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Authors

Howard Miller, Lakshmi Krishnan, and Lucciana Alvarez Ruiz

Green Inclusive Finance: A Framework for Understanding How Financial Services Can Help Low-Income and Vulnerable People Respond to Climate Change

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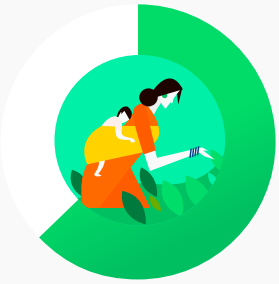
Introduction

As climate change-induced events — shocks like floods and storms and stresses like hotter temperatures and rising sea levels — increase in frequency, unpredictability, and severity, the people most impacted by such events are those least responsible for historic carbon emissions. The poorest 50 percent of the world's population produces half the emissions of the richest 1 percent.[i] In the last few years, international and government funds to mitigate and adapt to climate change have increased; however, these funds have largely invested in top-down greenhouse gas emissions mitigation efforts. Investments in resilience and adaptation of low-income and vulnerable individuals, households, and MSMEs remain insufficient.[ii]

Existing frameworks and approaches to tackle climate finance — such as the EU's sustainable finance taxonomy — tend to focus on mitigation financing investments that reduce global greenhouse emissions and transform the global economy into a green economy.[iii] These perspectives, while critical to solving some of the major challenges around climate change, do not address the impacts of climate change that are unavoidable and most severe for the people with the least capacity to cope. Globally, 1.7 billion people living in urban environments are affected by extreme heat.[iv] In Benin, Côte d'Ivoire, Senegal, and Togo, more than half of the coastline is already subject to rapid erosion.[v] Three-quarters of smallholder farmers in Zambia are vulnerable to climate shocks, including droughts and flash floods.[vi] When climate events occur, it is the most vulnerable who suffer the most. Climate finance needs to work to reduce global emissions, but it needs to work for these people, too.

Women and women-led households are heavily affected as well, as they are more vulnerable to the impacts of climate change than men. In

In low-income countries



63%

of female employment is in agriculture

low-income countries, 63 percent of female employment is in agriculture[vii] and women are highly dependent on natural resources for their livelihoods. Compared to men, women have fewer land rights,[viii] lower levels of financial inclusion,[ix] less involvement in cash crops, lower participation in commercial agriculture, and are more likely to carry out unpaid family work. Additionally, women are more affected by health impacts associated with climate change, and more likely to die of climate-related disasters like floods and storms.[x] Women's vulnerability to climate change is reinforced by power relations and social norms,[xi] and they have fewer resources and tools to manage the impacts of climate change.

As climate change increases the vulnerability of low-income people, financial systems in low- and middle-income countries will have new and different roles to play in helping people manage risks and adapt to changing conditions. However, despite the urgent need to adjust to the changing landscape, the inclusive finance community lacks an overarching framework for understanding and explaining the critical

ways in which financial services can support improved outcomes for low-income and vulnerable people in the context of climate threats. This paper aims to fill that gap and help the inclusive finance sector develop a shared understanding of how inclusive finance helps people reduce their vulnerability to negative climate impacts, respond to the challenges of climate change, and protect ecosystems that underpin their livelihoods.

The intended audience for this paper is financial service providers, policymakers, development funders, investors, and other stakeholders in the inclusive finance ecosystem looking to understand the various and often complex ways in which inclusive financial services can support improved outcomes for low-income and vulnerable populations in the context of climate change. The paper focuses on the usage of financial products provided by financial service providers — banks, microfinance institutions, insurers, and payment providers as well as informal providers — and is designed to be complementary to existing literature around social protection and climate risks,[xii] as well as emerging literature around how governments and development organizations can use financial instruments to support climate resilience. While a few terms, such as "resilience" and "adaptation," overlap with those commonly used and defined in climate literature, this framework aims to encourage the inclusive finance community to think about how these concepts can be brought into financial inclusion programming and how financial services can support improved outcomes in the context of climate change and environmental degradation.



