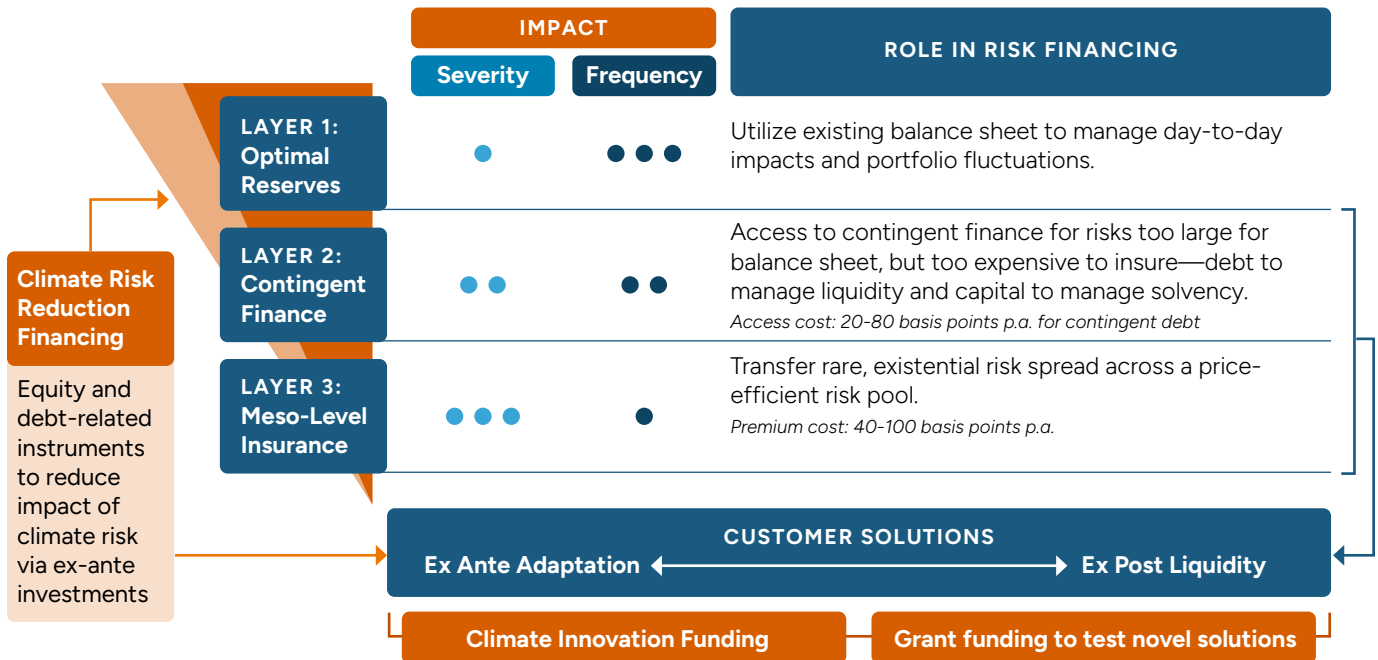
Examples of funds that include climate risk reduction financing include:

- **GAWA Capital's Kualu Fund** is a EUR 250 million<sup>14</sup> blended-finance vehicle with a EUR 37 million first-loss layer and a EUR 12.25 million technical assistance facility. The fund invests debt and equity into inclusive FSPs in Latin America, the Caribbean and India, to expand climate adaptation and mitigation finance (Kualu Fund-GCF, n.d.).
- **Triple Jump Financial Inclusion Resilience Fund** provides subordinated debt to FSPs to encourage investment in climate adaptation interventions (Triple Jump 2026).
- **Incofin Climate-Smart Microfinance Fund** provides senior and subordinated debt to microfinance institutions and adaptation enterprises to boost climate resilience (Incofin 2026).
- **BlueOrchard Climate Action Mobilisation Fund**, after launching, will provide senior debt, largely from DFIs and insurance investors, to FSPs that provide climate finance to SMEs and end borrowers in emerging markets (Africa Private Equity News 2025).

Figure 7 shows how financing that reduces climate risk works alongside risk layering by lowering the level of risk that needs to be managed, while channeling funding into customer solutions that support adaptation before shocks occur and provide liquidity afterward.

<sup>14</sup> Target size.

FIGURE 7. Climate Risk Reduction Financing Complements Risk Layering



Source: Authors

## The Role of Credit Guarantees

Guarantees can play an enabling role within the climate risk-financing architecture of an inclusive FSP. A guarantee is a promise by a trusted institution (often a development bank or similar specialized firm) to cover part of a lender's loss if a borrower can't repay. By sharing risk—only for a portion of the loan or for certain periods—it encourages FSPs to lend more, for longer, and at better terms. It does not insure the entire loan, so lenders still need to assess and manage risk.

Loans usually need to fulfill certain eligibility criteria to fall under the guarantee agreement (which can relate to demographic characteristics of the borrower or to the purpose, size, or term of the loan).

While some FSPs see guarantees as expensive, others (such as CGAP partner Bancamía, in partnership with Colombia's FNG) consider them to be essential to extending loans to sectors facing high climate risk, in

### What is a Credit Guarantee?

A guarantee is a promise by a trusted institution (often a development bank or similar specialized firm) to cover part of a lender's loss if a borrower can't repay. By sharing risk—only for a portion of the loan or for certain periods—it encourages FSPs to lend more, for longer, and at better terms. It does not insure the entire loan, so lenders still need to assess and manage risk. Loans usually need to fulfill certain eligibility criteria to fall under the guarantee agreement (which can relate to demographic characteristics of the borrower or to the purpose, size, or term of the loan).

spite of the fee such guarantees attract—3.5 percent in the case of Bancamía (2026).<sup>15</sup>

In climate adaptation and resilience, guarantees can stimulate FSP lending in two main ways. First, guarantees can protect a portion of potential losses from adaptation finance. Examples include the Green Morocco Plan, Africa Guarantee Fund’s Green Guarantee, and products offered by Aceli.<sup>16</sup> Second, guarantees can encourage wholesale lenders to provide liquidity to inclusive FSPs after a shock (Skees 2022).

Guarantees can be configured in various modalities, including first loss, second loss (usually utilized by wholesales lenders directly), and proportional risk sharing (CPI 2024a). As a result, guarantees can play a catalytic role at multiple levels of an FSP’s climate risk financing architecture.

FSPs may want to survey the market to find a guarantee program that supports adaptation and/or resilience programming given their unique objectives and capital structure, while avoiding fees that might make loans less competitive. Technical assistance usually serves to complement effective guarantee programs, ensuring that capital is utilized in a prudential manner in order to accomplish stated objectives. Finally, FSPs should use rigorous underwriting when utilizing guarantees to avoid moral hazard and ensure that the guarantee contributes effectively to the organization’s climate strategy.

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15 The price of the guarantee varies based on the duration of the loan, the percentage of the loan being guaranteed, and the purpose of the loan (including level of subsidy). This estimate is for a microcredit loan of up to 12 months duration, guaranteeing 70 percent of the loan.

16 For additional information refer to <https://euromed-economists.org/the-role-of-credit-guarantees-to-finance-adaptation-to-climate-change-in-the-mediterranean/>, <https://africanguaranteefund.com/product/loan-guarantees/green-guarantee/> and <https://aceliafrica.org/>, respectively.

## CHAPTER 5

# Adapting the Product Suite for Climate Resilience

Most FSPs recognize that, because climate adaptation and resilience are complex phenomena, there is no silver bullet. A typical client needs to engage in four ongoing, broad strategies that help them adapt and grow more resilient to climate change. Each of these strategies maps to a distinct set of solutions from their FSP that can support their journey to greater adaptation and resilience. These strategies may manifest differently for women and men due to gendered roles, asset ownership patterns, and decision-making power.

The existing products offered by most inclusive financial institutions already go some way toward supporting these strategies. But they increasingly fall short against the depth and breadth of potential impact brought on by climate change, making it essential for FSPs to iterate on their offerings. Much of that iteration is relatively straightforward but requires dedicated attention and a willingness to

tweak things that are deeply ingrained. Other aspects of it need a greater investment of time and resources, but also offer greater rewards for both the FSPs and their clients.

This chapter is split into two parts that reflect this distinction:

- Part 1 (The Basics) points to the lower-hanging fruit that all FSPs can start implementing today, with or without external assistance. These are smaller but salient changes that can collectively help customers to start creating their own layered approach to risk management.
- Part 2 (The Next Level) describes three big opportunities that CGAP believes represent an essential evolution for the inclusive finance sector in response to climate risk. Each of these is well within reach for most FSPs to adopt, but may require time and external support to test and grow comfortable with.

## Leadership Takeaways

- Step 1 is to use the framework below in conversation with clients to assess which client strategies your current offering is adequately supporting—and which it is not.
- Once identified, consider the relatively low-hanging opportunities outlined under each strategy.
- Beyond that, prioritize across the three emerging solutions that have major impact and business potential: adaptation finance, recovery lending, and contingent credit (including anticipatory financing).

FIGURE 8. **Four Customer Strategies to Adapt to Climate Change**

**Investing:** People invest in adaptation and resilience to build a better life in the face of climate change.

**When:** Months to years before climate shocks and stresses.

**Recovering:** People need to rebuild their lives and livelihoods after the immediate crisis has passed.

**When:** Weeks to months after a shock or stress.

**Hedging:** People pursue various strategies to manage risk ex ante.

**When:** Weeks to months before climate shocks and stresses.





**Coping:** Immediately before a shock, people need money to limit damages. When hit by a shock, people need money to get by without resorting to negative coping mechanisms.

**When:** Days before and after a shock.



Source: Authors

TABLE 2. **The Basic and Next-Level Product Opportunities**

	The Basics	The Next Level
<b>Investing</b> 	<ul style="list-style-type: none"> <li>• <b>Goal savings</b> for adaptive assets/inputs, and diversification.</li> <li>• <b>Tweaks to existing credit</b> products to enable adaptation investments—longer duration, larger, and aligned repayment schedules.</li> <li>• <b>Leasing / pay-as-you-go</b> models where upfront costs are high.</li> </ul> <p>» <b>Page 32</b></p>	<ul style="list-style-type: none"> <li>• <b>Adaptation finance:</b> fit for purpose loans for specific adaptive assets and practices, perhaps in partnership with adaptation solution providers.</li> </ul> <p>» <b>Page 41</b></p>
<b>Hedging</b> 	<ul style="list-style-type: none"> <li>• <b>Precautionary savings</b> in liquid, reliable, low fee, emergency accounts.</li> <li>• <b>Credit-linked climate risk insurance.</b></li> </ul> <p>» <b>Page 33</b></p>	<ul style="list-style-type: none"> <li>• <b>Meso-level portfolio insurance</b> purchased by the FSP but covering client liabilities.</li> </ul> <p>» <b>Page 23</b></p>
<b>Coping</b> 	<ul style="list-style-type: none"> <li>• <b>Post-disaster loan management policies</b> (rescheduling, moratoria, restructuring).</li> <li>• <b>Early warning information</b> to customers and staff.</li> </ul> <p>» <b>Page 37</b></p>	<ul style="list-style-type: none"> <li>• <b>Contingent lines of credit</b>, preapproved to deploy quickly after a shock.</li> <li>• <b>Anticipatory finance</b> deployed <i>ahead</i> of shock by linking to early warning systems.</li> </ul> <p>» <b>Page 48</b></p>
<b>Recovering</b> 	<ul style="list-style-type: none"> <li>• <b>Reconstruction/working capital loans</b> with grace periods.</li> <li>• Structured savings to rebuild buffers.</li> </ul> <p>» <b>Page 38</b></p>	<ul style="list-style-type: none"> <li>• <b>Recovery lending</b> programs with clear methodology, capital planning, staffing, and rapid response processes.</li> </ul> <p>» <b>Page 39</b></p>

## PART 1. THE BASICS: Low-Hanging Fruit for Iterating on Current Offerings

Most inclusive FSPs already offer products and services that support the four client strategies outlined in Figure 8 to some extent. In some cases, standard offerings may be sufficient to meet clients’ needs—especially where climate risks are not yet very significant. In many other cases, however, FSPs will

need to iterate on their offerings to better support clients. This chapter will go through each client strategy in turn, pointing to opportunities for reorientation or tweaking of FSPs’ existing offerings. Most inclusive FSPs operating in climate-vulnerable environments can realize quick wins by focusing on these iterations over the next 12 months.

