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April 2026

Early Warnings, Faster Recovery

How Climate Information and Finance Shape Women's Resilience in Urban Ethiopia

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Acknowledgments

This report was authored by Anindita Chakraborty and Edoardo Totolo, with editorial support from Sofia Huizar. The authors are grateful to Nataša Goronja from the Center for Financial Inclusion, Diana Boncheva-Gooley from Atram, and Nisha Singh for their substantive inputs in shaping the research and framing the insights. We also extend our appreciation to our research partner, Laterite, whose local knowledge and execution of the demand-side research in Ethiopia were vital to this study. We are especially grateful to the women microentrepreneurs in Ethiopia who shared their time, experiences, and perspectives to inform this study.

The authors also gratefully acknowledge the financial contribution from Jersey Overseas Aid and the people of Jersey for supporting this research.

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Executive Summary

This report examines how access to finance and climate information enable urban women entrepreneurs in Ethiopia to build resilience. In Ethiopia, urban climate shocks are becoming a frequent disruption for micro and small enterprises (MSEs). Extreme weather events and climate variability are impacting livelihoods and having a significant impact on MSEs, which often operate informally and have limited access to finance and digital solutions. Although MSEs dominate the country's private sector, they remain highly exposed: over one-third of MSE owners in Addis Ababa report being affected by climate shocks, yet fewer than 20 percent can access emergency funds (Totolo et al., 2025).

The study draws on original survey data and focus group discussions with more than 800 women microentrepreneurs in Addis Ababa and Dire Dawa and finds that timely and actionable climate information is a predictor of whether a business returns to normal operations within a month of a shock. Women entrepreneurs who receive early warnings recover faster, experience less severe impacts, and are more likely to take protective action; even after controlling for education, business experience, financial access, and shock severity. Women entrepreneurs who received alerts and had access to financial tools reported particularly strong outcomes. For example, entrepreneurs who received prior weather alerts and had access to savings installed weather-resistant roofing or elevated the floors and shelves of their businesses as a preventive strategy.

Notably, the study also points to an adaptation trap, in which the most vulnerable women entrepreneurs who experience the most severe shocks deplete the resources needed for future protection and are the least able to invest in adaptation. This finding adds additional context to prior research showing that, among affected entrepreneurs, those experiencing the most severe losses often have the least capacity to invest in protective measures for the future.

While the findings from this research cannot infer causation, the insights reflect the lived realities of women small-business owners across Sub-Saharan Africa. These findings demonstrate that access to timely climate warnings can play an important role as a driver of resilience from climate shocks among women entrepreneurs in urban Ethiopia, shaping their ability to anticipate shocks, absorb impacts, and adapt for the future. Access to timely finance only compounds this effect.

DATA HIGHLIGHTS

Despite high financial account ownership, only **15%** of women MSE owners have enough savings to cover business expenses for a month.

Nearly **75%** of women entrepreneurs cannot sustain business operations for more than one month without income.

17% of women entrepreneurs reported permanent loss or damage to business assets due to climate shocks.

Access to early warnings about upcoming climate shocks is associated with a **37%** increase in rapid recovery.

Contents

1 **Introduction** 5

2 **Research Approach: Understanding How Women Entrepreneurs Build Climate Resilience** 6

3 **Study Context and Methodology** 8

3.1 Ethiopia-Specific Context: Urban, Gender, and Enterprise 8

3.2 Study Design and Sampling Strategy 9

3.3 Sample Characteristics 9

3.4 Key Variables and Measurement 10

3.5 Limitations 10

4 **Study Findings** 11

4.1 Climate Exposure and Impact Severity 11

4.2 Financial Resources and Anticipatory Capacity 12

4.3 Shock Absorption: How Entrepreneurs Cope 13

4.4 Adaptation Investments and the Adaptation Trap 15

4.5 The Information Gap: Climate Warnings and Early Action 16

5 **Conclusion: Information as a Multiplier for Financial Resilience** 19

1 Introduction

Climate change is intensifying the frequency and severity of extreme weather in urban Africa, exposing cities to floods, heat waves, and other shocks. In Ethiopia's cities, such as Addis Ababa and Dire Dawa, rapid urbanization has outpaced infrastructure development, leaving a large share of the population without access to it. For instance, 67 percent in Addis Ababa live in flood-prone areas with inadequate drainage (Dusseau et al., 2023). Urban micro and small enterprises (MSEs), which are a vital source of livelihoods, are on the front lines of these climate shocks. Recent research conducted by the Center for Financial Inclusion (CFI) with MSE owners showed that one in three businesses across cities in emerging markets, including Addis Ababa, have been hit by droughts, floods, or other environmental shocks, yet fewer than 20 percent of businesses report having emergency funds available within a week (Totolo et al., 2025). When shocks strike, more than 50 percent of small businesses experience declines in sales and profits, with impacts in Addis Ababa among the most severe. Women-led enterprises form a large share of this vulnerable business population (e.g., 43 percent of MSE owners in Addis Ababa are women), yet their specific challenges remain under-examined.

Despite growing climate risks in cities, research and policy often lag behind the reality of resilience needs of urban communities and small businesses. Climate adaptation literature in Africa has historically focused on rural communities and households, neglecting urban contexts (Plänitz, 2019). This leaves conceptual and empirical gaps about how urban entrepreneurs cope with climate disruptions, how their business decisions intertwine with household well-being, and how gender dynamics shape these processes. Women MSE owners, in particular, often face "triple" vulnerabilities: businesses being disproportionately concentrated in high-risk, low-return sectors; having limited access to financial services and information; and the dual burden of managing household climate impacts alongside business recovery (Gannon et al., 2022). However, most climate resilience studies do not explicitly account for these compounding challenges, often treating entrepreneurs as generic "households" or ignoring the enterprise dimension altogether (Gannon et al., 2022).

This paper aims to address these gaps by examining urban climate shocks in Ethiopia and their impacts on women-led MSEs, with a focus on resilience dimensions. The research leverages original survey data from over 800 women entrepreneurs in Addis Ababa and Dire Dawa — two cities representing a major metropolis and a secondary city — to examine not just whether "climate shocks hurt women more," but to also understand the unique pathways through which women-owned businesses are affected. The research moves beyond descriptive impacts of climate shocks to explore the roles of financial tools and timely information in shaping resilience. In doing so, this paper attempts to reframe urban climate resilience as an active process of decision-making under stress, rather than a static outcome of asset endowments. Ultimately, the study offers new insights into how finance (formal, informal, and digital) and information (early warnings and advice) interact with women's entrepreneurship to influence their ability to anticipate shocks, absorb impacts, and adapt for the future.

2 Research Approach: Understanding How Women Entrepreneurs Build Climate Resilience

Resilience among urban entrepreneurs is best understood as a dynamic process shaped by decisions made before, during, and after climate shocks. This report builds on the concept of "resilience capital" (Totolo et al., 2026), first introduced in CFI's [Small Firms, Big Impact (2025)](), where the resilience of urban entrepreneurs is seen as a dynamic capital that is built (or depleted) by a sequence of actions and decisions made across different stages of climate risk, not just in moments of crisis. Some of these decisions occur when climate shocks feel distant or unlikely, such as whether to invest in preparation or adaptation despite competing priorities. Others are made under acute time pressure, as entrepreneurs experience a shock and need to respond to it in real time. Still others occur in the aftermath, when the memory of the shock is fresh but resources may be depleted, and recovery pathways seem uncertain. For women entrepreneurs, this continuum of decision-making before, during, and after a shock, is shaped by varying degrees of agency, financial access, and information. Each phase draws on different capacities, and resilience is built or eroded through the interaction of these decisions over time (see Figure 1).