A Framework for Climate and Inclusive Finance

The Center for Financial Inclusion (CFI), in consultation with industry stakeholders, has created a holistic framework to help understand the various impact pathways through which financial products and services can support low-income and vulnerable populations to manage and respond to challenges relating to climate change. This green inclusive finance framework builds on existing impact narratives that emphasize the idea of well-being[xiii] and includes the multi-dimensional ways in which financial services can be used by low-income households.

The green inclusive finance framework offers a new way of thinking about inclusive finance in the context of climate change based on four key impact pathways: mitigation, resilience, adaptation, and transition (see Table 1). This framework is intended to help the inclusive finance sector better understand how usage of a financial product or service can help consumers respond to the risks and challenges associated with climate change. The pathways are not mutually exclusive, and in some cases may be mutually reinforcing. They may also be exclusive of other ways that people and communities can respond to climate change.

TABLE 1: Framework for Green Inclusive Finance

Pathway	Role of Inclusive Financial Services	Example of Inclusive Financial Solution
Mitigation	To support the adoption of green technologies and practices that can improve local environmental conditions for households and communities	↗ Installment plans to pay for solar lighting systems ↗ Financing of "clean" cookstoves (e.g., those powered by electricity or biogas)
Resilience	To support the financial resources needed to prepare for, manage through, and recover from climate-related shocks	↗ Weather/livestock index insurance ↗ Easy-access savings ↗ Social protection payments for food or wage security
Adaptation	To support necessary changes to livelihood strategies in response to longer-term climate-related events	↗ Financing to farmer producer groups for high-value crop diversification and value chain linkages ↗ Financing to support weatherproofing homes
Transition	To support shifts to new livelihood strategies in response to and in anticipation of future climatic events	↗ Financing/remittances for migration to new locations ↗ Financing to invest in vocational training for new livelihoods



In this paper, we use the green inclusive finance framework to review existing evidence and classify the direct or indirect impact that inclusive financial services have on helping people respond to climate change. Like recent practitioners' interest in the role of inclusive finance in climate action, evaluative researchers have only just begun to carefully characterize and determine how financial services influence how low-income and vulnerable populations respond to and recover from current climatic impacts, and how access to these tools may modify decisions and behaviors in anticipation of future climatic risks. There is far richer literature on financial services and household shocks, but climate change presents unique complexities: the nature and covariance of risks, uncertainties involved, and systemic impacts imply that past evidence — which largely looks at idiosyncratic shocks — on effectiveness has a limited predictive role. Below, we further explore each of the impact pathways in the green inclusive finance framework and the evidence to date.

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Mitigation

In the context of this framework, "mitigation" refers to the role of financial services to support improved local environments and ecosystems for low-income people and vulnerable communities, in addition to the reduction of greenhouse gas emissions, the use of renewable energies, and conservation activities. Some examples of how green inclusive finance supports mitigation and environmental outcomes include pay-as-you-go (PAYGO) loans for renewable energy sources and payment for ecosystem services.

The mitigation pathway receives significant attention from investors and the donor community, such as the Green Climate Fund,[xiv] the Climate Investment Funds,[xv] and the IFC Catalyst Fund.[xvi] This attention has been driven by the PAYGO business model that is enabling clean energy solutions to be sold to low-income people in many parts of the world through embedded consumer financing.[xvii] Azuri PAYGO Energy, for instance, provides mobile phone technology and emission-free lighting using a PAYGO model in more than 11 countries in Sub-Saharan Africa. This company calculated that 3,504 tons of CO_2 emissions have been avoided through their services.[xviii] Although PAYGO has opened up new opportunities for both accessing energy and credit,[xix] studies have highlighted several ongoing challenges for the industry, including consumer protection issues such as limited payment flexibility,[xx] consumer risks,[xxi] penalties and fees related to late payments, or unreliability of the service.[xxii]

In a world where 2.4 billion people cook using open fires or stoves fueled by kerosene, biomass, or coal[xxiii] that pollute and contribute to climate change, financial services have helped to make clean cooking affordable for low-income populations and to mitigate indoor air pollution. For instance, MFIs have helped low-income populations adopt bottled liquid propane gas (LPG), a fuel with low emissions, by reducing the initial cost barrier of purchasing the equipment (cylinder, stove, and accessories).[xxiv] The Global LPG Partnership piloted this microfinance solution in Kenya, where MFIs provided loans to low-income households to cover upfront equipment costs of bottled gas with a six-month fixed repayment schedule. Loan recipients were more likely to use LPG for cooking and decreased the use of biomass fuel.[xxv] The loan provided by MFIs