## Investing



People living with climate risk need to proactively invest in creating a better, more resilient future—not just surviving the next season. This might include shifting to more climate-resilient crops, installing irrigation, reinforcing houses against storms, water-proofing inventory storage, or starting side businesses that are less exposed to weather. For many households, these investments are the only way to lower risk, raise productivity and profitability, diversify income, and reduce vulnerability over time.

Financial services make these investments possible. Savings products help households gradually build the lump sums needed for modest improvements, while various forms of credit allow them to make larger investments, for instance, in climate-smart assets. When designed responsibly, these products can be bundled with technical advice, input supply, or digital weather information so that more of this credit is used to invest in the right things.

Adaptation finance, a form of investing, is one of the three big opportunities CGAP has identified and therefore given focused attention in Part 2 of this chapter.

### GOAL SAVINGS

Well-designed goal-based savings products (sometimes called commitment savings) have proven effective in other contexts<sup>17</sup> and could play an important role in helping customers save for adaptive assets like solar water pumps, inputs like drought-resistant seeds, and revenue diversification opportunities. Commitment savings devices help households protect savings from competing daily needs and social pressures, ensuring that resources accumulate toward adaptation goals. Providers can further strengthen the link to resilience by aligning these products with concrete climate-smart investments.

For example, Agro Supply in Uganda offers a digital layaway system for customers to save for climate-resistant seeds. It couples this with other support, including farmer training. Nearly 9 in 10 Agro Supply farmers interviewed by the social impact measurement organization 60 Decibels report an improved quality of life, noting higher productivity and income. Okot Justine Mike, an Agro Supply customer in Oyam District, has used his increased yield (2,500 kg per acre, up from 650 kg per acre) to graduate from subsistence to commercial farming, buy more farmland, and further diversify his income by expanding his agro-inputs dealership (Nweke 2025; Agro Supply 2025).

Done well, goal savings products enable poor households not just to save more, but to save toward assets and capabilities that fundamentally change their climate risk profile. The challenge for FSPs is designing products with appropriate incentives, time horizons, and flexibility that recognize adaptation investments may take months or years to accumulate sufficient funds for, while providing the discipline needed to resist short-term pressures that would otherwise deplete these resources.

*“Buying seeds is impossible sometimes since we women have so many things to do with our money. So I joined Agro Supply because I can save little by little by buying scratch cards as soon as I have extra cash. Being able to pay for inputs benefits not only me, but also my family in the long run... If you have a good harvest, you have many choices.”*

—Stella Apio, an Agro Supply customer (Agro Supply, n.d.)

The value of attractive saving products cannot be overstated, for climate and beyond. However, customer savings alone are often not enough to help customers buy the needed asset, start that new

<sup>17</sup> See for instance Gine (2011); Martin (2014); (Habyarimana 2017); and Ashraf et al. (2003).

business, or invest in recovery. Savings are typically only part of the solution.

## TWEAKS TO CREDIT PRODUCTS

For larger investments in climate adaptation and resilience, customers often need to borrow. Identifying what these investments are and offering lending products to match can be a powerful way for FSPs to expand their business and gain first-mover advantage in what is unfortunately likely to be a growing space.

In certain cases, this may simply be a matter of proactively engaging clients around their adaptation needs and encouraging them to use existing loan products to invest in the appropriate solutions. FSPs and their loan officers need to invest in a better understanding of adaptation in the local context, but no changes to the offering itself are required.

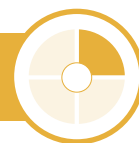
In other cases, the FSP may need to tweak the features of its lending products to match the characteristics of the investment. Some adaptations are expensive: installing a drip irrigation system may cost more than the largest loan that the FSP offers. Others take time before they pay off: improved seed varieties that produce higher yields don't generate greater incomes until after the harvest. Agroforestry can strengthen the climate resilience of smallholders in multiple ways, but both soil health and carbon capture benefits can take several seasons to materialize.

Hence, meeting clients' need for adaptation and resilience may require FSPs to consider larger loan sizes and longer tenors to pay back the larger amounts. More flexible repayment schedules can let clients repay in line with their cash flow while still maintaining high repayment rates.<sup>18</sup> Leasing and pay-as-you-go models can address both loan size and repayment schedule, spreading the high upfront costs of some assets over time while maintaining a steady but flexible repayment.

Making these tweaks takes time and effort, but can yield economic returns for FSPs by reducing climate risk in the portfolio and driving market share by meeting an emerging demand. The challenge is to structure the loans in ways that keep them both affordable for borrowers and viable for lenders, especially where returns to adaptation investments are uncertain or slow to materialize. Moreover, adaptation investments sometimes differ fundamentally from the productive investments inclusive FSPs typically finance, because they don't generate new revenue for the borrower: their value lies in preventing future losses when climate shocks eventually occur. This requires FSPs to think differently about the return on investment, explicitly incorporating an expected reduction in portfolio risk and associated reserves into pricing and lending decisions.

These investment opportunities and constraints are not gender-neutral. Female clients often operate on smaller plots, in lower-margin value chains, or from home-based businesses, and they often lack formal land titles or registered enterprises that may be required as collateral for adaptation loans. They may also have less control over household cash flows and face mobility and time constraints that make it harder to access extension services or after-sales support. In order to serve all their clients effectively, FSPs should ensure that they design adaptation investment products with these differing realities in mind.

## Hedging



Beyond investments in adaptation and resilience, people also need to manage the financial risk of climate change so that a bad season or extreme event does not end up being catastrophic. FSPs can offer several types of hedging tools for this purpose, including self-insurance mechanisms as well

<sup>18</sup> See for example One Acre Fund (2015) and Kurosaki and Shonchoy (2014).

as risk transfer tools like weather-index insurance. Flexible savings and liquidity buffers—for example, easy-access accounts or digital wallets—help households to self-insure against smaller shocks. When combined with climate information (e.g., early warning systems) and incentives for risk-reducing practices, these financial instruments can encourage more productive levels of risk-taking, benefiting clients and FSPs alike.

One of the key dimensions along which these hedging instruments should be viewed is their fungibility: whether they are specialized against a specific risk or more broadly applicable to a range of calamities that might befall the household. Insurance solutions offer the highest degree of risk cover, transferring the risk away from the customer to the insurance and reinsurance markets. However, insurance also tends to be narrowly focused on very specific risks and triggers. Insurance products that cover multiple risks quickly get more expensive.

Meanwhile, low-income people face many different risks—including many that are unrelated to climate change—and are reluctant to dedicate scarce resources to any single one. As Zollman (2020) points out from her research in Kenya, “the diversity of the risks people face means that they need risk management strategies that are fungible.” Solutions that can help people prepare for multiple risks are therefore generally more attractive to customers.

## PRECAUTIONARY SAVINGS

Precautionary savings are a core element of hedging for low-income households facing climate risk: they are the self-insurance buffer that absorbs smaller shocks and buys time in the face of larger ones. In climate-stressed environments, these buffers need to work harder and more often, as households face more frequent crop losses, health shocks, and income volatility. Yet the very same pressures make it harder to set money aside. Poor households often save in informal, illiquid, or risky forms—storing grain, holding small livestock, or relying on rotating savings groups—

which can themselves be wiped out by drought, flood, or disease. The result is that when a shock hits, people quickly exhaust whatever liquid resources they have and are forced into negative coping strategies such as selling productive assets, cutting essential consumption, or taking on expensive, short-term debt.

Research shows that households with greater savings prior to climate disasters are more likely to avoid negative coping mechanisms and achieve stronger recovery, with better food security and poverty outcomes afterward (Sandri and Robinson 2021). The flexibility of savings is particularly valuable given the unpredictable nature of climate impacts; funds set aside for drought might ultimately be needed for flood recovery, health emergencies triggered by heat stress, or maintaining children’s education when livelihoods are disrupted.

Features like low or no minimum balances, fee-free small deposits, and subaccounts earmarked for emergencies can make disciplined saving more realistic for low-income clients. Linking these accounts to early warning systems or parametric products can further strengthen the hedge: for example, allowing automatic top-ups during good seasons or offering temporary fee holidays when a climate trigger is reached. For providers, the challenge is to design products that are both commercially viable at very low balances and robust in crisis conditions, so that precautionary savings genuinely function as a first line of defense rather than a theoretical option.

## CLIMATE RISK INSURANCE

When most people in the inclusive finance space think of climate insurance, they think of parametric weather-index insurance, which is often used to cover smallholder farmers against extreme weather using remote measurements of objective phenomena like rainfall or wind speed. Broadly speaking, such products have struggled to gain widespread adoption despite subsidies and 9 in 10 people worldwide remain unprotected from rising risks, including climate change (Merry and Calderon 2025). See Box 3 for a brief overview of the

hurdles that constrain parametric insurance at the retail level, many of which have to do with customer understanding of and trust in the product.

Fortunately, there is an alternative that avoids many of these hurdles: meso-level parametric insurance purchased by the FSP for its portfolio instead of by the end client, as described in Chapter 4. Another approach FSPs are increasingly considering is area yield-index insurance, provided by Pula and others, which bolsters satellite data with reference plots to ensure local relevance and reduce basis risk (Pula 2026). When reference plots show low yields, payouts for the relevant region are automatically triggered without the need for loss assessment at the individual farm level. By its nature, yield-index insurance covers multiple risks that impact yield, beyond any single climate event.

A third approach is represented by credit-linked catastrophic property insurance, which pays off an individual customer's loan when that customer's property—a building, stock, crop, or other predefined asset—is destroyed due to a natural disaster.

Inclusive FSPs like Advans and VisionFund are already bundling catastrophic property insurance with their loan offerings, similar to the credit-life policies that have been used in the inclusive finance industry for many years. In the event of a claim, the insurance typically covers the outstanding loan principal, enabling

the FSP to write off the loan for the client. While this adds to the cost of the loan, buying the insurance at the FSP level rather than the retail level is so much less expensive that it doesn't have to price the FSP's loan product out of the market.