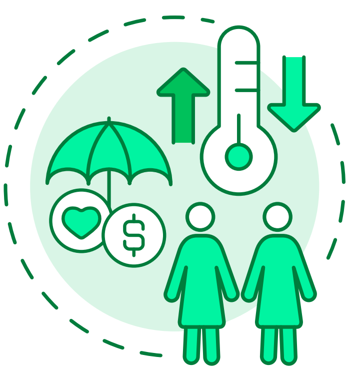

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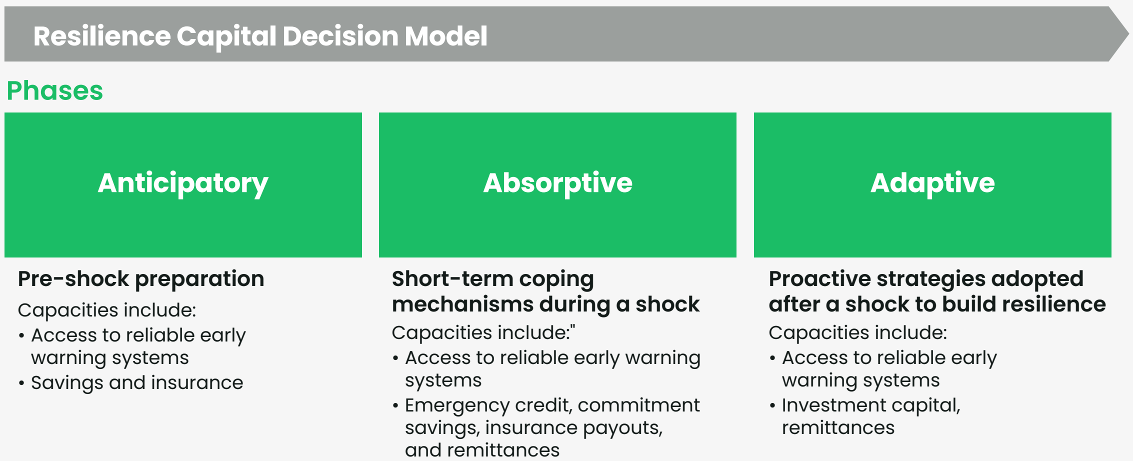
FIGURE 1: PATHWAYS FOR URBAN WOMEN ENTREPRENEURS TO PREPARE FOR CLIMATE SHOCKS



Source: Authors

- **Anticipatory (Pre-Shock) Decisions:** Before a shock occurs, resilience is defined by the ability to plan and invest in protective or preparatory measures. MSEs can adopt diverse measures, including saving money as a buffer, purchasing insurance, reinforcing physical infrastructure, diversifying inventory, or contingency planning based on notifications. Access to timely and credible climate information is critical at this stage to help MSE owners take preemptive action. For example, an early flood warning or seasonal forecast can prompt an entrepreneur to move goods to safer storage or purchase a generator before anticipated power outages. However, information alone is not enough; when coupled with financial capacity, it can enable entrepreneurs to act.
- **Absorptive (During Shock) Decisions:** When a shock strikes, entrepreneurs rely on absorptive capacity — the short-term coping mechanisms to absorb the impact and keep the business from collapsing. During this phase, access to timely and relevant financial services is paramount for enabling entrepreneurs to cope with the shock. CFI's research with entrepreneurs across five emerging markets, including Addis Ababa, indicates a high degree of interdependence between MSE households and their businesses (Totolo et al., 2025). Consequently, when a shock strikes, MSE owners often tend to dip into household savings, delay loan repayments, or cut back on consumption as a coping mechanism. Evidence also suggests that for most African MSEs, formal financial services are a last resort in a crisis (Totolo et al, 2025). Entrepreneurs primarily lean on informal support — personal savings, family loans, rotating savings groups, etc. — blurring the line between business and household finances.
- **Adaptive (Post-Shock) Decisions:** After the immediate crisis, resilience hinges on adaptive capacity — the ability to learn, reorganize, and make longer-term changes to thrive under new conditions or to be prepared to respond to future risks. At this stage, entrepreneurs must decide whether (and how) to invest in recovery and longer-term adaptation. CFI's research with MSE owners in emerging markets finds that most adaptation investments by MSEs are reactive rather than proactive actions taken ahead of a shock (Chakraborty & Goronja, 2025), highlighting the need for timely information, tools, and financial resources that would help them make the necessary long-term shifts.

Building on this conceptual foundation, the analysis in this report focuses on three core objectives. First, it examines how access to financial services influences the ability of women entrepreneurs to absorb climate shocks and invest in longer-term adaptation. Second, it analyzes the role of timely climate information in enabling entrepreneurs to anticipate shocks and take preventive action. Third, it explores how these two factors interact within the specific context of women's entrepreneurship in urban Ethiopia to shape resilience outcomes.

This paper expands on CFI's Green Inclusive Finance Framework by incorporating access to climate information and early warning systems as a key driver of resilience. The analysis builds on this framework to examine how financial services contribute to resilience, adaptation, and longer-term economic transition. Financial tools such as savings, emergency liquidity, or insurance can help entrepreneurs absorb losses, stabilize their businesses during disruptions, and invest in measures that reduce future vulnerability. At the same time, timely and actionable climate information can enable entrepreneurs to anticipate risks and take preventive action. In practice, however, the effectiveness of climate warnings often depends on whether the information is trusted, specific to business needs, and delivered through trusted channels to entrepreneurs.

3 Study Context and Methodology

3.1 Ethiopia-Specific Context: Urban, Gender, and Enterprise

Ethiopia provides a distinctive context to explore these issues. The country is undergoing a rapid rural-to-urban transition, and its urban population is expanding quickly; Addis Ababa alone has more than doubled in size since 2000 and now exceeds 5 million residents. However, Ethiopia remains less urbanized than many of its peers, with only about 21 percent of the population living in urban areas (Dusseau et al., 2023).

Urban systems are under incredible strain from influxes of people, often displaced by rural conflicts, environmental degradation, and climate stress, pushing migration to cities. Additionally, as a densely populated highland city, Addis Ababa faces frequent flooding due to heavy rain and topographic runoff; its expansion of informal settlements in steep or riverine areas further exacerbates flood risk (Seifu et al., 2025). The city also experiences periodic droughts and heat waves, leading to water shortages and higher food prices. Dire Dawa, a lower-elevation city, has a history of devastating flash floods — notably in 2006 when hundreds of residents were killed — caused by intense rain overwhelming the dry riverbeds. It also experiences extreme heat and variability in rainfall (Fuller, 2019). Both cities lack robust infrastructure for climate resilience: drainage systems are often clogged or undersized, and many buildings in informal areas are not structurally safe from floods or landslides. City governments, with support from donors, have begun to develop climate action plans and watershed management projects (e.g., reforestation upstream of Dire Dawa's rivers), but governance challenges and resource gaps persist (Kebede, 2025).

Increased climate variability and extreme weather events are impacting livelihoods and catalyzing displacement. Extreme weather events, particularly recurring floods and droughts, adversely affect rural livelihoods that depend on rain-fed agriculture and pastoralism, and, in turn, cause conflict over land and water. These, coupled with the pre-existing armed conflict in the Tigray region, have contributed to forced displacement among vulnerable populations. The World Bank estimates a surge of climate-induced rural-to-urban migration by 2025, further exacerbating conflicts over economic resources in Addis Ababa and other urban areas (SIPRI, 2022).

In terms of enterprises, Ethiopia's private sector is dominated by MSEs, many of which operate informally and have limited access to finance and digital solutions. Women play a significant role, especially in sectors like small retail trade, food processing, textiles, and services. Past studies on Ethiopian women entrepreneurs note that they face hurdles such as limited access to credit, weaker business networks, and cultural expectations to prioritize family over business growth (Totolo et al., 2025; Gannon et al., 2022). Moreover, financial inclusion in Ethiopia, while improving, continues to lag behind some African countries; formal banking reaches only a fraction of low-income women, though mobile money (notably the M-Pesa-like service Telebirr) is expanding. Similarly, given connectivity barriers, the digital financial ecosystem remains nascent, with Ethiopian entrepreneurs adopting fewer digital solutions than their counterparts in other emerging markets (Totolo et al., 2025).

When it comes to climate risk and disaster management, Ethiopia has a strong history of rural safety nets, such as the Productive Safety Net Program for drought, but urban systems are relatively new. Only recently have there been efforts like an Urban Productive Safety Net Program that includes public works and support for the urban poor (including women) to build climate resilience (World Bank, 2022); however, these often focus on infrastructure and employment rather than specifically on protecting small businesses. There is limited Ethiopia-specific research on how climate-affected women entrepreneurs in urban areas prepare for, respond to, and recover from climate shocks.