2.4 billion people

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Dominican Republic

An MFI in the Dominican Republic offered

green inclusive loans

accompanied by training for small and medium agricultural producers in rural areas to protect biodiversity ecosystems.

proved to be a commercially viable solution to fund the adoption of cleaner energy as the repayment rate was above 94 percent.[xxvi]

When banks and MFIs offer "green" loans in the agriculture sector, these tend to relate to some form of mitigation linked to more sustainable agricultural practices and climate-smart agriculture. For example, in a pilot developed by ADA in the Dominican Republic,[xxvii] an MFI offered green inclusive loans accompanied by training for small and medium agricultural producers in rural areas to protect biodiversity ecosystems. The project financed the acquisition of agricultural equipment that uses good practices that protect the environment, such as drip irrigation and plantations of tree species (e.g., bananas) with organic management.[xxviii]

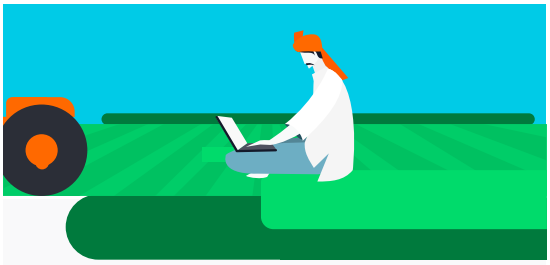
Similarly, payments for ecosystem services (PES) are programs where those who provide positive ecological services, such as biodiversity, carbon sequestration, or watershed management, get paid by those who benefit from these services. In Colombia, PES recipients converted more than 40 percent of their land into environmentally friendly land use over four years.[xxix] Similar results were found in Costa Rica,[xxx] Mexico, and Uganda,[xxxi] where PES reduced deforestation and food insecurity. These experiences show that financial intermediaries are key to collecting and distributing payments. However, the payments should be high enough to compensate for the transaction, implementation, and opportunity costs incurred by the providers of ecosystem services.[xxxii]

Resilience

"Resilience" is a term broadly used within both the inclusive finance and climate sectors and can have different meanings within these varied contexts. For this framework, resilience is used in a relatively narrow sense to describe the roles that financial products and services can play in helping low-income and vulnerable people prepare for, manage through, and recover from the acute risks associated with climate change. In this context, resilience is a form of coping capacity, or people's capacity to absorb shocks. Defining resilience in this way distinguishes the role of financial services from longer-term processes that are more focused on the resilience of the planet to changing climates.

Different types of financial services are essential before, during, and after a climate-related extreme weather event. To prepare for climate-related risks, people need to reduce vulnerability and exposure and build safety nets. When weather shocks occur, households with access to financial products and services — including credit,[xxxiii] savings,[xxxiv] mobile money,[xxxv] or agricultural insurance[xxxvi] (usually index insurance) — can smooth consumption, avoid distress sale of assets such as livestock, and keep children in school. However, the extent to which households can offset shocks and maintain well-being varies, as does the coping strategy; for example, some turn to loans while others choose to draw down savings.

Insurance products can play a key role in building resilience among low-income and vulnerable populations to face climate hazards that are infrequent but potentially catastrophic. Weather index insurance is an example of risk transfer through which low-income farmers can pay a premium to ensure financial compensation in the case of an extreme weather event (for example, too much or too little rainfall). Several studies have shown that



Weather index insurance is an example of risk transfer through which low-income farmers can pay a premium to ensure financial compensation in the case of an extreme weather event.

weather insurance helps farmers to manage future risks, which is a binding constraint when farmers make an investment decision on inputs and crop choices. For instance, in northern Ghana, where agriculture is mainly rain-based, farmers who adopted rainfall insurance increased their investment in agriculture inputs such as fertilizers, land preparation, and labor.[xxxvii] Similarly, weather index insurance allowed farmers in India to invest in new technologies[xxxviii] and shift production to higher-return but higher-risk crops.[xxxix]