More customer-centric versions of such policies also include a small cash benefit to help the customer cover immediate expenses. Such a cash benefit on an embedded insurance product helps the customer see direct value from insurance, since otherwise the policy only pays off their outstanding loan, which they may or may not understand to be the result of insurance.

Credit-linked insurance can play an important enabling role for recovery lending or contingent credit programs (see Part 2 of this chapter). If implemented well, the cover allows the FSP to leverage the insurer's in-principal claim approval to satisfy regulatory ratios and quickly issue fresh loans, without waiting for the insurer to actually disburse the claims. By covering the outstanding loan, credit-linked insurance can also help to mitigate over-indebtedness around lending to customers in climate-exposed contexts, enabling FSPs to keep serving vulnerable clients where otherwise they may not. While making credit-linked insurance mandatory can be controversial, it can help to diversify the risk pool, thereby significantly lowering the cost and allowing the policy to cover more risks.

### BOX 3. The Unrealized Promise of Parametric Weather-Index Insurance

#### Context

Parametric weather-index insurance is widely recognized as a potentially important tool for managing climate risk, particularly in contexts where traditional loss-based insurance is costly or infeasible. Objective, agreed-upon triggers allow insurers to avoid expensive claims assessments, while customers can benefit from rapid, sometimes automated, payouts without the need to file claims. Despite this promise, experience with retail-level parametric insurance products, particularly those targeting smallholder farmers, has revealed persistent structural challenges.

#### Approach

Parametric weather-index insurance products rely on predefined triggers such as rainfall, temperature, wind speed, or river flow measured over a specific geographic area. When the trigger threshold is met, payouts are made regardless of individual losses. Over the past two decades, numerous pilots and products have been implemented at the retail level, often with donor or government support, providing a substantial evidence base on both the potential and the limitations of this approach.

### BOX 3. The Unrealized Promise of Parametric Weather-Index Insurance (continued)

#### Key Challenges

Experience across pilots highlights several recurring challenges:

1. **Trigger setting and basis risk.** First, basis risk remains a persistent problem: insurance may fail to trigger when customers experience losses or may trigger when they do not. Second, insurance is economically viable primarily for large, infrequent shocks. If a policy does not trigger for several years, customers are less likely to renew; if it triggers early, insurers may raise premiums to recover losses, undermining affordability.
2. **Product complexity and trust.** Many customers struggle to understand parametric insurance products, limiting perceived value and trust. This challenge is often exacerbated by basis risk. For example, some SEWA members questioned why their parametric heat insurance product did not pay out when temperatures displayed on their phones exceeded the trigger level.
3. **Financial sustainability.** Retail-level index insurance for low-income populations remains heavily dependent on subsidies. According to the *Landscape of Microinsurance 2024*, subsidies supported 97 percent of clients covered by 83 inclusive agricultural insurance products (Merry et al. 2025). A 2020 J-PAL review of 20 parametric weather-index projects similarly concluded that permanent subsidies may be required, noting consistently low take-up at market prices (Jameel 2024). Although subsidies are often designed to taper over time, this transition has rarely

materialized in practice. While indefinite subsidies may be acceptable in some contexts, their long-term viability in low- and middle-income countries (LMICs) remains uncertain.

4. **Data quality and asymmetry.** FSPs typically rely on insurtechs, insurers, risk experts, and reinsurers for product design and delivery, limiting transparency and accessibility. Accurate pricing requires long-term historical climate data, which is often unavailable or insufficient in many geographies. Even where data exist, actuaries must calibrate triggers to specific crops with differing sensitivities (e.g., cocoa versus maize). Products also require satellite-based monitoring across large geographic units and multiple payout thresholds, adding complexity and cost.
5. **Gender gaps.** Insurance uptake is further constrained by gender-specific barriers. Women often lack the formal documentation, land titles, or decision-making authority required for enrollment and may have lower financial literacy related to insurance concepts.

#### Key Lessons

These challenges do not imply that parametric insurance should be abandoned at the micro-level. Rather, future parametric weather and yield-index insurance pilots should be designed with a clear understanding of the long-term role of subsidies, a realistic path to sustainability, and strategies to diversify and expand insurance portfolios. More broadly, inclusive insurance will require sustained and targeted investment to scale in a financially viable manner.

Source: Authors, Kara et al. (2025)

## Coping



When disaster strikes, the actions people take in the hours and days before and after the shock become incredibly important for not just their short-term well-being, but also their prospects over time (WFP 2025; IRC and IFPRI 2023). Preparing for an imminent flood or storm and getting through the immediate aftermath means having the money to quickly board up your shop, batten down your roof, relocate key assets or inventory, buy food and water at crisis prices, cover urgent health costs, repair critical assets, or temporarily relocate to a safer area.

Access to finance during these times often determines whether a temporary shock becomes a permanent setback. Without money to protect themselves and keep up consumption while incomes are disrupted, many low-income households resort to negative coping mechanisms such as distress sales of livestock or other assets, pulling children out of school, or cutting back on food and healthcare. These negative responses tend to fall disproportionately on women and girls, who therefore suffer the greatest harm—in both the short and the longer term—from the lack of money in a time of need.

Fast, reliable financial services are critical for avoiding these outcomes. Digital payments and remittances, emergency loans and temporary overdrafts, and fee-free withdrawals from savings accounts give clients rapid liquidity to protect lives and assets before losses escalate. The design priority at this stage is speed, simplicity, and accessibility, especially in fragile infrastructure and for clients with limited documentation or mobility.

Contingent lines of credit, including anticipatory finance, are seen as a big opportunity to help customers cope and are therefore given focused attention in Part 2 of this chapter.

## POST-DISASTER LOAN MANAGEMENT POLICIES

In the absence of credit-linked insurance, customers often struggle to repay their loans in the aftermath of a climate disaster. At times, FSPs make allowances for good customers, such as rescheduling a loan (i.e., changing the term), restructuring the loan (e.g., changing the interest rate, duration, or timing of repayments), introducing repayment holidays, or even forgiving loans. These responses can be critical for the coping and recovery of clients, but are often undertaken in an ad hoc manner as FSPs react to a given crisis without a clear plan in place.

Both FSPs and their clients are better served by having clarity ahead of time on what such a crisis response will look like. Putting in place policies that define the conditions under which different concessions will be made, and what approvals will be required, can allow FSPs to respond more quickly to disasters while also offering greater transparency and predictability for clients. This approach requires a relatively low effort and can limit the extraction of liquidity from communities when it is most needed. Ultimately having concessions in place can give customers the time they need to get back on their feet, helping to reduce their losses and those of the FSP.

CGAP and others have provided guidance on responding to crises that largely apply to climate disasters (see, e.g., Abrams 2021). From a loan management perspective, this includes segmenting customers to enable targeted relief to negatively affected customers, while continuing to deploy loans to healthy businesses and those with potential to recover. It also involves defining clear criteria for when and how loans can be rescheduled and restructured, and communicating those conditions across the business. Another key element is ensuring that any restructured loans that are considered new, and therefore effectively improve the quality of the portfolio, are closely monitored, appropriately provisioned for, and explicitly communicated with management, the board, and investors (Abrams 2021).

While recovery lending, meso-level insurance, CLOCs, and post-disaster loan management policies have been addressed separately in this Focus Note, they should all be integrated into a consistent post-disaster response and clearly communicated to customers.<sup>19</sup>

## EMERGENCY LOANS

Similarly, it is not entirely uncommon for FSPs to offer emergency loans ad hoc to some of their clients on a case-by-case basis. Such loans can play an extremely important role in helping clients get back on their feet after a crisis and should become a standard part of the climate resilience toolkit—but only if done rigorously as part of a preplanned, well-resourced recovery lending program (as described in Part 2 of this chapter). If not, such loans run the risk of contributing to over-indebtedness among clients and larger write-offs for the FSP. Emergency lending can thus be one of the most powerful, but also one of the most destructive, tools that inclusive financial institutions can bring to bear after a shock. It needs to be treated accordingly.

## Recovering



After the immediate crisis has passed, the longer process of rebuilding lives and livelihoods begins. For low-income households, this often means repairing damaged homes or businesses, replanting fields, replacing livestock or inventory, repaying arrears accumulated during the shock, and gradually restoring savings and social capital.

Financial services need to support both rehabilitation and “building back better.” Medium-term reconstruction and working capital loans can help households and micro and small enterprises restock, repair, and resume operations—ideally with grace periods or other terms that reflect post-shock income volatility. Recovery lending, discussed in Part 2 of this chapter, offers a big opportunity for inclusive FSPs and customers. Structured savings plans and matched savings can help reconstitute emergency funds and investment capital over time. Where disaster relief or social protection payments are available, linking these to accounts and to inclusive FSPs can create a bridge from pure relief to longer-term financial inclusion and adaptation finance (Roest et al. 2025).

Recovery often requires not just replacing what was lost, but making lives and livelihoods more resilient to future shocks, by shifting to climate-adapted crops, relocating businesses away from flood zones, investing in more durable assets, upgrading to more resilient technologies, or switching livelihoods altogether. This means that part of the toolkit supporting the investing strategy becomes relevant also for recovery. Critically, delivering on the needs of their clients requires ensuring that FSPs can, and will choose to, maintain operations in disaster-affected areas and adapt their products to support recovery, rather than withdrawing after risks materialize.

<sup>19</sup> Refer to CGAP’s upcoming reading decks on recovery lending and CLOCs for additional implementation considerations.

## PART 2. NEXT LEVEL: Three Big Opportunities on Adaptation and Resilience

Beyond the basic responses outlined above, CGAP sees three distinct innovations in the product portfolio that bring significant opportunities for FSPs to make their clients more resilient. Together, these represent the direction in which inclusive finance needs to evolve in response to the growing threat of climate change.

FSPs that have greater capacity or have already done the basics on climate resilience should start to explore these solutions, which require more structural investment and/or external partnerships. CGAP is developing deep-dive decks for publication in 2026 that will offer hands-on guidance and examples to support FSPs in this effort.

### Opportunity 1: Recovery Lending

Recovery lending (RL) is a distinct methodology to provide timely credit to customers to help them restore productive capacity after a disruptive disaster or shock. It involves understanding how customers have been impacted, what opportunities they have to be productive after the shock, and how a loan can support their recovery. Evidence gathered over more than a decade suggests that done right, it may be one of the most powerful and proven interventions that FSPs can offer for the climate resilience of their clients—and their own long-term viability.

VisionFund Malawi CEO, Theodora Ntaba, called RL a “game-changer” for the institution, crediting RL with its rise to become the second largest microfinance institution in the country. Meanwhile, in the aftermath of Cyclone Freddy in 2023, a savings group working with the FSP explained that RL allowed its members to

avoid removing their children from school, while many micro and small business owners saw RL as a lifeline.