Given this context, this paper positions itself to contribute Ethiopia-specific insights that speak to broader debates. It expands the climate resilience narrative by bringing urban entrepreneurship into focus and also highlights that urban women entrepreneurs may face “invisible” compound risks. Localized climate shocks such as floods affecting specific urban neighborhoods might not trigger international humanitarian responses like a large-scale drought would, yet they can be locally catastrophic for a woman’s livelihood. By empirically documenting cases from Addis Ababa and Dire Dawa, it fills a gap in Ethiopian literature and provides a comparative lens between a capital and a regional city. In sum, while drawing on global and African literature, the study carves out a novel space at the intersection of urban climate adaptation, gender, and MSME development in Ethiopia, where only sparse, fragmented evidence currently exists.

3.2 Study Design and Sampling Strategy

This study draws on original survey data from 800 women-owned MSEs in urban Ethiopia, collected between August and October 2025. The survey was administered face-to-face in two cities representing distinct urban typologies: Addis Ababa, the highland capital with flooding risks from heavy rains compounded by inadequate drainage in informal settlements, and Dire Dawa, a lower-elevation secondary city experiencing both flash flood risk and extreme heat exposure. The surveys were accompanied by eight focus group discussions in the two cities to probe deeper into women entrepreneurs’ household context, exposure to climate shocks, and access to financial services and information, alongside other coping mechanisms and community-level adaptation strategies.

The sampling strategy employed multi-stage purposive selection to ensure representation across business sectors and neighborhoods with documented climate vulnerability. Crucially, enumeration areas were selected specifically in climate-affected zones — flood-prone market areas, informal settlements with infrastructure deficits, and commercial corridors historically impacted by extreme weather. This deliberate focus on climate-affected areas meant that the resulting 100 percent climate exposure rate in the sample reflects the study's design rather than an artifact or limitation: the research sought to understand how women entrepreneurs cope with climate shocks in contexts where such shocks are an unavoidable business reality, not whether they experience shocks at all.

This purposive approach offers several analytical advantages. First, it provides sufficient statistical power to examine variation in resilience outcomes among climate-affected entrepreneurs, which would otherwise be obscured in a general population sample where many respondents might report no climate impacts. Second, it mirrors the reality facing a growing share of urban African entrepreneurs. As cities expand into flood-prone areas and infrastructure lags behind population growth, exposure to climate shocks becomes routine. Third, it intentionally draws attention to the factors that differentiate resilience trajectories among the exposed, rather than comparing exposed to unexposed populations.

3.3 Sample Characteristics

The sample profile reflects the demographic and economic realities of women's informal enterprise in urban Ethiopia (See Figure 2). The average respondent is 35 years old (median age: 33), with substantial variation from young entrepreneurs in their early 20s to established businesswomen in their 60s. The educational distribution reveals significant heterogeneity: 27 percent have no formal education, 36 percent completed only primary school, 25 percent reached the secondary level, and 12 percent are university-educated with post-secondary qualifications. This distribution, skewed toward lower educational attainment, mirrors the broader profile of women-owned informal enterprises in Ethiopian cities.

Most businesses in the sample are solo operations (66 percent), with the owner as the only worker. The remaining are micro-enterprises: 33 percent employ two to five people, and less than 1 percent have more than five employees. The average business has operated for 6.4 years (median: 4.5 years), indicating a mix of established enterprises and relatively newer ventures that have survived at least one full year.

The sectoral composition reflects the gendered segmentation of urban informal economies: Retail trade dominates (59 percent), followed by food and beverage preparation (24 percent), services (15 percent), and a small share in production (2 percent). These sectors — small shops, market stalls, food vendors, tea houses, tailoring — represent the typical livelihood activities of urban women entrepreneurs across sub-Saharan Africa, characterized by low capital requirements and ease of entry, but also thin margins and high vulnerability to disruption.

FIGURE 2: UNDERSTANDING WOMEN ENTREPRENEURS IN URBAN ETHIOPIA

Age

The average respondent is **35 years old** (median: 33), with substantial variation from the early 20s to the late 60s

Education

27% of MSE owners have no formal education,
36% completed primary school only
25% reached secondary level and
12% have post-secondary qualifications

Business

66% of businesses are sole proprietorships with the owner as the sole worker
33% employ two to five people
<1% have more than five employees

The average business has operated for **6.4 years** (median: 4.5 years)

Sector

59% of businesses are in retail trade
24% in food and beverage preparation
15% in services, and
2% in production

3.4 Key Variables and Measurement

Following the conceptual framework, the survey instrument was structured around the shock timeline — anticipate, absorb, adapt — and the intersecting roles of finance and information at each stage. The research examines the type of enterprise, role of education, and access to formal financial services, savings, and information in enabling recovery and adaptation investments. The primary outcome variables capture distinct dimensions of resilience (see Figure 3):

FIGURE 3: PRIMARY OUTCOME VARIABLES

Climate Impact Severity	% decline in business sales or income during the most severe recent climate event, categorized as mild (<10% drop), moderate (10-25%), severe (26-50%), or critical (>50%)
Recovery Time	Captures the self-reported duration MSEs required to return to normal business operations, with "quick recovery" defined as returning to normal within one month
Adaptation Investment	Binary variable that captures whether the entrepreneur made physical or operational investments in the past three years to protect the business from future climate impacts

3.5 Limitations

The findings should be interpreted in light of several limitations. Although the research focuses on women entrepreneurs, it does not include a comparative analysis between women and men. Instead, the study examines variation in resilience outcomes among women entrepreneurs themselves, drawing on the literature on gender norms and household dynamics to interpret these patterns. The study recognizes that for many women microentrepreneurs, the boundary between household and business finances is often blurred, requiring them to draw on business resources to meet household needs and potentially affecting their ability to prepare for and recover from climate shocks. The purposive sampling approach allows the research to capture detailed insights into the experiences of women entrepreneurs who have recently faced climate shocks, although it may limit the generalizability of the findings to entrepreneurs operating in less exposed environments. The cross-sectional design and absence of a comparison group also limit the ability to establish causal relationships, meaning the analysis identifies patterns and associations rather than definitive causal effects. Finally, because the survey relies on respondents recalling their exposure to climate shocks and their impacts over the past three years, responses may be subject to recall bias.

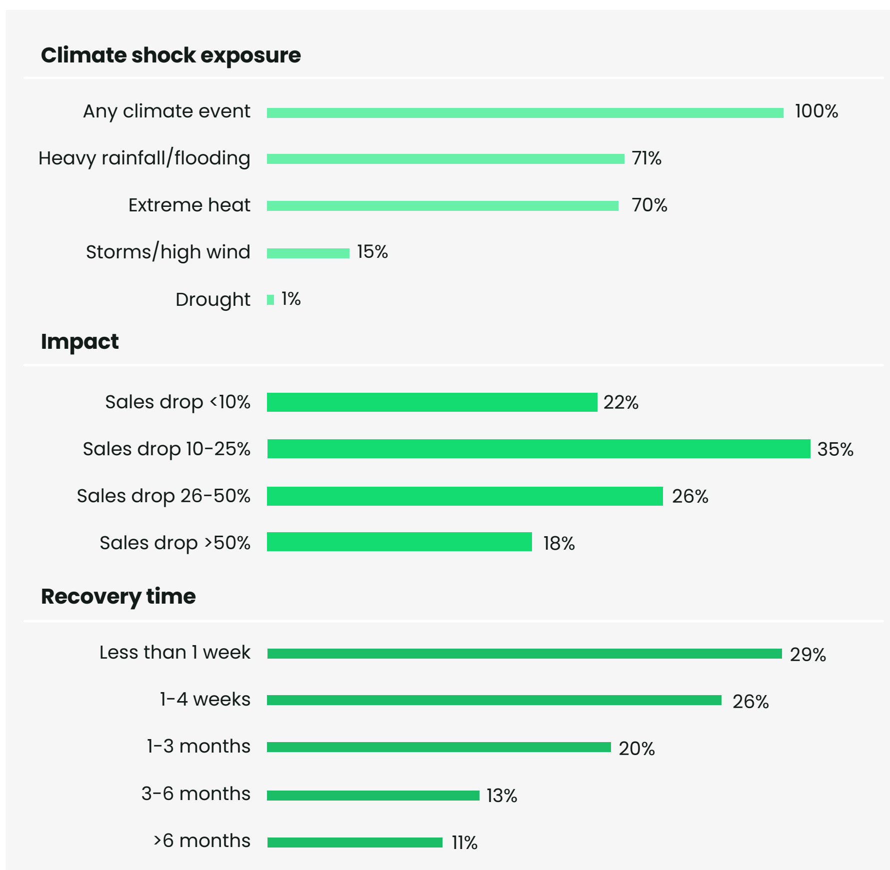
4 Study Findings

4.1 Climate Exposure and Impact Severity

Given that the sample was purposively drawn from climate-exposed locations, every entrepreneur in the study experienced at least one climate shock in the past three years. This universal exposure allows the analysis to focus on what differentiates resilience and recovery outcomes among affected businesses.