Weather index insurance not only affects ex ante investment decisions but also ex post strategies to cope with climate change. A randomized control trial (RCT) in rural Kenya estimated that weather index insurance reduces the likelihood of households deploying costly coping strategies after a weather shock, such as reducing household consumption for poorer households and selling assets for wealthier households.[xl] An impact evaluation of weather index insurance, implemented through the CADENA program in Mexico, shows that it increased farmers' resources to invest in the subsequent planting season after a weather

shock, increased the cultivated area after the shock, and increased household consumption.[xli] Although index insurance could benefit low-income producers in the context of climate change, it has a low uptake due to price, basis risk, liquidity constraints, data availability, and trust barriers.

Savings are also a critical component of pre-shock resilience, as they help individuals to cover the costs of potential damages and later rebuilding. An example of how savings can help build resilience to droughts, particularly for women, is through savings groups. In an RCT in Mali,[xlii] a community-based program called Saving for Change enabled women to associate into savings and credit groups. Women and households living in villages with savings and credit groups were more likely to have savings and loans and were more resilient to income shocks (mostly from weather fluctuations or health emergencies). Moreover, households in the treatment group were less likely to be chronically food insecure, were better able to cope with weather fluctuations, and could maintain food consumption at the same level throughout the year without skipping meals or eating less. Since livestock is a preferred saving stock to mitigate risks associated with droughts or health emergencies, households living in treated areas also owned more livestock than the comparison villages. Savings groups were also found to support resilience against droughts as part of an RCT in Ghana, Malawi, and Uganda.[xliii]

It is important to consider the form of savings to ensure funds are accessible when needed — for example, saving in livestock or cash savings in the locked box of a village savings and loans association can be vulnerable to flooding. At the same time, digitized savings in a mobile money account may rely on a functioning power infrastructure that is also vulnerable to extreme weather events.

For low-income and vulnerable populations, mobile money networks have an important role when facing a weather shock. Mobile money reduces transaction costs, time, and risks of transferring funds between individuals and can improve resilience to natural disasters. In Tanzania, mobile money helped mitigate the effect of rainfall shocks on household



consumption by facilitating the flow of remittances.[xliv] In an RCT in Uganda, mobile money decreased the probability of households changing their diet or the number of meals to cope with shocks (mainly droughts and floods).[xlv] In Mozambique, an RCT revealed that the likelihood of rural flood-hit households receiving remittances increased with the availability of mobile money.[xlvi] Moreover, mobile money also increased the welfare of rural households, smoothed consumption, and reduced vulnerability (measured as access to food, water, and medicine) among households that faced flooding.

Credit can also increase the capacity of low-income and vulnerable populations to cope with natural risks and reduce the ex post vulnerability to future risks. For instance, during the lean season in Zambia and during flooding months in Bangladesh,[xlvii] informal and formal credit strategies were used to finance consumption in the absence of traditional alternatives such as agricultural wage labor. In these contexts, informal credit from friends and family was largely used because it was flexible and easy to access to finance household consumption. The results of an RCT in Zambia show that access to formal food or cash credit during the lean season increases household well-being and food security. Moreover, households with access to formal credit were less likely to do casual or off-farm labor and produced more agricultural outputs than those without access to credit. The use of credit to build resilience to climate shocks should be coupled with strong consumer protection practices to reduce risks to both borrowers and providers.

Adaptation

In the context of the green inclusive finance framework, "adaptation" refers to the processes that help people and their communities make necessary adjustments in response to actual or expected climatic changes. Unlike resilience, adaptation emphasizes the longer-term financial investments that can be made to reduce vulnerability or exposure to climatic risks. For example, financing can support crop or cattle diversification and management practices better suited to changing conditions, or to help with investments in stress-tolerant seeds, or efficient water-use technologies such as drip irrigation.