*“Half of the goods [stock], if not three quarters were destroyed...[Without the recovery loan] the business would have collapsed, and that is definite”*

—Male retail shop owner, VisionFund Malawi customer.<sup>20</sup>

Yet the idea of injecting capital into a community after a natural disaster is typically viewed by FSPs as too risky and potentially irresponsible. Indeed, while emergency lending is sometimes undertaken after disasters, without appropriate underwriting and lending guidelines, post-disaster lending can be harmful for both the overexposed FSP and the over-indebted client.

Without a capital injection, however, affected customers are less able to restart business activities. This can have lasting consequences, as the evidence shows a clear link between speed of recovery and long-term outcomes (Middelanis et al. 2025). The combination of reduced economic activity and lack of liquidity can also create a vicious cycle for FSPs in affected communities: as businesses fail, repayment erodes, and clients are lost. Therefore, either closing off new loans or lending to the wrong customers can reduce repayment rates and result in the loss of active customers for whom inclusive finance is most needed.

Standard emergency loans offered by FSPs can be problematic when characterized by two common features:

<sup>20</sup> Source: CGAP interview, 1 April 2025.

1. Blind underwriting. When FSPs under-evaluate the capacity of client to repay moving forward, emergency loans are more likely to default.
2. Capital used for consumption. When customers hit by a shock use emergency loans primarily for non-productive purposes, they are less likely to be able to repay and rebuild their economic stability over time.

Because of these negative experiences, regulators often issue guidance that either directly or indirectly reduces FSPs’ willingness or ability to lend after natural disasters—by, for example, indicating that new loans post-disaster will be scrutinized, or tightening supervision of capital and provision requirements. While such measures are well-intentioned, they should be structured to incorporate lessons from banks that *did* lend effectively after disasters, both boosting client resilience and FSP performance.

The RL methodology is different to emergency loans in several important ways. FSPs establish RL programs with clear guidelines, procedures, and backstopping support well ahead of time. This allows them to respond immediately in the wake of a disaster, visiting affected clients in the hours and days afterward with a clear process to follow. RL requires that FSPs understand three key elements: how customers have been impacted, which customers have opportunities to be productive after the shock, and how a loan can support them. Once RL capital is deployed, the FSP stays closer than normal to borrowers to monitor progress.

Table 3 shares some highlights from VisionFund’s experience deploying RL programs in response to multiple disasters, climate and beyond, across multiple countries over more than a decade. It highlights the business case for its MFIs, driven by lower NPLs, higher portfolio growth, and improved customer retention, as well as the benefits for customers in boosting economic activity and speeding up recovery.

TABLE 3. **Snapshot of VisionFund’s Experience with Recovery Lending Across Multiple Countries**

Microfinance Institution Benefits		Customer Benefits	
<b>Portfolio Quality</b>	MFIs in 12 geographies since 2013 report RL repayment rates at <b>95–99%</b> , higher than MFIs using rescheduling alone.	<b>Business Performance</b>	<b>81%</b> of RL customers reported improved business performance in Guatemala (VisionFund 2025).
<b>Client Retention</b>	Branches offering RL during El Niño drought had <b>15–20%</b> higher client retention than those who restructured (VisionFund 2019).	<b>Increased Income</b>	<b>92%</b> of RL customers in the Philippines reported increase income (VisionFund 2025).
<b>Branch Stability</b>	VisionFund Kenya’s Narok branch achieved <b>112%</b> operational self-sufficiency with RL; some other branches hit by the same shock closed (VisionFund 2019).	<b>Household Recovery</b>	Despite multiple follow-on shocks after El Niño in 2015–16, <b>89%</b> of RL customers in Kenya, Malawi, and Zambia demonstrated partial recovery, and <b>24%</b> had full recovery after El Niño (VisionFund 2019). In response to Typhoon Haiyan in the Philippines, <b>96%</b> of RL customers reported livelihood recovery (ADB 2016).
<b>Brand Growth</b>	VisionFund Malawi credited RL with its jump from #5 market position to <b>#2</b> in 2 years; the #1 MFI has since introduced its own RL strategy (VisionFund 2019).	<b>Quality of Life</b>	<b>95%</b> of RL customers in Guatemala reported improved quality of life; women reported deeper impact (VisionFund 2022).

Source: Authors and references cited in the table

Evidence of RL's effectiveness has also been documented beyond VisionFund. In Haiti, Fonkoze disbursed 11,000 recovery loans after a 2010 earthquake with a repayment rate of 97 percent, higher than predisaster levels. Fundusz Mikro in Poland responded to devastating flooding in 1997 by deploying a two-year recovery loan with a six-month grace period that was able to maintain credit discipline and achieve a 93 percent on-time repayment rate (Goldberg and Varada 2008). Small Farmers Development Bank disbursed 15,700 recovery loans in Nepal in 2015, with beneficiaries reporting 115 percent higher net income as compared to non-beneficiaries (Khakal et al. 2019).

There are multiple reasons why RL works for both customers and FSPs.

1. **RL sits at the intersection of finance and disaster response.** RL is neither charity nor exploitation. Rather, by being early on the scene, supporting local economic agency (Su and Le Dé 2020), and providing active support to borrowers to deploy the capital to the benefit of their communities and families, RL plays an important role in an overall portfolio of climate responsiveness.
  2. **RL matches capital to post-shock community needs.** While the common assumption is that low-income clients—already hard to serve for formal FSPs—are even less attractive after a disaster, RL demonstrates that these clients can utilize capital well when there is a vision for productive deployment. Low-income clients are accustomed to setbacks; after a disaster, economic activity doesn't disappear. Rather, entrepreneurs find ways to provide needed goods and services. FSPs who capitalize on this locally led activity benefit their clients and themselves, especially as competitors retrench.
  3. **Recovery lenders see opportunities others miss.** FSPs who look for the entrepreneurs with the strongest business plans in the post-shock environment will see what other FSPs miss as they
- focus on retrenchment and collections. Inclusive FSPs involved in RL often find that they are the main lender in a community as their competitors have tightened credit. As a former Chief Risk Officer of VisionFund Malawi told CGAP, as many as 7 out of 10 clients in a post-disaster context see opportunity after a shock; FSPs deploying RL are therefore matching their customers' ambitions by seeing opportunities in a shock (CGAP 2025). Furthermore, as much as 40 percent of VisionFund Malawi's recovery loans went to new clients, a finding that surprised management.
4. **RL underwrites based on what is relevant.** RL requires modifying typical underwriting guidance for a post-shock context: the past three months of income are no longer relevant, and collateral may have been washed away. RL evaluates what is relevant after a shock: the borrower's character, track record, relationships, business plan, and the new economic landscape. With this information, the FSP is better able to evaluate whether the next loan will be repaid.
  5. **RL is not only a lifeline, but also a lever.** Recovery loans are meant to stimulate new economic activity. FSPs must manage evaluation and disbursement of RL closely, ensuring that productive purposes are prioritized.

## Opportunity 2: Adaptation Finance

Adaptation to climate change is most likely already one of the uses of inclusive finance, even if it isn't labeled that way. Customers tend to respond autonomously to changing conditions using the information, inputs, and assets available in the market—and relying on generic savings and lending products to do it. A comprehensive review of the available evidence by CGAP's Impact Pathfinder found strong positive evidence that access to microcredit enables farmers to adopt more and costlier adaptation measures.<sup>21</sup>

21 See [www.impactpathfinder.org](http://www.impactpathfinder.org), which refers to multiple studies including (Olutumise 2023); (Bakare et al. 2023); and (Waaswa et al. 2024).

However, generic credit solutions are not always well suited for the specific adaptation needs of a wide variety of customers. There may be mismatches on the loan size (too small for larger adaptation investments), loan term (too short for investments that take time to bear fruit), repayment schedule (not aligned to crop or business cycles), or the credit assessment (such as not considering the financed asset as collateral).

Increasingly, inclusive FSPs are starting to recognize the importance of identifying specific adaptation needs—assets, inputs, and practices—and provide financing tailored to those needs. In some cases, this may be a repurposing or redesign of existing products; in other cases, new financing solutions and partnerships may need to be established. CGAP is undertaking research on adaptation-relevant innovations in agricultural technology that have demonstrated effectiveness but the uptake and scaling of which is constrained by lack of financing.

Climate adaptation is, however, a vast and complex undertaking, involving a very large number of potential adaptations depending on the specific climate risk, geography, livelihood, and other factors that affect a given customer's exposure and vulnerability as well

**There are two opposing outcomes for FSPs to guard against—avoiding adaptation finance altogether and building an overly complex array of solutions.**

as the most effective and cost-efficient adaptation response. Hence there is no one-size-fits-all product

that FSPs can adopt in order to finance their clients' adaptation—each financial institution will need to figure out what their specific clients need and how best to meet those needs.

Below, we present an initial step-by-step approach to help FSPs navigate this complexity and start taking action. This approach needs to be complemented by more in-depth work on location-specific categories of adaptation and how to finance them. For now, here is a way to get started.

## NAVIGATING THE COMPLEXITY OF ADAPTATION FINANCE

Locally led adaptation (LLA) is an approach, not a product set—and successful adaptation involves a range of funding structures and applications, not all conducive to private finance. Within this landscape, however, there are financeable assets, inputs, and practices that inclusive FSPs can promote to customers to reduce their exposure and vulnerability to climate risk.

In exploring this, there are two opposing outcomes for FSPs to guard against—avoiding adaptation finance altogether and building an overly complex array of solutions. To strike the right balance, FSPs can apply standard product prioritization frameworks while adding a climate change dimension to the analysis.

There are multiple existing frameworks, which often include variations of **desirability** (value for customers), **viability** (commercial value for the FSP), and **feasibility** (how doable it is practically), with prioritization driven by the best combination of these factors.

Regardless of the specific framework being used, CGAP proposes adding six adaptation-focused questions to help organize and prioritize the potential opportunities for developing new solutions. FSPs should consider probing these in the order outlined below.

1. **Climate risk:** How severe and imminent is the risk being considered, relative to other risks customers face? The FSP should define one or more clear criteria of materiality against which each risk can be assessed. This assessment can flow directly from the PCRA (see Chapter 3), but only if the PCRA was designed to collect the specific information required to gauge various risks against the selected materiality criteria. For all risks that meet the materiality criteria, proceed to the next step.
2. **Customer and portfolio impact:** How many customers and what proportion of the portfolio are potentially affected by the risk in the near, medium, and longer term? This assessment has implications for both managing portfolio exposure

and quantifying the potential market for a solution. Exploring this requires that the PCRA has collected and analyzed the necessary information at a sufficient level of resolution and time scale.

3. **Solution effectiveness:** What assets, inputs, or practices are best suited to helping customers adapt and grow resilient to this risk?<sup>22</sup> Are the solutions proven in similar contexts? Does the solution come with any risks of *maladaptation*, such as water scarcity growing worse if everyone in the same area installs a new borehole?
4. **Solution availability:** Which of these solutions exist locally? Are there existing providers of the needed assets, inputs, and know-how in the market? Are these providers already selling to and servicing the FSP's customers? Can the FSP simply offer financing to clients or is a partnership with one or more solutions providers required?<sup>23</sup>
5. **Customer business case:** Is the solution viable for the customer within a specified time frame? Committing a significant amount of resources *ex ante* to addressing a single risk can be problematic for customers, since it leaves fewer resources to deal with other risks. The longer the commitment or return on investment, the bigger the risk and weaker the case for the customer.
6. **FSP business case:** For FSPs, it is worth looking beyond product-level economics to consider the impact of enhanced customer resilience on the viability of the FSP through lower portfolio risk, strengthened loyalty, higher lifetime value of customers, and ability to attract new customers.