As seen in Figure 4, heavy rainfall and flooding dominate the urban climate risk profile, affecting 71 percent of businesses, while extreme heat impacted 70 percent of them. Storms and high winds affected 15 percent, while extended drought had minimal direct impact on urban enterprises, though drought effects may manifest indirectly through supply chains and food prices.

FIGURE 4: CLIMATE SHOCK EXPOSURE, IMPACT, AND RECOVERY



The impacts of these climate shocks were substantial. Only 22 percent of businesses experienced mild effects, defined as sales declines of less than 10 percent, while 43 percent experienced severe-to-critical impacts. Of these, 43 percent reported sales declines of over 26 percent due to extreme climate events.

17% of women entrepreneurs reported permanent loss or damage to business assets due to climate shocks.

Beyond temporary income losses, 17 percent of entrepreneurs reported permanent loss or damage to business assets. Focus group discussions revealed damage to shop structures, equipment, and inventory, often resulting in irreversible losses. As one hair salon owner explained:

> ***"Heavy rain caused power outages, and my equipment was damaged several times over the past three years. As a result, I could not serve customers and lost income."***

Recovery trajectories also varied considerably. While approximately 55 percent of businesses recovered quickly and returned to pre-shock levels within a month, nearly a quarter took three months or longer to return to normal operations, and 13 percent required more than six months to do so, underscoring the vulnerability of women-owned MSEs.

4.2 Financial Resources and Anticipatory Capacity

The conceptual framework underpinning this research identifies anticipatory capacity, defined as the financial and informational resources available to prepare for and cushion shocks, as a critical determinant of resilience.

Despite high financial account ownership, only 15 percent of women MSE owners have enough savings to cover business expenses for a month.

Financial inclusion appears relatively high, with over 83 percent of respondents having some form of financial account (55 percent owned bank accounts, 18 percent were customers of microfinance institutions, and 27 percent used mobile money). However, headline account ownership masks low financial depth. Only 15 percent of women reported having savings sufficient to cover one month of business expenses, while 33 percent had savings lasting up to four weeks. Alarmingly, 27 percent had less than a week's worth of savings, and 25 percent reported having no savings.

As a result, over three quarters of women entrepreneurs could not sustain their businesses for more than one month without income. This underscores how limited savings constrain women MSE owners' ability to prepare for and cope with climate shocks. As one entrepreneur in Addis Ababa explained:

> ***"My financial status is low. I do not save money because I do not earn enough. I use my earnings for my children and household expenses."***

The research also notes a sizeable resilience gap — defined as the time between needing and receiving financial assistance to recover — among women entrepreneurs. Nearly 40 percent of the respondents mentioned requiring immediate financial assistance to prevent further losses and recover from the shocks. However, less than a quarter were able to obtain the required resources within a day. Furthermore, looking more closely at the urgency of financial need and the time it took to receive the much-needed support, the research finds that about 40 percent of respondents received timely help, and 22 percent received preemptive support. In comparison, the remaining respondents struggled to receive on-time support, and only 44 percent of women entrepreneurs facing a resilience gap were able to make a quick recovery compared to 73 percent of those who were able to access financial resources when needed.

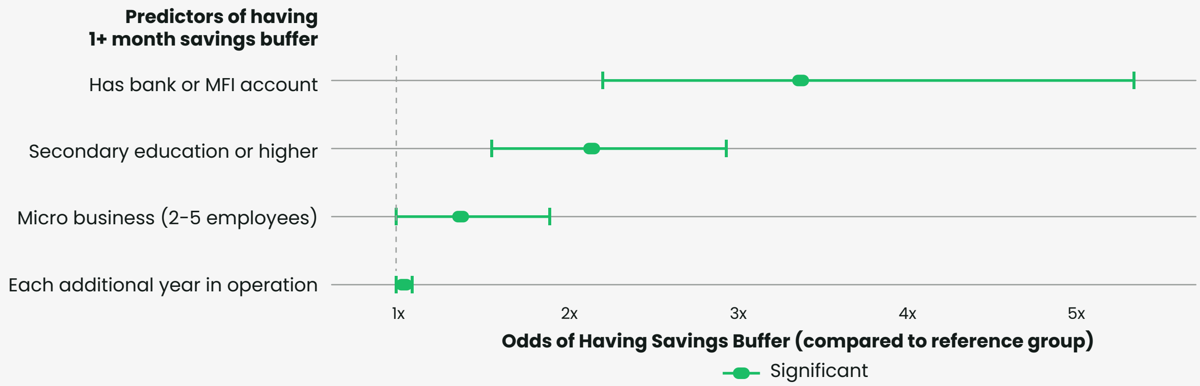
The insurance picture is more troubling. While nearly 40 percent of entrepreneurs report having insurance (primarily health insurance), only 0.1 percent have any business or asset insurance. This near-complete absence of protection mechanisms for productive assets suggests that, in the absence of appropriate risk-transfer mechanisms, entrepreneurs had to bear the full burden of losses when climate shocks damaged their inventory, equipment, and business premises.

Education emerges as a key driver of financial resilience. Among entrepreneurs with no formal education, 53 percent reported having no savings, and only 12 percent had a buffer sufficient to cover one month of business expenses. In contrast, among university-educated entrepreneurs, only 13% had no savings, while 32 percent maintained a one-month buffer. Disparities in financial access were similarly stark: 47 percent of women with no formal education held a bank account, compared to 97 percent of university-educated women, a 50 percentage point gap.

Regression results (shown in Figure 5) further confirm these patterns. Entrepreneurs with secondary education or higher had more than twice the odds of having a one-month savings buffer compared to those with no education.[1] Financial access was an even stronger predictor of financial resilience; having a bank or MFI account was associated with more than three times higher odds of maintaining a one-month buffer. Years in operation also had a positive, though smaller, effect size, suggesting that experience gradually translates into financial preparedness. While these relationships are correlational and warrant further investigation, they indicate that education, financial access, and experience can jointly shape entrepreneurs' capacity to prepare for shocks.

1 Note, odds ratio (OR) compares the odds of an event in one group to another: An OR of 1 means no difference in odds; >1 means higher odds in the exposed group; and <1 lower odds in the exposed group. For example, Figure 8 shows that secondary or higher levels of education had an OR of 2.14 p <0.001, meaning that women entrepreneurs with secondary or higher education were more than twice as likely to be more financially resilience than those with lower levels of education. The estimates are statistically significant at a 99-percentile confidence interval.

FIGURE 5: PREDICTORS OF HAVING 1+ MONTH SAVINGS BUFFER



Source: CFI Ethiopia MSME Climate Resilience Survey (n=800) Note: Line at 1.0=noeffect. Values >1 increase odds.

4.3 Shock Absorption: How Entrepreneurs Cope

Despite high levels of account ownership, women entrepreneurs primarily relied on informal mechanisms to cope with climate shocks. This finding aligns with other studies, including the Global Findex 2025 and Totolo et al. (2025), which notes that despite a sizeable increase in account ownership, women are less likely to borrow or save formally or to make digital payments (Bonfert & Norris, 2025).