In urban areas, low-income populations can be highly vulnerable to extreme weather and shocks associated with climate change. The C40 Cities Alliance estimates that by 2050, 215 million urban, low-income people will be exposed to average summertime temperature highs of over 35˚C (95˚F), compared to 26 million today.[xlviii] People will need to adapt to these rising temperatures, and financial services have a critical role to play, particularly in supporting the investment costs of new, heat-reducing technologies. For example, Mahila Housing SEWA Trust (MHST) in Ahmedabad, India, provides loans to low-income women for low-cost modular roofs and heat-reflecting white paint to reduce internal temperatures during heat waves.[xlix]

Where people are unable to adapt their current housing or business to changing conditions, housing finance will be required to build new homes, and MSME finance can help to build new buildings for businesses. Those who stay in the areas affected by climate change will need to adopt climate-resilient building techniques. In Bangladesh, households in flooding-prone areas opted to replace their traditional earth homes with houses that use new techniques based on



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Those who stay in the areas affected by climate change will need to adopt climate-resilient building techniques.

bricks and mortar and are less vulnerable to flooding.[l] To partially cover the high upfront costs of these adaptations, households obtained loans from banks (although they faced credit limits and high loan costs).

In Kenya, where access to credit among dairy farmers was constrained by high down payments, an experiment found that relaxing loan requirements increased borrowing investment in new technology.[li] As part of an



The effects of increasing access to credit for adaptation also improve gender indicators.

RCT, a dairy cooperative offered three types of loans to finance water tanks, which can help reduce drought risks: a loan collateralized by the asset (in this case a water tank), a loan with a high down payment, and a loan with joint liability. The experiment found that loosening loan requirements through asset collateralized loans increases tank ownership and new tank investments, and thus improves water storage capacity. Moreover, dairy farmers with asset collateralized loans were more likely to sell their milk and repay their loans in full. The effects of increasing access to credit for adaptation also improve gender indicators. In this case, improving access to loans to buy water tanks reduced the time that girls spend fetching water for livestock and decreased school drop-out rates for girls.

Programs that combine skills training or asset transfers with microloans are more likely to enable low-income and vulnerable people to adapt. In Kenya, an MFI provided a credit option coupled with training activities to increase women's capacity to adapt to climate change.[liii] Women received training in agroforestry, including adaptation strategies, and business administration. The training introduced new drought-tolerant seeds (beans, cassava, and maize) and nitrogen-fixing crops (groundnut and cowpeas) which helped women adapt to extreme weather changes and increase the quality and quantity produced. The training also helped women to prevent water erosion and protect their crops from insolation during droughts. Women recognized the benefits of the training coupled with lending and continued using microloans to expand agroforestry, invest in soil fertility maintenance, and buy more drought-tolerant seeds. An evaluation of the long-term impacts of this program, after eight program years, revealed increases in agroforestry-related income, gains in asset accumulation, and improvement in households' resilience to weather shocks.[liii]

In northwest Bangladesh,[liv] where droughts are increasingly common during the dry season, a study found that the provision of prepaid debit cards for irrigation water increased the adoption of alternate wetting and drying of rice fields for water efficiency.[lv] The prepaid cards help farmers recognize the marginal price of water compared to the traditional approach of acreage-based seasonal contracts. The study showed a small increase in crop income through reduced water pumping costs, though it did not directly measure the impact on surface or groundwater.[lvi]

Transition

In extreme cases, climate change and ecosystem deterioration can fundamentally change people's ability to sustain their current lives and livelihoods, and some may need to seek out new livelihood strategies altogether. In some cases, it may no longer be possible to adapt to certain vulnerabilities, and people will need to transition — in other words, to remove or move away from risk. Examples of climate threats that would instigate the need to transition include rising sea levels that destroy coastal communities and jobs, or increasing temperatures, changing weather patterns, or desertification that renders certain economic activities unsustainable. In these cases, financial services can be essential to support the transition to a new livelihood strategy.

Financial services can help low-income and vulnerable populations transition to new economic activities that are less susceptible to climate change by providing the funds to overcome initial barriers to start the new activity. For example, in southern Bangladesh,[lvii] where agriculture-based adaptations are limited due to biophysical constraints and the severity and duration of flooding, some households living in flooded areas have abandoned traditional agricultural activities and converted their land to fish and prawn aquaculture. While wealthier households were able to access credit from banks to cover the upfront costs, the transition costs were typically higher than what low-income populations were able to borrow from microfinance institutions.





The impact of climate change in reducing arable land could see over 140 million people forced to migrate within their own countries by 2050.