The adaptation solutions identified through these questions should be treated as priority initiatives for inclusive FSPs. This may result in one initiative or several, though limited bandwidth likely means that pursuing too many adaptation projects or products at a time may inhibit the success of any single initiative.

Crucially, the analysis must be undertaken separately for each major climate risk: if flood and drought risks are both material for an FSP, for example, these questions should be asked separately for each risk. New or adapted products that are relevant for multiple material risks and customer segments are more viable and should be prioritized. Once the FSP has undertaken a prioritization exercise, then the work begins to test, iterate and scale these solutions locally.

## EVALUATING ADAPTATION FINANCE OPPORTUNITIES

The business case for financing adaptation can be more complex than traditional forms of lending, but the general evidence is compelling. A recent paper by the World Resources Institute (WRI) indicates that every \$1 invested in adaptation and resilience generates \$10.50 in benefits over 10 years as the combined effect of a “triple dividend” for climate adaptation investments, including avoided losses, induced economic benefits, and knock-on social and environmental benefits (Brandon et al. 2025).

In the inclusive FSP context, the business case generally builds on several interrelated pieces: lower portfolio risk as clients suffer fewer losses; stronger client prospects and lifetime value from successful adaptation; higher revenue per customer through cross-selling the new adaptation solutions; reduced churn and increased customer loyalty; and support from third parties, for example, concessional or risk-sharing capital.

At the same time, the business case is complicated by three structural features: the difficulty of measuring avoided losses counterfactually, long time horizons over which benefits materialize, and the fact that many adaptation investments protect livelihoods rather than generate immediate cash flows. As a result, adaptation finance often requires a longer-term perspective than traditional productive lending.

22 There are a growing number of resources that refer to promising adaptation opportunities. FSPs will need to identify and prioritize those that are locally relevant and available. To get started, refer to (World Intellectual Property Organization 2025) and (CPI 2024b).

23 See below for discussion on partnership challenges.

FSPs looking to better understand and measure the impact and business case for adaptation finance should explore UNEP FI's recently released *Adaptation and Resilience Impact Measurement Toolkit*.

Box 4 shows the high-level business case for installment-based financing for biodigesters as piloted in India by Pahal Financial Services and Sistema.bio, the asset supplier.

#### BOX 4. Biodigester Financing Pilot: Sistema.bio and Pahal Financial Services (India)

##### Context

Many climate-adaptive assets remain unaffordable for low-income households due to high upfront costs, underdeveloped and expensive distribution channels, and limited access to carbon markets, despite the mitigation cobenefits of some adaptation investments. This pilot illustrates the high-level business case for biodigesters as piloted in India by Pahal Financial Services and Sistema.bio, the asset supplier. The pilot aimed to reduce upfront cost barriers and borrowing needs through commercial mechanisms rather than public subsidies.

##### Approach

The pilot combined biodigester technology with an innovative financing and revenue model. Household biodigesters convert dung from cattle into biogas for clean cooking and natural fertilizer, generating both adaptation and mitigation benefits. A key design feature was Sistema.bio's ability to tap into carbon markets, which materially improved the profitability time horizon and allowed the retail cost of the biodigester to be reduced by approximately 75 percent.

##### Implementation Steps

The model incorporated several integrated elements:

1. **Deployment of household biodigesters** producing biogas for cooking and natural fertilizer from cattle dung.
2. **Use of expected future carbon credit revenues** to cover ~75 percent of the asset cost, significantly reducing upfront price barriers.<sup>a</sup>

3. **Installment-based financing** for the remaining 25 percent of the cost, improving affordability for low-income households.
4. **Value-chain-linked repayment mechanisms**, enabling automatic deductions from milk sales to dairy cooperatives to reduce default risk and administrative costs.

##### Outcomes

The pilot demonstrated a strong customer-level business case:

- ~80 percent reduction in LPG (gas) expenses
- ~85-90 percent reduction in fertilizer expenses
- Annual household savings of USD 215–430
- Protects against weather-related energy and supply chain disruptions

These savings reflect the combined impact of lower ongoing household expenses and reduced upfront asset costs enabled by carbon market revenues.

##### Key Lessons

- Carbon markets can be leveraged to reduce upfront cost barriers for adaptation investments that have mitigation cobenefits, improving affordability without reliance on public subsidies.
- Reducing upfront costs lowers borrowing needs, making adoption more feasible for low-income households.
- This model is applicable to other adaptation investments with mitigation cobenefits but is not viable for adaptation assets that do not sequester or reduce greenhouse gas emissions.

<sup>a</sup> Farmers assign the rights to future emission reductions, and related carbon revenue, to Sistema.bio upfront.

Source: Sistema.bio (2026), Pahal Financial Services (2026), Mehta and Sharma (2025), Authors

Other examples of adaptation investments with evidence-based value include:

- **Solar pumps save expenditure on diesel fuel.** The *Solar or Diesel: A Comparison of Costs for Groundwater-Fed Irrigation in Sub-Saharan Africa under Two Energy Solutions* study showed that solar pumps are more cost-effective than diesel fuel in nearly two thirds of sub-Saharan Africa (Xie et al. 2022).
- **Climate-smart agricultural practices improve crop yields and reduce losses.** The *Energy and Economic Efficiency of Climate-Smart Agriculture Practices in a Rice–Wheat Cropping System of India* study showed that climate-smart agricultural practices improved yield, farm income, and economic efficiency as compared to traditional practices (Kakraliya et al. 2022).
- **Drip irrigation systems improve yields with less water required.** The IFC's report *Handbook for Scaling Irrigation Systems* showed that because drip irrigation can increase yields by two to three times over standard practices, return on investment on a commercial basis can be realized within three years (IFC 2022).

## PARTNERING FOR ADAPTATION

In exploring adaptation finance, it is important for FSPs to carefully consider the link to providers of the adaptation solutions being financed. To develop adaptation finance solutions, FSPs may need to partner with a third party to facilitate access to inputs (such as drought-resistant seeds, building materials, or cooling materials), assets (solar pumps or biodigesters) and/or know-how (climate-smart agriculture techniques or flood prevention approaches).

The involvement of a third party introduces upsides as well as uncertainty for the lender. By working more closely with the solutions provider, the FSP can gain a better understanding of the adaptation solution, its potential benefits, and success factors. It can also shorten the loop to the investment, reducing the risk that the loan is diverted for a different purpose.

Perhaps most importantly, the FSP can stand to gain customers from the marketing efforts of the solutions provider by becoming the preferred option for financing. Conversely, the solutions provider can gain customers from the marketing efforts of the FSP. In each case, one party stands to benefit from the distribution, trust, and customer outreach that the other has in markets they may not yet have penetrated.

Ultimately, this can take the form of an embedded finance model, where the application for a loan from the FSP is baked into the standard sales process of the solutions provider, providing a compelling benefit for both companies. The solutions provider can drive sales by having easy access to financing in a streamlined process and by leveraging the customer trust the FSP has earned, and at the same time, the FSP can gain clients with low or no costs for customer acquisition, onboarding, and distribution.

All that being said, scaling these partnerships comes with several important challenges:

1. **Postsale servicing:** When there is a problem with a financed adaptation asset or input that the FSP has been involved in marketing, customers often seek support from the FSP rather than the solutions provider. One FSP in East Africa reported that customers returned assets three years or more after the sale, when the partnership no longer existed. As a result, FSPs should conduct due diligence upfront with this concern in mind. SEWA in India, for example, has a grassroots team that tests and installs the adaptation products they explore, like solar water pumps, to ensure that the products work in the harsh environments that their members live and work in. They also train members to service financed water pumps, which provides a source of income for young SEWA climate entrepreneurs. Before financing adaptation assets, FSPs should consider the potential outcomes and decide what they are willing to invest in.
2. **Heterogeneity of FSP customers:** Each partnership typically needs to be managed individually. Resource-constrained FSPs

therefore need to be clear on how to prioritize which solutions providers to spend staff time partnering with, for instance by giving preference to those selling solutions that meet the needs of a large share of customers or that have the strongest short-term business case. This might be straightforward where the FSP client base is highly homogeneous, but in other cases it may be difficult for FSPs to reach the necessary scale with any one partner, requiring multiple partnerships.

3. **Maladaptation:** Some adaptive responses could not just fail to work, but actively contribute to worsening outcomes in the longer term or for other people in the community. For instance, a levee or drainage that protects one building or part of a village from flooding could increase flood risk for neighbors as the water needs to flow somewhere. Similarly, boreholes and solar pumps can be a logical response to water scarcity from the perspective of an individual farmer—but contribute to rapidly falling water tables if everyone in the area invests in the same solution. While not directly responsible for these risks, financial institutions need to be aware of potential maladaptation to ensure they are truly helping their clients, safeguarding the surrounding communities, and protecting themselves from potential indirect legal liability. One FSP in Latin America noted its reluctance to share what it considered to be good adaptation advice from a partner for fear that customers would hold it accountable if anything were to go wrong.

## DELIVERING ADAPTATION ADVICE AT SCALE

One way that FSPs can support their customers in adaptation is by providing locally relevant advice. Historically, this has been difficult to do meaningfully and at scale, due to the variability of local climate risks, livelihoods, and farming practices, as well as the added complexities of servicing rural customers who speak multiple languages and often have low literacy levels.

However, generative AI (genAI) is emerging as a potential solution. GenAI can synthesize vast, fragmented information on climate risks, weather patterns, and adaptation options and tailor it to specific customer contexts, while the iterative nature of genAI interactions allows and encourages users to refine questions and redirect responses when information is not relevant. Increasingly, genAI tools can engage through text, audio, and images in a growing number of languages, helping to overcome literacy barriers.

At the same time, it is not without risks and limitations. Erroneous responses could have serious consequences for low-income users with limited resources and few fallback options. Adoption is further constrained in rural, low-income communities in developing countries by limited access to smart phones and connectivity; low trust in, and exposure to, genAI tools; and gaps in training data from similar contexts. However, despite these challenges, the pace of improvement in genAI tools is rapid, suggesting strong potential even at this early stage of development. Pioneering initiatives are already underway to leverage this technology to enable local adaptation at scale, as the following example from Opportunity International illustrates (see also Box 7).

## BOX 5. Opportunity International and the Potential of AI-Driven Adaptation Advice

### Implementation

In 2024, Opportunity International (Opportunity) created Farmer AI, a chat-bot with a WhatsApp interface that delivers immediate agricultural information to farmers in Africa. It leverages ChatGPT to source locally relevant agriculture information from official sources, usually government departments of agriculture. It interacts via text, voice in multiple languages, and photo uploads.