As seen in Figure 6, recovery from climate shocks relied largely on informal financial resources, while formal finance is rarely utilized. Nearly 60 percent of entrepreneurs used personal savings and 30 percent borrowed from friends and family, while a quarter relied on advances from suppliers for working capital. As one food stall owner from Dire Dawa reflected:

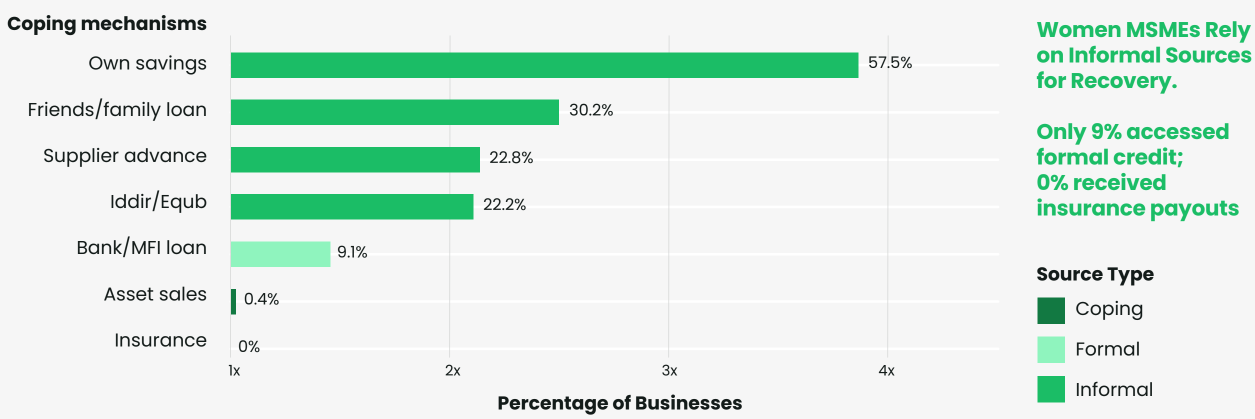
> ***"Often I do not have money to purchase raw materials to prepare food. In such situations, I directly get the goods from customers and pay them with my earnings at the end of the week."***

Traditional mutual aid institutions also played a substantial role, with 22 percent relying on Iddir or eQub for recovery support. These informal mechanisms remain an important safety net during shocks and may offer opportunities for integration with formal financial services and insurance. Formal financial services on the other hand rarely play a role in building resilience. As one focus group respondent explained:

> ***"I do not have a positive attitude toward loans from banks. It causes me a lot of stress and anxiety."***

Most strikingly, even though all respondents had experienced a climate shock in the past three years, none of them had received an insurance payout.

FIGURE 6: COPING MECHANISMS TO RECOVER FROM CLIMATE SHOCKS



Source: Chakraborty and Totolo (2026). Center for Financial Inclusion at Accion

The research examined the drivers of the business's ability to recover and return to pre-shock levels within a month. The strongest predictors of rapid recovery were timely warning and timely access to financial services. Participation in community-level adaptation activities also recovered faster, highlighting the multiple ways social networks can be an invaluable form of support during crises.[2] Having a savings buffer of at least one week of expenses was also associated with faster recovery, reinforcing the importance of both timely information and preexisting financial resources (see Figure 7). By contrast, the severity of climate impacts significantly reduced the odds of recovery. Entrepreneurs experiencing severe shocks had only 36 percent of the odds of recovering within a month compared to those with mild impacts, with the slowest recovery observed among women entrepreneurs facing large resilience gaps and deeper financial constraints.

FIGURE 7: PREDICTORS OF QUICK RECOVERY AFTER A CLIMATE SHOCK

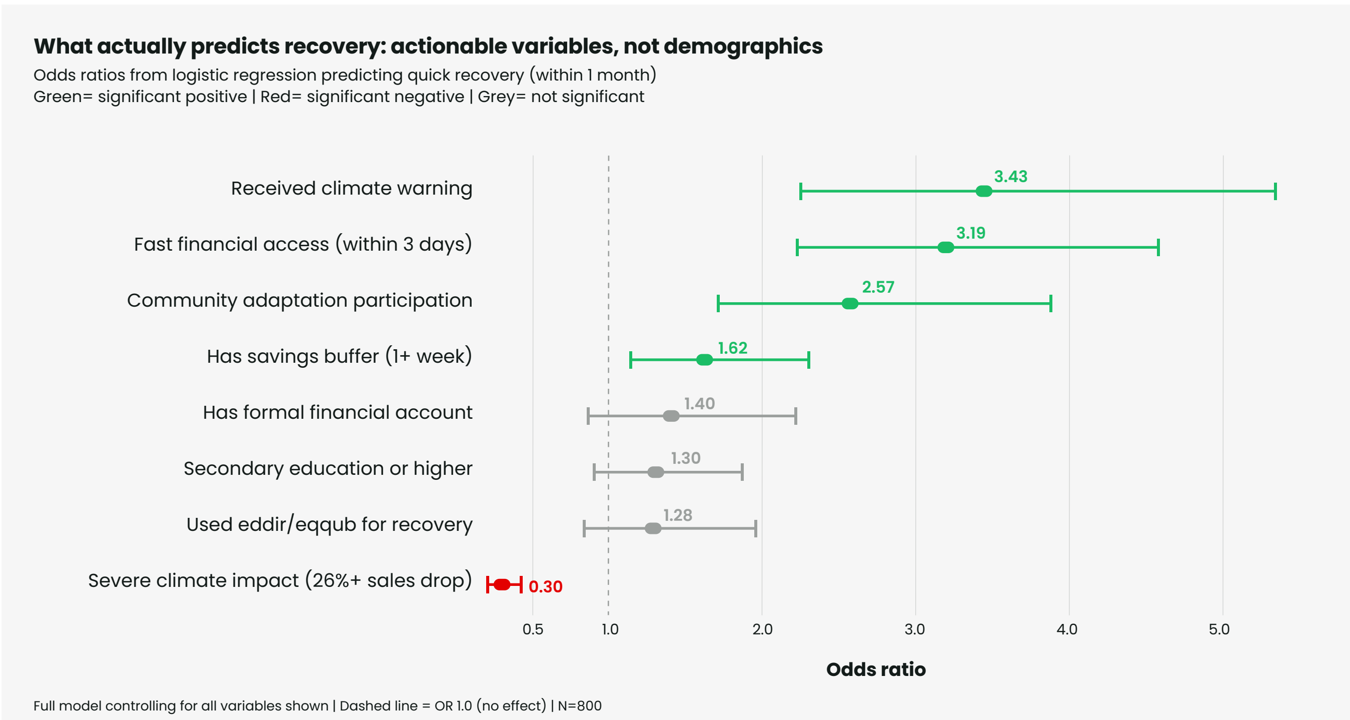


Photo credit: iStock.com/afhunta

2 More than 76 percent of women entrepreneurs reported engaging in collective activities such as community cleanups (60 percent), infrastructure repair (26 percent), or pooling resources for shared greenhouse facilities (16 percent), and those involved in such efforts were significantly more likely to recover quickly.