When the economic barriers to livelihood diversification cannot be overcome, migration becomes another important example of a possible transition strategy. Migration might be an ex post response to an extreme climatic event, or it might be an ex ante strategy to seek improved opportunity. It can be seasonal or permanent and can occur over short or long distances. Additionally, the decision to migrate could be directly related to climate change — for example, due to rising sea levels — or it might also be indirectly related, such as climate change leading to resource scarcity which can lead to conflict and forced relocation. The World Bank estimates that the impact of climate change in reducing arable land could see over 140 million people forced to migrate within their own countries by 2050.[lviii] Climate change can also constrain migration because it reinforces poverty traps and inequality — it is more likely for low-income households to lack social networks or to be unable to afford the upfront costs associated with long-distance mobility.

Access to financial services can directly enable voluntary migration by easing liquidity constraints or indirectly through enabling asset accumulation.[lix] Current evidence on mobility reveals that male members of poorer households tend to engage in short-term (and not always profitable) survival or distress migration in response to shocks. This strategy precludes long-distance, profitable migration — that financial services can support. For migrants and climate refugees, safe and effective digital financial services can play an important role as they allow people to liquidate assets from their former home, securely store the funds, and then access their money in a new location. When moving across borders, digital remittances and international interoperability of mobile payments and KYC systems play an important role.

Mobile money can help low-income and vulnerable populations to migrate and perform a different economic activity by reducing transaction costs and eliminating liquidity constraints. In rural Mozambique, access to mobile money reduced the transaction costs associated with long-distance transfers and encouraged out-migration from rural areas[lx] — that is, geographical occupational change. This occurred with a concurrent decrease in agricultural investment and activity because family members migrated, and these effects strengthened over time. In Uganda, mobile money allowed people to increase their liquidity — either through the receipt of remittances or the cost reduction of sending remittances, which supported their households' transition from farming to self-employment doing non-farm labor.[lxi]

Credit is helpful to remove the initial barriers of migration. In Bangladesh, in the absence of agricultural adaptation options after flooding, many men migrated domestically to find agricultural employment in other regions.[lxii] Those who were socioeconomically advantaged migrated internationally. In this case, informal providers were the only source of loans for migration, as banks and MFIs would not fund the activity. At the same time, as people move into new areas of work or abandon the activities that are threatened by climate change, they will need training and vocational education that may require financing.

A Way Forward

Climate change impacts low-income and vulnerable populations in vastly different ways and the risks change over time. The four impact pathways laid out in this paper provide a way for inclusive finance practitioners to think about the various roles that financial services will need to play as risks increase and spread.

The impact pathways are not mutually exclusive and in fact may be mutually reinforcing. Low-income and vulnerable populations are unlikely to overcome their climate-related challenges with a single financial product. However, a portfolio of financial products — particularly over a longer time and when combined with non-financial interventions and infrastructure investments — could provide significant benefits. For example, farmers could take out financing to produce a variety of crops to mitigate low-intensity weather shocks, rely on cash-for-work to supplement income or food during a moderate intensity event, and obtain index insurance to address moderate- or high-impact climate shocks, while relying on savings and remittances to smooth consumption if rains are delayed. All of which could be underpinned by increasing access to climate information and adaptive infrastructure at the community level.[lxiii]

There are limits to what inclusive financial services can do in the context of climate change. Financial services can help low-income and vulnerable populations manage certain risks, smooth consumption, and make investments, but are unlikely in isolation to support sustainable and resilient livelihoods. In many cases, inclusive finance will be an enabler of outcomes in adjacent sectors, such as food systems and nutrition, WASH (water, sanitation, and hygiene), or housing. In most instances, there is likely to be a strong case for government intervention, both directly (through expanded and adaptive social protection systems), and by the provision of supporting infrastructure (for example, reinsurance to manage idiosyncratic climatic risks).

CFI has identified key actions by a variety of stakeholders to better incorporate the impacts of climate change into programming. These are particularly relevant for financial service providers working with low-income and vulnerable people, for policymakers looking to leverage financial inclusion for positive social and environmental impacts, and for the development sector looking for new ways to support these efforts.