In 2025, after a successful pilot in Malawi, Opportunity began scaling up Farmer AI in their Agricultural Finance Program, adding Ghana and Kenya. In addition to direct-to-farmer models, because most target clients do not have smartphones, Opportunity is testing access via its Farmer Support Agents (FSAs) and government agricultural extensions officers. As of the end of 2025, there were over 3,000 users; 50 percent of users are smart-phone-equipped agents and 50 percent are farmers. Regarding uptake, 18 percent of users had asked a question in the last month. Notably, in the direct-to-farmer model tested in partnership with Safaricom's DigiFarm platform, uptake was most common among younger, better educated, male farmers.

### Outcomes

More rigorous research is needed to determine Farmer AI outcomes for farmers, but there are early positive indications.

- Users overall are surprised and pleased with Farmer AI—user conversation ratings are 90 percent positive, with 26 percent of messages rated. According to Opportunity, users especially value Farmer AI's accuracy, speed, convenience, practical advice, and rapid identification of pests and diseases, which enables farmers to respond quickly to save their crops.
- The majority of users (80 percent) say that advice from Farmer AI is being applied on farms, and 72 percent of users say that this advice is enhancing farm performance. In Kenya, 67 percent of farmer-users have increased production and 58 percent

have better pest control because of applying Farmer AI advice on their farms. Farmers also report that it saves them money from having to travel to consult an extension agent.

- Farmer AI helps agents feel more confident in themselves and generates respect from farmers, both of which are especially important for female, younger, and less educated agents. Agents also report that it saves them time.
- In terms of accuracy, an agricultural expert reviewer gave Farmer AI a 7.3 out of 10.

### Key Lessons

- While still at an early stage, when carefully designed and deployed, AI-driven tools have the potential to overcome long-standing constraints in delivering location-specific adaptation advice at scale. Interestingly, many users test AI information by asking questions they know the answers to before trusting AI with new questions.
- Familiar delivery channels like WhatsApp and intermediaries (such as FSAs) can support early adoption and trust. While there is a cohort of farmers (young, educated men) who can take up and benefit from AI solutions without training, dedicated support can be particularly important for reaching less educated, digitally excluded farmers, who are often women.
- Authoritative sources of agricultural information do not necessarily prioritize or even provide environmentally sustainable or regenerative agriculture solutions. Models need to be purposely designed to promote these kinds of solutions.
- While demand for local languages is high, AI performance still varies by local language, particularly for technical content.
- Risks related to accuracy, trust, and data for training represent critical constraints that must be actively managed. Further, data costs may be challenging for farmers and agents and need to be taken into consideration.

Source: Opportunity International (2025), Opportunity International Team, Authors

## Opportunity 3: Contingent Lines of Credit and Anticipatory Finance<sup>24</sup>

The contingent line of credit (CLOC) is a deceptively simple product, designed to deliver rapid, flexible capital to individual customers in the wake of a shock such as a flood or drought. It is simply a pre-arranged commitment by the FSP to extend a loan with a specific size and terms whenever a trigger condition is met. The trigger can be defined by parametric indicators (such as rainfall or temperature thresholds, verified by trusted data sources), institutional triggers (such as the declaration of a disaster by government or cooperative bodies), or portfolio-based triggers (where a localized event impacts multiple clients in the same area). The predefined trigger is what allows CLOCs to deliver liquidity precisely when it is needed, without the delays and uncertainty created by case-by-case loan relief and emergency lending processes.

For clients, CLOCs can provide immediate liquidity when it is needed most, reducing the risk of default, asset loss, and falling into deeper poverty. But their impact goes far beyond recovery: CLOCs also give clients the confidence to invest in the face of risk. This can be crucial in helping low-income households avoid using underinvestment as a primary risk management strategy. Consistently choosing low-risk, low-reward livelihoods options over those with higher risk but greater payoffs is well known to be a major cause of poverty traps.

Evidence from Bangladesh, for example, shows that farmers who were offered a CLOC against flood risk significantly increased both the area of land being cultivated and the level of inputs, leading to a 35 percent higher total yield for farmers who were not affected by a flood. Meanwhile farmers who were hit

by a flood and used the CLOC saw significantly smaller reductions in consumption in the aftermath (see Box 6).

In this sense, CLOCs play the same role that insurance is meant to play: enabling forward-looking investments by reducing fear of loss. The difference is that CLOCs sidestep many of the deeply challenging demand-side hurdles that continue to hold back insurance adoption. Further, because CLOCs are voluntarily taken by customers and repaid, parametric triggers can be set such that they trigger more frequently than parametric insurance policies.

For FSPs, the CLOC can help protect portfolio quality, maintain client trust, and demonstrate proactive risk management. It acts as a corollary to, and is ideally directly supported by, a contingent debt facility at the FSP level that ensures the FSP has enough liquidity to extend CLOCs to their clients (see Chapter 4). Because it is linked to a client's existing account or loan relationship, it can also be used to incentivize repayment discipline in good times as clients want to make sure to retain access to the CLOC.

### ENSURING RESPONSIBLE DESIGN AND IMPLEMENTATION

It deserves to be underscored that CLOCs, like any form of lending in the wake of a shock, must be designed and implemented in ways that minimize the risk of over-indebtedness. Although evidence shows that lending to people in crisis can be safe and beneficial, that does not mean such lending is free of risk or can be done indiscriminately. The key is structuring CLOCs safely: targeting reliable borrowers, sizing loans within known repayment ranges, and ensuring that rapid liquidity support strengthens resilience without driving over-indebtedness.

<sup>24</sup> This section on CLOCs draws extensively from CGAP (forthcoming, n.d.). The authors are grateful to Jacob Winiacki for his contribution and expertise on CLOCs.

## BOX 6. The BRAC Experience Piloting CLOCs: An Alternative to Insurance

### Context

Smallholder farmers in Bangladesh face increasing flood risk, which regularly undermines livelihoods and repayment capacity. At the same time, demand for flood insurance remains low due to high costs, limited understanding of insurance products, and low trust in insurers. Anticipation of flood risk also discourages farmers from making ex ante investments in land and agricultural inputs, constraining yields and incomes. BRAC piloted CLOCs to address these constraints through a flexible, optional, credit-based alternative to insurance.

### Approach

CLOCs are preapproved emergency loans linked to an objective climate trigger. Rather than requiring farmers to pay premiums upfront, the design allows clients to access additional liquidity only if a disaster occurs and only if they need it. The approach aims to provide rapid, predictable access to finance while avoiding the affordability and trust barriers associated with traditional insurance.

### Implementation Steps

The BRAC pilot incorporated the following features:

1. **Preapproved loans**, communicated to farmers before the planting season to reduce uncertainty and encourage productive investment.
2. **Predefined loan terms**, set at up to 50 percent of the client's previous loan amount and offered on the same conditions.
3. **No premiums or upfront costs** for clients.
4. **Index-based triggers**, enabling rapid and transparent loan availability following flood events.
5. **Optional uptake**, ensuring clients borrow only when a disaster occurs and when additional liquidity is needed.

Source: CGAP (forthcoming, n.d.), Lane (2023)

### Outcomes

The pilot demonstrated positive impacts for both clients and the MFI:

- 18 percent increase in land cultivated
- 35 percent higher yields among farmers who did not experience flooding
- 10 percent increase in consumption among households affected by flooding
- Higher repayment rates and a 4 percent higher return on these clients for the MFI

### Key Lessons

- Credit-based, optional instruments can overcome key barriers to insurance uptake in flood-prone contexts.
- Preapproved, trigger-based liquidity can encourage ex ante investment while supporting post-shock recovery.
- Well-designed CLOCs can improve client welfare while strengthening MFI portfolio performance.
- Despite the positive results, the pilot was not scaled. There are several potential reasons for this, including that it was initially seen as an interesting third-party-driven experiment rather than a strategic priority, it lacked a senior BRAC owner to drive its iteration and scaling, and it was not fully integrated operationally, including misaligned field officer incentives. BRAC is, however, currently piloting a CLOC with rice farmers in Bangladesh. The new pilot, supported by the Gates Foundation and the Resilience+ Innovation Facility, bundles a savings and insurance product to the CLOC, both of which are linked to the same area yield index as the trigger.

TABLE 4. **Recovery Lending Compared to Contingent Lines of Credit**

Product	When It Is Used	Client Use Case	Institutional Role	Key Challenge
<b>Recovery lending</b>	Underwriting and loan disbursement both take place after the shock	Enables productive activity by SMEs with capacity to deploy for community benefit	Reactive support; high staff involvement and discretion	Intensive role of staff in underwriting and managing after disbursement; capital planning
<b>CLOC</b>	Customers approved before shock, loan provided on trigger	Fast, pre-arranged credit for recovery; better investment decisions ex ante	Pre-arranged credit disbursed after trigger	Upfront design, including eligibility criteria and trigger determination; capital planning

Source: Authors

A CLOC involves preselection of customers based on savings or repayment behavior, timely notification of eligibility, activation based on the predefined trigger, and then opt-in and rapid disbursement. Customers typically enjoy a grace period and repayment terms aligned with the recovery cashflow. Preselection criteria should avoid inadvertently excluding women, who may have smaller savings patterns, lower average loan amounts, and different seasonality in their businesses.

CLOCs to some extent appear similar to RL, described earlier in this chapter. In reality, they have fundamental differences, playing distinctive roles in the resilience of clients and requiring different types of investments and capacities by FSPs (see Table 4).

### ANTICIPATORY FINANCING

One area that has not been explored extensively by FSPs, but may hold significant promise, is anticipatory financing. Anticipatory financing refers to putting money in people’s hands in the hours and days before a climate shock hits, so they can act early to reduce losses. For low-income households, this can mean paying for safe transport and temporary shelter, moving livestock and equipment out of harm’s way, reinforcing roofs against a storm, improving drainage

or barriers before a flood, or stocking essential food and medicines while prices are still relatively low. Without cash at that moment, people are forced to “wait and see” and then absorb much higher losses once the storm or flood arrives. A small amount of money ahead of time can make a major difference for the final outcomes of people affected by a shock—and their lenders.

Anticipatory financing could be powerful under a CLOC structure to help people reduce loss to assets and lives. Although its effectiveness has been demonstrated in the humanitarian space (WFP 2025, IRC and IFPRI 2023), it is virtually unheard of as a retail financial product. Major recent advances in predictive modeling have, however, rapidly improved the ability to forecast shocks accurately at high resolution and with substantial advance warning. Tools like Google Flood Hub<sup>25</sup> can now accurately predict local flooding more than a week in advance.

Pilots are emerging to test this high-potential area of innovation, leveraging AI to deliver early warning, financing, and tailored advice (see Box 7).

25 Available at <https://sites.research.google/floods//0/0/3>.

## BOX 7. Atram and Bancamía—Leveraging AI to Push the Frontier of CLOCs

### Context

This pilot explores how AI can be used to enhance the effectiveness of CLOCs by integrating early warning systems, adaptation and preparedness advice, and rapid loan access (including in anticipation of the shock) into a single, scalable solution.

### Approach

Atram, a climate-tech company, is partnering with Bancamía, the BBVA Microfinance Foundation, and CGAP to pilot an AI-enabled solution for microfinance clients in flood-prone areas of Colombia. The pilot combines AI-driven flood alerts, preparedness and adaptation advice, and preapproved emergency loans delivered through a WhatsApp-based conversational interface.