4.4 Adaptation Investments and the Adaptation Trap

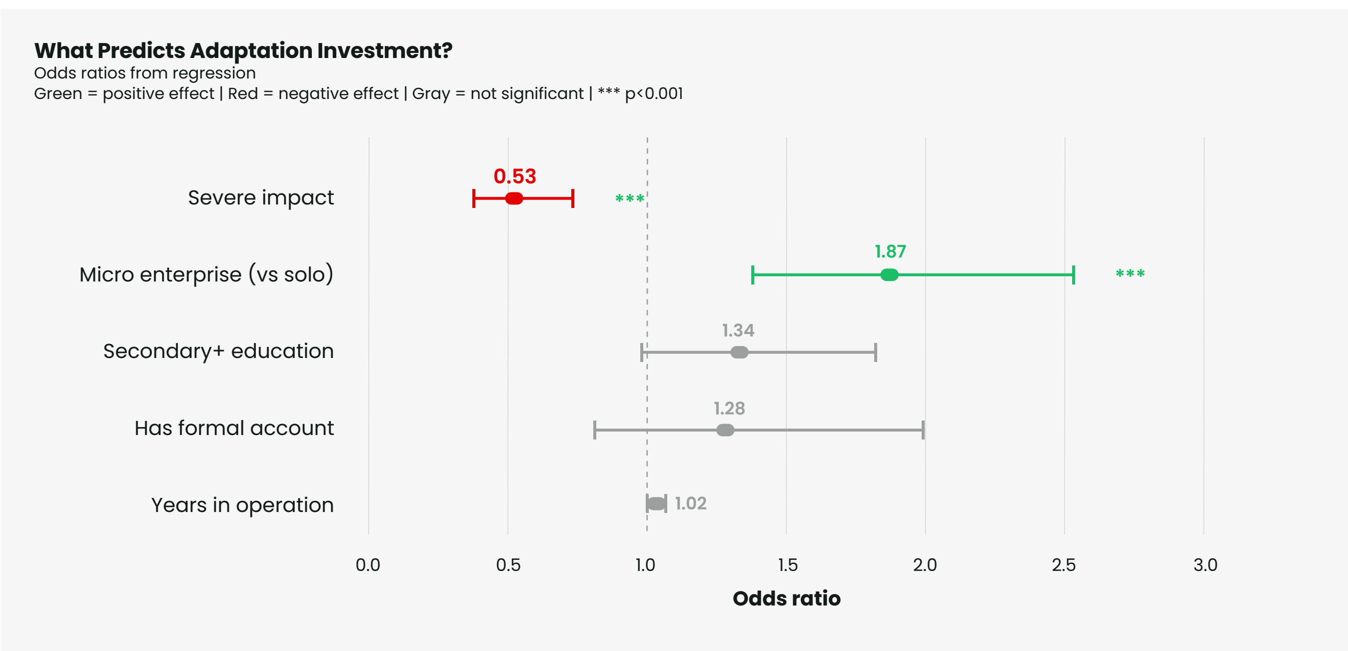
A striking finding from this research is that the entrepreneurs most severely affected by climate shocks are often the least able to invest in adaptation. While prior CFI research across five emerging markets found that exposure to climate shocks tends to increase the likelihood of adaptation investments, the evidence from Ethiopia reveals a more complex pattern. In Addis Ababa and Dire Dawa, 58 percent of women entrepreneurs reported making at least one adaptation investment in the past three years. The most common measures included installing weather resistant roofing (37 percent) and raising floors or shelving to prevent flood damage (20 percent), while fewer entrepreneurs invested in reflective paint (9 percent) or relocated to safer premises (6 percent).

At the same time, Figure 8 points to a troubling pattern; entrepreneurs who experienced severe climate impacts were significantly less likely to have made adaptation investments. Microenterprises were nearly twice as likely to invest in adaptation as solo businesses. This "adaptation trap"[3] highlights that those most adversely affected by climate shocks lack the financial resources to invest in protection, even though they face the greatest need. This finding is echoed in other studies conducted in Ethiopia (Carter et al., 2007), other sub-Saharan African markets (Newsham et al., 2023), and globally, which show how shocks and natural disasters can create a self-reinforcing cycle of poverty and vulnerability for households that lack access to liquidity and other financial resources needed to rebuild assets.

These findings suggest that exposure alone does not automatically lead to adaptation. Among affected entrepreneurs, those experiencing the most severe losses often have the least capacity to invest in protective measures for the future. Evidence also shows that incentives to invest in adaptation, including insurance uptake, can weaken over time as resources are diverted to more immediate priorities (Chakraborty & Goronja, 2025). For women entrepreneurs, in particular, competing household and business demands further constrain the ability to allocate resources to adaptation. As a result, the very shocks that should encourage protective investments can instead reduce the capacity to act.

Beyond adaptation, the research also examined the extent to which women MSE owners were investing in transitioning to new and more climate-resilient livelihoods, pivoting their businesses, or migrating for better opportunities. Over 29 percent of women entrepreneurs pursued at least one transition activity, including upskilling (16 percent), migration (8 percent), and relocating business premises (5 percent). Only 1 percent of women MSE owners started a new business line or invested in new equipment, perhaps due to challenges in accessing investment capital. Most of these activities were either government-funded (41 percent) or self-financed (40 percent), with formal credit playing a minimal role (4 percent).

FIGURE 8: PREDICTORS OF ADAPTATION INVESTMENT



3 In this context, "adaptation trap" for low-income women refers to survival mechanisms, that, given systemic challenges and women's limited mobility and access to resources, prevents them from making long-term adjustments to cope with future climate shock and further reinforce poverty and vulnerability.

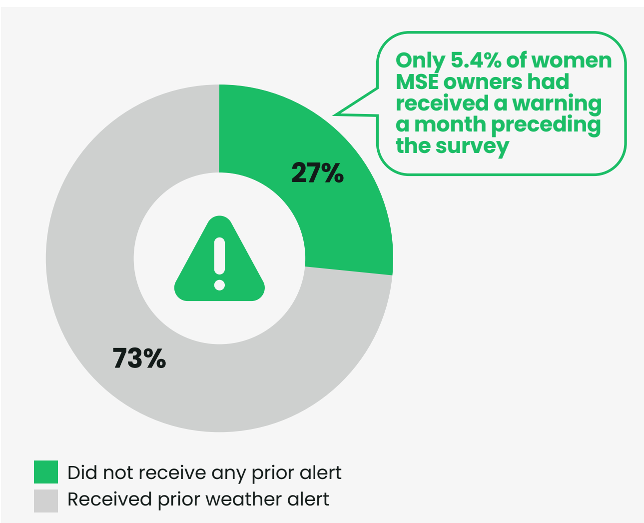
4.5 The Information Gap: Climate Warnings and Early Action

A central objective of this research is to examine how access to financial resources and climate information jointly shape resilience among women entrepreneurs. While the survey data shows that most respondents did not receive prior warnings about imminent climate shocks, the analysis provides compelling evidence that timely and relevant information can significantly influence resilience outcomes.

4.5.1 The Information Access Gap

One of the most striking findings of this study is the low level of access to climate information among women entrepreneurs. As shown in Figure 9, nearly three-quarters of women entrepreneurs had never received any early warnings or business-relevant climate advisory. Among those who had received warnings, the timing varied: Only 5.4 percent received a warning in the month preceding the survey, 19.4 percent within the past year, and 1.9 percent more than a year ago.

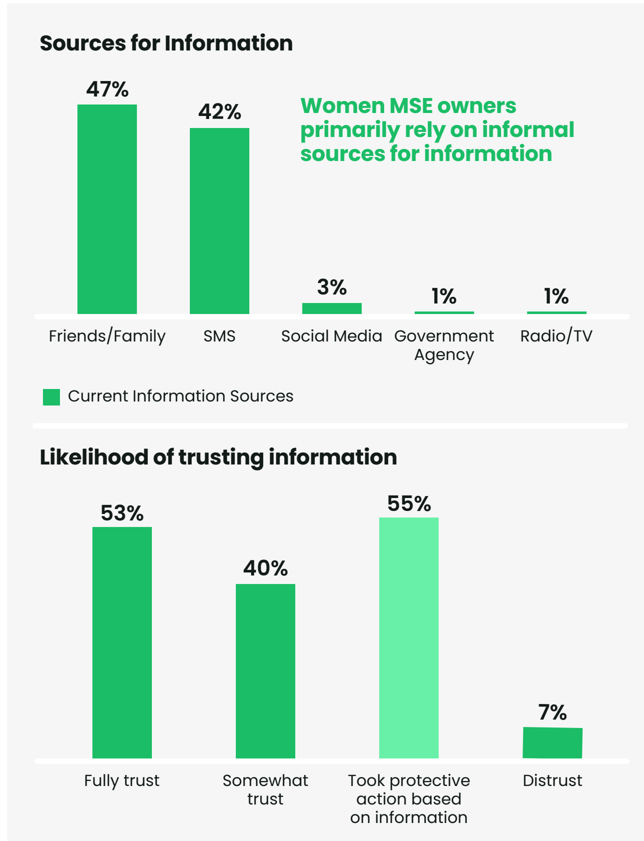
FIGURE 9: WOMEN MSE OWNERS WHO RECEIVED A WARNING BEFORE A CLIMATE SHOCK



Most entrepreneurs relied on informal networks for information about upcoming shocks. Among those who received warnings, the main sources were friends and family (46.5 percent) and mobile phone SMS (41.8 percent). Formal channels were rarely mentioned: social media accounted for just 2.8 percent, government agencies 1.4 percent, and radio/TV only 0.5 percent (see Figure 10). This pattern suggests that, when it reaches women entrepreneurs at all, climate information travels primarily through social networks rather than through official early warning systems.