1. Increase research focus on slow-onset climatic stresses and long-term financial solutions. Most of the available evidence to date focuses on the impact and response to acute climatic shocks — floods, hurricanes, droughts, heatwaves, etc. These are typically discrete events that are relatively simple to model and understand the impact. However, many of the impacts of climate change on low-income and vulnerable populations play out over longer periods of time in ways that can be harder to understand. Such risks include sea level rise, salinization, desertification, declining and changing precipitation, rising temperatures, and biodiversity loss. The risks are particularly pronounced for communities that directly depend on natural resources for income. How can financial services help people respond to these challenges where the negative impacts may be incremental and accrue over years or decades?

2. Increase the priority of resilience and adaptation programming, particularly in low-income countries. To date, the development sector has focused on and invested in the overlap of climate and inclusive finance

as it relates to mitigation. This results in funding concentrations for clean energy models, such as PAYGO solar systems, and sustainable agriculture. Such work remains important; however, there needs to be greater recognition that people in low-income countries are net losers from climate change and their impact on carbon emissions is typically negligible. While financial services remain important to support improved and more sustainable environmental practices, they also must support people as their lives and livelihoods are reoriented in response to climate change. The development sector and investors can support increased research into the ways in which financial services can support resilience, adaptation, and transition efforts, and they can help build capacity and channel resources to these often complex areas of work.



3. Move away from labeling products as "green" to a more complex understanding of the role of financial services. Many of the financial services that people need to respond to climate risks are not what would traditionally be labeled as "green." While some products are easily understood to be part of the "green" ecosystem, for example a PAYGO home solar product, there are other important financial tools that support resilience — mobile money accounts, secure savings, and quickly accessible loans. There is value for financial institutions and investors to understand how much of their portfolio supports positive climate-related outcomes, but this cannot be boiled down to a simple binary where some products are considered green, and others are not. Rather, financial institutions, systems, and investors should aspire to provide a portfolio of financial services that help people manage the various and often complex risks related to climate change.

4. Forge partnerships outside of the traditional financial inclusion ecosystem with climate organizations and those in adjacent sectors. The inclusive finance community is inherently limited in its ability to respond to climate change at scale. To further build out the evidence base on the role of financial services in achieving positive climate-related (or environment-related) outcomes, new partnerships need to be forged between organizations that specialize in inclusive finance and those that focus on climate (and the ecosystems and biodiversity sector as it further matures). These partnerships are essential to successfully respond to the complexity of the challenges faced at the overlap of green and inclusive finance. Some of the interventions described in this paper were traditional development interventions that were not explicitly designed to address climate shocks; the recognition often came in hindsight. New partnerships could leverage lessons-to-date to intentionally design programs to advance green inclusive finance.

5. Focus on women, young people, indigenous groups, and other marginalized populations. Climate change reinforces and exacerbates existing inequalities in economies and societies. Those with the most power and control in societies are less vulnerable and more able to access resources to respond to climate change. Vulnerability to climate change intersects with other forms of vulnerability and marginalization, and therefore green inclusive finance needs to be cognizant of existing structures of inequality. The

presence of gender differences in the demand for certain financial products — for instance, women prefer savings over weather insurance[lxiv] — makes women more vulnerable to climate risks than men. Norms and inequalities should be addressed at the institutional level during the product and product delivery channel design processes. For instance, since mobile money is increasingly used in Sub-Saharan Africa[lxv] and it has proven to help increase resilience to climate change, it is key for financial service providers to design mobile money apps that eliminate trust barriers that could exclude women and marginalized populations from using them.

6. Integrate climate into broader thinking about consumer protection and responsible finance. As climatic risks increase the challenges of reaching vulnerable populations, there is a danger that they exacerbate financial exclusion. For example, populations living in areas vulnerable to climatic risks may be discriminated against. Increasing the availability and accuracy of weather and climatic data may have the unintended consequence of excluding more people from the financial services that they need to manage these risks. More broadly, a forward-looking perspective on responsible finance needs to consider the overlapping and mutually reinforcing vulnerabilities associated with climatic risks and consumer protection. Policymakers, regulators, and other stakeholders will need to ensure that approaches to support one outcome are not detrimental to the other, and that consumer protection initiatives are reinforced to protect those most vulnerable to climatic risks.

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