### Implementation Steps

The pilot operates through four integrated stages:

1. **Setup:** Clients connect with Atram via WhatsApp, share their location, and co-create a personalized readiness plan. Selected clients are preapproved for anticipatory or post-shock loans.
2. **Alert:** Atram's AI model integrates data from Google Weather, Google FloodHub, and OpenMeteo, with validation by human meteorologists and hydrologists, to trigger reliable flood warnings.
3. **Respond:** During flood events, clients receive real-time safety and business guidance through

AI "micro-consultants," including *Rada* (local weatherman) and *Yaya* (disaster advisor).

4. **Anticipate and recover:** Immediately before or after floods, Bancamía clients can rapidly access CLOCs to avoid losses or to restock and restart operations, while the system captures data on behavioral and financial outcomes.

### Outcomes

As of November 2025, the pilot is being tested with 25,000 clients across 46 Bancamía branches using a rigorous experimental design. Multiple treatment groups receive different combinations of alerts, advice, and loan access, alongside a control group. The pilot is assessing whether integrated digital services can reduce losses, lower loan delinquency, accelerate post-flood recovery, and increase client confidence and engagement.

### Key Lessons

- AI-enabled early warning and advisory services have the potential to significantly enhance the effectiveness of CLOCs.
- Combining alerts, guidance, and liquidity in a single channel may improve preparedness, reduce losses, and support faster recovery.
- Rigorous testing is critical to understand which combinations of services generate the greatest impact for clients and FSPs.

Source: CGAP (forthcoming, n.d.)

## FINAL REFLECTIONS

# Looking Forward

This Focus Note sends a clear message to inclusive FSPs on how they think about and engage with climate change. The stakes are high both for the vulnerable communities they serve and for their own long-term viability. However, the path forward does not require reinventing the wheel. It requires shifting mind-sets, disciplined prioritization, and acting with purpose.

To move from awareness to action, inclusive FSPs can begin by:

1. **Reframing strategy:** Move beyond piecemeal responses to climate. Assess how climate risks intersect with your mission, clients, and portfolio—and then appropriately integrate climate risk into core strategy. Prioritize the alignment of customer and institutional resilience so they reinforce each other.
2. **Doing more deliberate and useful climate risk analysis:** Use available data tools to understand climate exposures and integrate climate risk into decision-making processes.
3. **Adopting more efficient risk-financing solutions:** Deploy multiple instruments in a risk-layering approach that efficiently protects solvency and liquidity against a range of climate risks—enabling institutions to keep lending when clients need them most.
4. **Prioritizing fit-for-purpose products:** Identify gaps in your current offerings and consider how iterations to existing products and targeted innovations—like recovery lending, new approaches to adaptation finance or CLOCs—can meet client needs while strengthening your business.

These four entry points across strategy, risk, and product provide a starting framework for inclusive FSPs to integrate climate resilience into their core operations. This Focus Note will be followed by a set of reading decks that will offer deeper dives into specific tools and product innovations, to support implementation.

Climate resilience and adaptation is central to achieving the inclusive finance mission. FSPs that fail to support their clients' ability to manage climate risks will find it harder to maintain healthy portfolios and serve core market segments. Conversely, those that invest in climate resilience and adaptation can unlock meaningful value for both clients and their own institutions. When done well, it can be a win-win for all.

Crucially, getting started is more achievable than many FSPs assume.

## ANNEX 1

# Glossary and Acronyms

## Glossary

**Adaptation (to climate change):** In human systems, the process of adjustment to actual or expected climate and its effects in order to moderate harm or exploit beneficial opportunities (Möller et al. 2022).

**Adaptation finance:** Finance for actions that help communities reduce the risks they face and harm they might suffer from climate hazards like storms or droughts. It pays for things like stronger housing, more drought-tolerant crops, social safety nets, or improved decision-making around climate-related risks. Adaptation finance includes both finance from developed to developing countries as well as finance that governments—both developing and developed—invest to cover the costs of climate change impacts within their own borders. Adaptation finance can also come from private sources (WRI et al. 2025).

**Anticipatory finance:** Funding that is released **before** the peak impacts of a hazard that is known to be imminent, based on agreed-upon triggers, in order to reduce those impacts (for example by supporting early action or preparedness activities) (Scott 2022).

**Cobenefits:** A positive effect that a *policy* or measure aimed at one objective has on another objective, thereby increasing the total benefit to society or the

environment (Möller et al. 2022). In this Focus Note, it refers to the climate change mitigation benefits of adaptation responses and vice versa.

**Risk financing:** In this Focus Note, risk financing refers to the process FSPs undergo to arrange financial resources in advance, to prepare for potential losses from climate risk events, through mechanisms such as risk retention, risk transfer, and contingent financing. This is a subset of broader climate and disaster risk financing.<sup>26</sup>

**Mitigation (to climate change):** A human intervention to reduce emissions or enhance the sinks of greenhouse gases (Möller et al. 2022).

**Climate resilience:** The capacity of an entity to adjust to climate-related changes, developments or uncertainties. Climate resilience involves the capacity to manage climate-related risks and benefit from climate-related opportunities, including the ability to respond and adapt to climate-related transition risks and climate-related physical risks. An entity's climate resilience includes both its strategic resilience and its operational resilience to climate-related changes, developments, and uncertainties (IFRS 2023).

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<sup>26</sup> This definition is developed by the authors.

**(Climate) shock:** Short-term, unpredictable, and discrete events with a sudden onset and clear endpoint. Examples include flooding or storms (CGAP 2021).

**(Climate) stress:** Long-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 (CGAP 2021).

**Contingent capital:** A pre-agreed capital injection (often subordinated or equity-like) that is automatically or rapidly triggered when a defined climate shock occurs. The capital commitment is pre-agreed, for example, terms, sizing, trigger conditions, and subordination structure, and used to address solvency challenges.

**Contingent debt:** In this Focus Note, the term contingent debt refers to a pre-arranged line of credit that an FSP can access to address liquidity constraints when a predefined climate trigger is met, with no debt incurred unless the facility is drawn. It is analogous to the CLOC for retail customers, and to the contingent sovereign financing that the World Bank and others offers to national governments.<sup>27 28</sup>

**Contingent Line of Credit (CLOC):** In this Focus Note, a CLOC refers to a preapproved loan that becomes available to a retail customer when a predefined climate trigger is met. Examples of triggers include administrative disaster declarations as well as numerical indices for events such as flooding, drought, or high winds. The size and terms of the loan are agreed upon and communicated by the FSP to the customer ex ante, once the preapproval takes place. If the trigger is met, the customer has the option to take up the loan or not.<sup>29</sup>

**Credit-linked catastrophic property insurance:** In this Focus Note, credit-linked catastrophic property insurance refers to a group insurance product that pays off the outstanding customer loan when the customers' property—a building, stock, crop, or other predefined asset—has been destroyed due to predefined disasters such as a storm, flood, or fire.<sup>30</sup>

**Exposure (to climate risk):** The presence of people; livelihoods; species or ecosystems; environmental functions, services, and resources; infrastructure; or economic, social, or cultural assets in places that could be adversely affected by a hazard (World Bank 2026).

**Hazard:** The potential occurrence of a natural or human-induced physical event or trend or physical impact that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems, and environmental resources. Here, hazard usually refers to climate-related physical events or trends or their physical impacts (World Bank 2026).

**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 MSEs (CGAP 2023).

**Locally led adaptation (LLA):** A new paradigm where local actors and communities have meaningful input in shaping decisions over how, when and where to adapt. LLA recognizes the value of local knowledge and expertise to address climate risk and ensures that local actors on the front lines of climate change have equitable access to power and resources to build resilience. LLA is about devolving authority and control

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27 See, e.g., World Bank (2024) for a description of its Development Policy Loan with Catastrophe Deferred Drawdown Option.

28 This definition is developed by the Authors to focus on contingent debt for FSPs, and to differentiate it from similar concepts at the retail customer and sovereign levels.

29 The definition is developed by the authors based on CGAP (Forthcoming, n.d.)

30 The definition is developed by the Authors combining elements of common insurance products, including credit life insurance and fire and allied perils insurance.

over resources to local actors as well as strengthening these local actors and local institutions so that they are inclusive, agile, and responsive, given the uncertainties of climate change<sup>31</sup> (IIED 2024).

**Maladaptation:** Actions that may lead to increased risk of adverse climate-related outcomes, including via increased greenhouse gas emissions, increased or shifted vulnerability to climate change, more inequitable outcomes, or diminished welfare, now or in the future. Most often, maladaptation is an unintended consequence (Möller et al. 2022).

**Index-based or parametric insurance:** A type of insurance that pays out when an event of a certain agreed-upon severity takes place—that is, it does not pay out based on the actual damage or losses sustained. The objective measure that determines a payout is often known as the parametric trigger (World Bank Group 2023).

**Meso-level insurance:** Meso-level insurance is designed for aggregators, which include institutions such as development banks, microfinance institutions, provident/pension funds, associations, and cooperatives. These entities act as both policyholders and insured parties (Zinyoro 2024).

**Recovery lending:** A methodology used by some inclusive FSPs in response to disasters and shocks, which provides timely and meaningfully sized loans to customers to help them restart their economic activity or diversify to a new one. To manage risk, FSPs typically rely on robust lending practices, including using loan officers to understand how customers have been impacted and how they can be productive after the shock.<sup>32</sup>

**Resilience:** The ability of individuals and businesses to reduce the risk of, mitigate, cope with, recover from, and adapt to various shocks, stresses, and life cycle events in order to minimize any reduction in short-term or long-term well-being (CGAP 2021).

**Risk layering:** Combining (or layering) different financing instruments to protect against events of different frequency and severity in a cost-effective manner. Risk layering allows governments [and FSPs] to structure risks and risk transfer instruments for each risk layer in order to optimize cost-effectiveness, allowing the most cost-efficient and effective solution to be applied (InsuResilience Global Partnership, n.d.).

**Risk transfer:** Risk transfer refers to the process of transferring the potential financial consequences of an adverse event from one party to another. Insurance is one example of a risk transfer tool (InsuResilience Global Partnership, n.d.).

**Vulnerability:** Vulnerability is defined as the propensity or predisposition to be adversely affected and encompasses a variety of concepts and elements, including sensitivity or susceptibility to harm and lack of capacity to cope and adapt. Vulnerability of exposed human and natural systems is not only a component of risk, but also, independently, an important focus in the literature. Vulnerability is widely understood to differ within communities and across societies, regions, and countries, also changing through time (Möller et al. 2022).

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31 Also refer to GCA (2021) for the *Principles for Locally Led Adaptation Action*.