Importantly, when warnings are received, they are trusted: 53 percent of recipients reported trusting warnings completely, and 40 percent somewhat, with only 7 percent expressing distrust. Among those who received warnings and for whom action data was available, 54.5 percent reported taking protective action. This suggests that alongside credibility, timing and reach are equally important — when information arrives, entrepreneurs value it and often act on it.

FIGURE 10: PREFERRED SOURCES OF INFORMATION AND LIKELIHOOD OF TRUST



4.5.2 Who Has Access to Information?

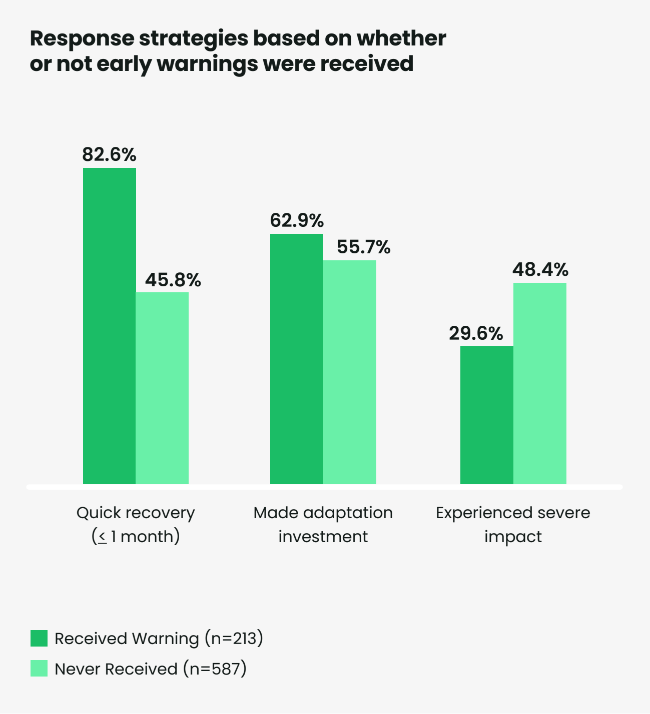
The study finds that information access mirrors existing inequalities. Analysis of logistic regression results to identify the drivers of information access reveals that women entrepreneurs with access to financial services and the internet are more likely to receive early warning messages than those without such access. Descriptively, the gaps are substantial: 30.5 percent of those with financial accounts received warnings compared to only 8.0 percent of those without. Similarly, 45.2 percent of those with internet access had received warnings, compared with 23.9 percent without. These patterns indicate that information access reinforces existing advantages, potentially widening the resilience gap between more- and less-connected entrepreneurs.

Surprisingly, education was not a significant predictor in the multivariate model, suggesting that financial inclusion and connectivity may serve as gateways to information access rather than just to financial services.

4.5.3 Information and Resilience Outcomes

One of the strongest findings of this research is the association between receipt of early warnings and key outcomes. As shown in Figure 11, respondents who reported receiving early warnings exhibited markedly different recovery patterns compared with those who received no information. Receipt of early warnings is significantly associated with both a lower likelihood of severe impacts and a higher likelihood of rapid recovery at the 99 percent confidence level. The association with investment in adaptation is also statistically significant at the 90 percent confidence level.

FIGURE 11: OUTCOMES EXPERIENCED BY WOMEN ENTREPRENEURS



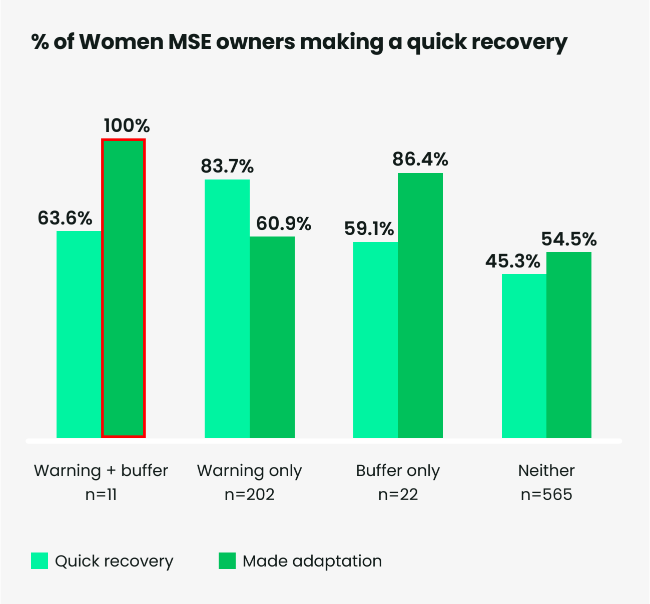
As shown in Figure 11, the 37 percentage point gap in rapid recovery between those with and without access to early warnings is striking. Even after controlling for education, business size, financial access, impact severity, and experience, warning receipt remains the strongest predictor of a quick recovery, with an effect size of 4.69. This finding highlights the important role that timely and actionable information can play in enabling entrepreneurs to respond quickly to shocks, alongside the financial resources needed to absorb losses and stabilize their businesses..

Additionally, the timing of information receipt is equally crucial. Nearly 77 percent of women entrepreneurs who received warnings in the past month recovered within the month, and 21 percent reported experiencing less severe impacts than those who never received warnings, suggesting that information recency is associated with better recovery outcomes.

4.5.4 The Information-Finance Interaction

This section examines the combined role of timely warnings and savings buffers in shaping resilience outcomes. It compares outcomes across four scenarios: no access to warnings or savings, warnings only, a savings buffer only, and both warnings and savings (see Figure 12).

FIGURE 12: INFORMATION-FINANCE INTERACTION



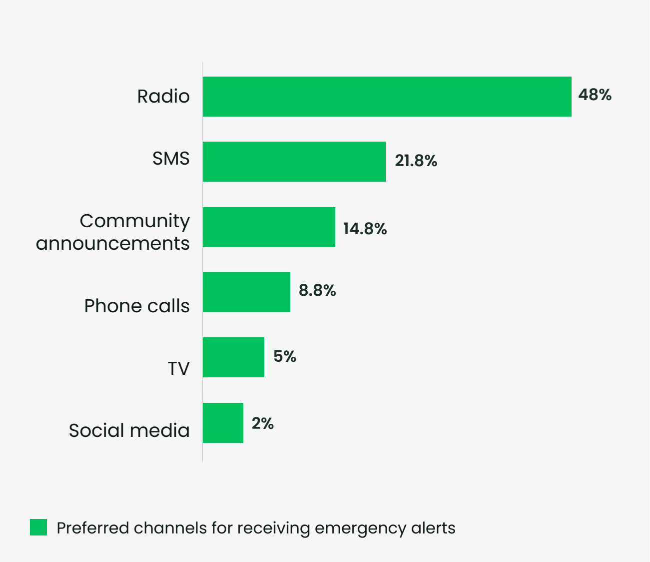
The results reveal a nuanced picture. Nearly 84 percent of MSE owners who received early warnings were able to recover quickly, compared with 59 percent of those who relied only on a savings buffer. On the other hand, access to savings appears to play a critical role in enabling adaptation investments. As shown in Figure 12, the combination of timely early warnings and a savings buffer yields a particularly strong outcome. Despite the small sample size, all women entrepreneurs with access to both made adaptation investments, compared with 61 percent among those with warnings only and 54.5 percent among those with neither. The interaction between early warning access and a savings buffer is statistically significant at the 90 percent confidence level, suggesting that their effects are not merely additive. Although the small sample size for the combined group limits statistical power, the pattern is consistent with the conceptual framework's emphasis on the synergistic roles of information and finance in strengthening adaptive capacity.