32 The definition is developed by the Authors based on (CGAP 2025) and (VisionFund 2019).

## Acronyms

ARDIS	African and Asian Resilience in Disaster Insurance Scheme
BBVA	Banco Bilbao Vizcaya Argentaria
BII	British International Investment
CGAP	Consultative Group to Assist the Poor
CLOC	contingent line of credit
DFIs	development finance institutions
EMDEs	emerging markets and developing economies
FSPs	financial services providers
IFC	International Finance Corporation
J-PAL	Abdul Latif Jameel Poverty Action Lab
LICs	low-income countries
MDBs	multilateral development banks
MFI	microfinance institutions
MSMEs	micro, small, and medium-sized enterprises
NGFS	Network of Central Banks and Supervisors for Greening the Financial System
NPL	nonperforming loan
PCRA	physical climate risk assessment
SDGs	Sustainable Development Goals
SEWA	Self Employed Women's Association
SMEs	small and medium-sized enterprises
TA	technical assistance
UNEP FI	United Nations Environmental Programme—Finance Initiative
WRI	World Resource Institute

## ANNEX 2

# Six Common FSP Responses to Climate Change

## Risk Avoidance

The simplest approach to respond to climate risk is to avoid it. Driven by a reluctance to throw good money after bad and a need to limit losses, FSPs often respond to climate shocks and stresses by focusing on collections and stopping new lending. But some FSPs are going further: getting out ahead of the next shock by pulling back from serving regions, sectors, or value chains that are exposed to climate risk. In both cases, the FSP redeploys capital to less climate-exposed clients rather than figuring out how the risk might be managed.

While understandable for FSPs that have recently experienced capital, liquidity, or other existential crises, this approach can damage customer trust and erode a viable customer segment that the FSP has already invested in. It can also impact portfolio quality by decreasing customer willingness to repay, as customers often prioritize repayment of loans where there is a good prospect of future loans. In the long term, this risk avoiding response may negatively impact the customer and the FSP.

## Compliance

A common climate-related action by FSPs is simply to respond to requests for climate risk analysis from their investors and financial regulators. Both groups are

increasingly concerned with climate risk to the balance sheets of individual FSPs and to the stability of the financial sector.

While climate risk assessments can be tremendously important, when driven primarily by compliance, they can also be pointless or even problematic: Pointless because they sometimes answer questions for regulators or investors but have little practical value for the FSP or its customers—and hence end up on a shelf. Problematic because they shine a light on aggregate risk without offering solutions for addressing those risks, thereby easily prompting the type of risk avoidance described above.

## Green Finance

Pursuing the “green finance” opportunity centers on developing new business lines around financing solar panels, electric vehicles, and other carbon-reducing practices. Such initiatives are often triggered and encouraged by the availability of fresh concessional capital from funders focused on climate mitigation.

The case for developing a green finance business can be compelling and deserves consideration by inclusive FSPs. It is, however, important to recognize that these efforts often have little bearing on climate risk, adaptation, and resilience. In failing to make a

distinction between the adaptation and mitigation aspects of climate change, far too many FSPs perceive themselves to be climate forward while failing to craft the type of climate strategy that will actually best serve both themselves and their clients. This is fundamentally a matter of prioritization and timing.

## Business As Usual

Serving low-income and marginalized populations is hard in the best of times. Most inclusive FSPs are already at full capacity focusing on portfolio quality, profitability, efficiency, growth, and customer satisfaction. The complexity of climate impact can leave management teams unsure of how to engage. This can result in wholesale postponement of climate change as something that can be dealt with later, which is not an uncommon stance. It can also result in some climate-related action being taken around the edges of the business, without meaningfully influencing how the institution operates, how it handles climate risk, or what new opportunities it is pursuing. Either way, FSPs are left broadly unprepared for growing risks.

## Net-Zero Planning

Many impact-oriented FSPs, influenced over many years by the climate discourse in the Global North, have been trying to be good citizens by reducing their own carbon footprints. Some have gone as far as developing and implementing net-zero plans.<sup>33</sup>

While useful in contributing to global decarbonization, it is important for FSPs to recognize that net-zero efforts typically do very little if anything to bolster the climate adaptation and resilience of the FSPs or their

clients. While some mitigation-oriented efforts can have significant cobenefits—achieving both objectives at the same time—these need to be specifically identified and deliberately pursued. Hence net-zero plans can make FSP management feel like they are taking action on climate change, while doing nothing to prepare the institution and its clients for the new reality that may sooner or later come knocking.

## Mission First

Many inclusive FSPs with an explicit social mission instinctively respond by doing anything it takes to ensure the well-being of their clients. Well-meaning FSPs may be tempted to provide widespread debt forgiveness coupled with indiscriminate ex post lending to inject much-needed capital into disaster-affected communities—often supported by donor funds. Some FSPs are also experimenting with new insurance products that help clients while soft funding is available.

While this can be good for customers and communities who benefit, ensuring financial self-sufficiency is more critical for FSPs than ever in an increasingly constrained donor-funding environment. This ensures FSPs can communicate clearly beforehand how they will support customers after a shock, and reliably then meet those expectations regardless of the availability of donor funding.

In the absence of a more comprehensive approach to climate risk, FSPs either need to avoid risk or could end up placing customer deposits and/or institutional loans at risk and ultimately eroding future access to much-needed financing options for end customers.

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33 Given the recent decision by the members of the Net Zero Banking Alliance to cease operations, the prevalence of this response moving forward is unclear. Source: Hans (2025)

## ANNEX 3

# Physical Climate Risk Assessment Resources

## 1. Open-Source Climate Risk Tools: Nontechnical

Most FSPs who are new to PCRA would benefit from reviewing a few open-source platforms that do not require technical climate data skills, as listed in Table 5. These resources provide a high-level understanding of portfolio risk, helping inclusive FSPs incorporate climate risk into management decisions. Table 5 lists a few of the key nontechnical tools for inclusive FSP professionals, sorted by five of the most common reasons PCRA are initiated, which should also be an important consideration when it comes to tool choice.

## 2. Open-Source Climate Risk Tools: Technical Expertise Required

To dive deeper into more complex climate risk data sets, the second option for inclusive FSPs is to work with an expert to leverage technical open-source platforms. While this approach allows FSPs to assess risk on a more granular level than nontechnical platforms allow, it usually requires funding to hire a contractor with technical expertise in geospatial data analysis and climate modeling. Table 6 lists a few of the technical platforms most frequently used by inclusive FSPs that have access to technical expertise:

## 3. Specialized PCRA Service Providers

The third option, for FSPs who have access to more significant PCRA funding and require the most customized view of climate risk, is to work with a specialized PCRA service provider (see Table 7). Thanks to the increase in available climate risk data, these specialist providers can produce PCRA tailored for the inclusive FSP context at a standard available only to a Tier 1 bank a decade ago.

TABLE 5. **Open-Source Climate Risk Tools: Nontechnical**

Tool	Summary
Climate Change Knowledge Portal ( <a href="https://climateknowledgeportal.worldbank.org/">https://climateknowledgeportal.worldbank.org/</a> )	Free portal offering country-level flood, drought, and storm risk profiles; good starting point
CRiSTAL ( <a href="https://www.iisd.org/cristaltool/">https://www.iisd.org/cristaltool/</a> )	Community-based tool for participatory climate risk screening, useful for engaging directly with branches and borrowers
FEWS NET ( <a href="https://fews.net/">https://fews.net/</a> )	Early warning system focused on drought and food security, helps FSPs track near-term agricultural and borrower risks
GRI Risk Viewer ( <a href="https://global.infrastructureresilience.org/">https://global.infrastructureresilience.org/</a> )	Free global risk viewer offering multihazard maps for flood, cyclone, drought, good for portfolio screening
Google Flood Hub ( <a href="https://sites.research.google/floods/l/0/0/3">https://sites.research.google/floods/l/0/0/3</a> )	Free real-time flood monitoring and forecasts, highly usable for active support in flood-prone areas
ND-GAIN Index ( <a href="https://gain.nd.edu/our-work/country-index/">https://gain.nd.edu/our-work/country-index/</a> )	Country-level vulnerability and readiness scores, good for comparing climate exposure across markets
PRISM (WFP) ( <a href="https://innovation.wfp.org/project/prism">https://innovation.wfp.org/project/prism</a> )	Geospatial platform for real-time hazard monitoring (floods/droughts), strong for operational risk officers
ThinkHazard ( <a href="https://thinkhazard.org/en/">https://thinkhazard.org/en/</a> )	Simple, free screening tool for flood, cyclone, and drought hazards by country/district; baseline tool

Source: Authors

TABLE 6. **Open-Source Climate Risk Tools: Technical Expertise Required**

Tool	Summary
CLIMADA_† ( <a href="wcr.ethz.ch/research/climada.html">wcr.ethz.ch/research/climada.html</a> )	Open-source impact model to estimate damage from floods, cyclones, droughts; requires technical expertise
Climate Impact Explorer_† ( <a href="climate-impact-explorer.climateanalytics.org/">climate-impact-explorer.climateanalytics.org/</a> )	Free portal showing projected changes in flood, drought, and cyclones by country; useful for scenario planning
GFDRR Maps_* ( <a href="http://www.gfdr.org/en/geospatial">www.gfdr.org/en/geospatial</a> )	Free hazard layers (floods, cyclones, drought) from the World Bank; good for portfolio overlays with GIS support
MapX_* ( <a href="http://unepgrid.ch/en/mapx">unepgrid.ch/en/mapx</a> )	Open geospatial platform to visualize and combine hazard and environmental data sets; best with GIS expertise
NGFS Climate Scenarios Portal_† ( <a href="http://www.ngfs.net/ngfs-scenarios-portal/">www.ngfs.net/ngfs-scenarios-portal/</a> )	Free climate and transition risk scenarios, regulator-aligned; requires modeling expertise.
NOAA/GFS Alerts ( <a href="http://www.ncei.noaa.gov/">www.ncei.noaa.gov/</a> )	Global weather and climate alerts for near-term hazard monitoring; can be integrated into dashboards
OS-Climate_† ( <a href="http://os-climate.org/">os-climate.org/</a> )	Open-source climate scenario platform for stress testing; requires modeling expertise

\* = GIS/Geospatial analyst needed † = Climate/impact modeling expertise needed

Source: Authors

TABLE 7. **Specialized PCRA Service Providers**

Tool	Summary
BlueOrchard Analytics ( <a href="http://www.blueorchard.com/">www.blueorchard.com/</a> )	Provides climate risk reporting tailored for emerging market FSPs to meet DFI and investor standards
South Pole ( <a href="http://www.southpole.com/">www.southpole.com/</a> )	Offers full-service climate risk analytics and reporting, plus support for climate finance proposals and donor engagement
Syvl Earth ( <a href="https://syvl.earth/">https://syvl.earth/</a> )	Uses satellite data to build hazard dashboards showing borrower exposure to floods, droughts, and cyclones
YAPU Solutions ( <a href="http://www.yapu.solutions/">www.yapu.solutions/</a> )	Helps MFIs integrate climate risk into loan origination and portfolio management with simple digital scoring systems

Source: Authors

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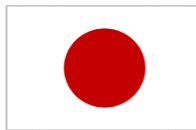
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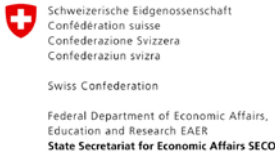
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# CGAP Members



# CGAP Members (continued)



# CGAP Strategic Partners





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