4.5.5 Demand for Information Services and the Paradox of Experience

Despite — or perhaps because of — the information gap, demand for timely early warning services is strong: 78 percent of respondents said they would sign up for free weather alert services if available. Even more notably, nearly three-quarters expressed interest in alerts for immediate emergency cash transfers, aligning with the framework's emphasis on integrated finance and information solutions.

Preferences for alert delivery channels highlight practical access constraints. Radio is the most preferred channel at 47.6 percent, followed by SMS at 21.8 percent and community announcements at 14.8 percent. Phone calls, television, and social media are less favored, indicating that effective early warning interventions should prioritize channels that remain accessible to entrepreneurs without smartphones or reliable internet access. (see Figure 13).

FIGURE 13: PREFERRED COMMUNICATION CHANNELS FOR RECEIVING EARLY WARNING MESSAGES

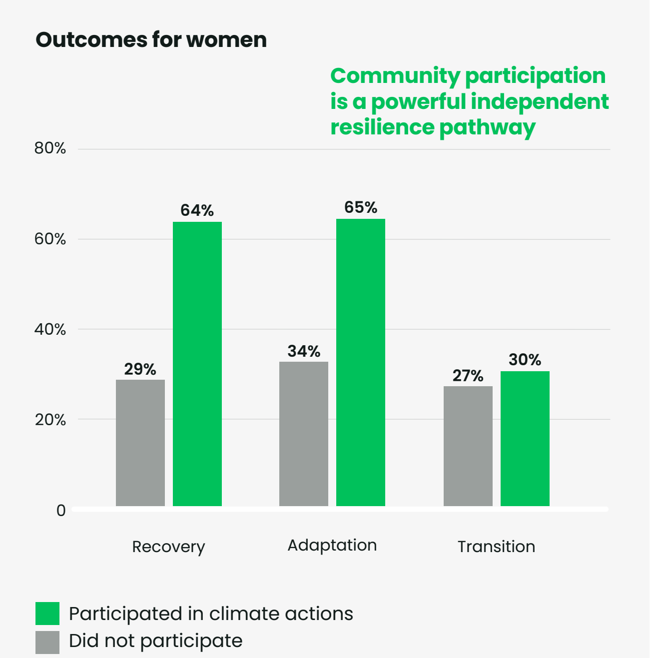


Paradoxically, women entrepreneurs who had previously received weather warnings were significantly less likely to express interest in signing up for new alert services, including alerts linked to emergency cash transfers, perhaps because they believe they have access to sufficient information. While this counterintuitive pattern warrants further investigation, it highlights that alongside expanding warning coverage, early warnings must be carefully designed to be specific to the entrepreneur's business context, timely enough to enable action, and actionable, ideally linked to clear guidance and financial support to be perceived as relevant or useful.

4.5.6 Community Participation as a Driver of Resilience

As noted in Section 4.3, nearly 75% of women entrepreneurs participated in some form of community-level activity to collectively recover from a climate shock. The research finds that participation in collective adaptation efforts was an important predictor of recovery, independent of individual financial access. As seen in Figure 14, respondents participating in community-level adaptation efforts reported faster recovery rates (64 percent versus 29 percent) and were nearly twice as likely to make adaptation investments (65 percent versus 34 percent). They were also slightly more likely to invest in transition efforts (30 percent versus 275 percent), perhaps because of the high reliance on government support for training and other transition activities. Evidence from Vietnam (Pham et al., 2024), Bangladesh (Islam et al., 2025), and other markets have also demonstrated the crucial role of community-based early warning systems have help spread awareness, strengthen community participation in disaster prevention activities and improve disaster risk reduction efforts, underscoring the need for mechanisms and resources to strengthen their capacity to serve low-income communities.

FIGURE 14: PARTICIPATION IN COMMUNITY ACTIVITIES AS A DRIVER OF QUICK RECOVERY, ADAPTATION, AND TRANSITION



Community actions include cleanup, infrastructure repair, joint greenhouse investment | N=800
All differences significant at p<0.001 in multivariate regression

5 Conclusion: Information as a Multiplier for Financial Resilience[4]

This research contributes new evidence on how financial resources and climate information jointly shape resilience among women microentrepreneurs. Drawing on primary data from more than 800 women entrepreneurs in Addis Ababa and Dire Dawa, the analysis shows that while financial access remains important, timely climate information plays a critical role in enabling rapid recovery from shocks. Despite relatively widespread account ownership, financial buffers remain extremely limited. Over one-third of respondents reported having no savings, and nearly 75 percent indicated that they could not sustain business operations for more than one month without income, underscoring the structural fragility of many women-owned microenterprises.

Within this context, access to climate information emerges as a powerful enabler of resilience. Although only 27 percent of respondents reported receiving weather alerts or climate-related advisories, access to timely warnings is strongly associated with faster recovery after shocks. The evidence suggests that information allows entrepreneurs to anticipate disruptions, take precautionary measures, and reduce losses before shocks fully materialize. This points to a significant opportunity to strengthen resilience by integrating climate information services with financial systems.

The research highlights three insights that are particularly important for practitioners and policymakers. First, women entrepreneurs who experienced the most severe impacts from a climate shock also had the least capacity to invest in adaptation solutions, highlighting the need for practitioners to ensure that the solutions designed are inclusive and cater to the needs of those who need them most. Second, women entrepreneurs who had financial services accounts or had previously received weather information were less inclined to sign up for free alerts, even when linked to cash transfer support. Third, while women MSE owners with financial service accounts were nearly four times as likely to receive alerts compared to those without accounts, they were also less inclined to sign up for future alerts. These findings indicate the vital role financial inclusion plays in catalyzing access to information and also highlight the importance of strengthening formal financial systems to be more relevant and responsive to the needs of women entrepreneurs during crises.

4 Note, a key goal of this research is to move beyond theoretical framing to test approaches that can help low-income women strengthen their resilience and adaptive capacity. To that end, CFI will test this conceptual framework with low-income urban entrepreneurs in Ethiopia by partnering with a climate-tech firm to provide a combination of weather information and AI-driven, contextually relevant advisory services and eventually pairing it with liquidity support to provide the resources entrepreneurs need to make adaptation investments.

Perhaps the most important contribution of this research, drawing on primary data from over 800 women microentrepreneurs, is that the combination of timely warnings and the ability to tap into financial resources, particularly savings, during times of need is powerful in enabling investment in adaptation. At the same time, the analysis makes it evident that not all women entrepreneurs can follow the anticipate-absorb-adapt pathway and prepare for climate shocks. Rather, it is shaped by pre-existing resource endowments that vary dramatically within the population of women entrepreneurs and lead to vastly different outcomes. As noted in the paper, women entrepreneurs with education, access to finance, and reliable information can receive early warnings and draw on their financial resources, expanding their ability to take anticipatory action, absorb losses, and stabilize operations. In contrast, women facing compounding vulnerabilities primarily rely on their limited savings and informal networks, which may be equally vulnerable to climate shocks. Enabling access to formal financial services and savings, timely access to financial resources, and weather alerts can go a long way toward helping women entrepreneurs with limited education be better prepared for climate shocks.

While this paper focuses on the role of information and liquidity in driving adaptation investments, future research can strengthen the insights by incorporating a household lens to provide a deeper understanding of the "adaptation trap" and potential pathways and solutions that can help low-income women be better prepared for climate shocks. Additionally, future research can explore in depth the mechanisms through which community adaptation measures support women entrepreneurs and how they can be strengthened and scaled to serve as effective rapid-response systems. Furthermore, while this research finds that informal savings groups such as *iddir / equb* play an instrumental role in supporting women during crises, it may be worthwhile exploring how their capacities can be strengthened to support low-income urban entrepreneurs and communities during recurring shocks.

Photo credit: iStock.com/derejeb

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