



VENTURES

Reducing Climate Vulnerability through Insurance-Embedded MSME Loans in Kenya

PILOT ENDLINE REPORT

Reducing Climate Vulnerability through Insurance-Embedded MSME Loans in Kenya

The pilot was led by a partnership of:



3BLOCK3IMA



This report was prepared by:



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EXECUTIVE SUMMARY

Informal traders in Kenya are chronically exposed to climate risk.

- **Micro, Small, and Medium Enterprises in East Africa remain deeply underinsured against escalating climate shocks.** Sub-Saharan Africa's MSMEs number over [44 million](#) and account for up to 80% of all jobs. Africa is warming faster than the global average; by 2030, [an estimated 118 million Africans](#) may face severe drought; yet Kenya's insurance penetration stood at [2.4% in FY2024](#).
- **Climate shocks are pushing already-vulnerable borrowers out of the formal credit system.** Digital lenders in Kenya have seen loan default rates soar from 15–20% in 2020 to [nearly 40% by 2024](#), as climate-driven income shocks [intensify borrower vulnerability](#). A 2021 study found that only [around 17% of SMEs in Kenya](#) accessed loans for climate adaptation, with many forced to downsize or sell assets to cope.
- **Women entrepreneurs face a compounding "triple differential" vulnerability.** Women face [disproportionate barriers](#) to climate resilience and [greater structural barriers to accessing adaptation finance](#) – leaving women-led businesses among the most exposed and least protected.
- **Existing insurance products are not designed for this population.** Traditional insurance requires claims filing, documentation, and adjudication processes that are inaccessible to low-literacy, time-constrained informal traders.



BlockBima: insurance-embedded loans for informal traders in Kenya

BlockBima embeds parametric climate insurance directly into microloans for informal market traders in Kenya. When satellite-verified rainfall exceeds predefined thresholds, **smart contracts** built atop the XRPL chain **automatically make insurance payouts on-chain to the lender.** This reduces the borrowers' repayment obligations, reducing defaults while bolstering traders' ability to recover.

Mercy Corps Ventures partnered with BlockBima, Fortune Credit, Shamba Network, and RiskShield to test whether this model can **reduce climate-driven defaults, unlock credit for excluded borrowers, and reduce insurance operational costs and timelines.**



CORE HYPOTHESES

01. **Embedded insurance and microcredit will strengthen MSME climate resilience.**
02. **Embedding climate insurance in microloans will expand credit access for climate-vulnerable MSMEs while reducing lender risk.**
03. **The use of smart contracts will result in better operational efficiency and faster claim payouts to MSMEs.**

The Pilot

The BlockBima pilot embeds parametric rainfall insurance directly into 5-day working capital loans for informal market traders in Nairobi.

When satellite-verified rainfall exceeded predefined thresholds, borrowers' repayment obligations were automatically reduced with no claims process required.

203 informal market traders received 322 insurance-backed loan policies across the pilot period. Borrowers were predominantly women operating across four Nairobi informal markets: Kaloleni Marikiti, Kangemi, Githurai, and Ruai/Kikuyu. Repeat borrowing across both phases indicated sustained trust in the product.

Payouts were triggered on 5 extreme rainfall days, covering 49 paid policies and disbursing KES 88,635 in loan balance reductions. 100% of settlements were automated, with all transactions publicly verifiable on-chain. In total, KES 1.61M in working capital credit was unlocked.

BlockBima's smart contract ran on the XRPL-EVM sidechain, with payouts settled in RLUSD stablecoin and reconciled in real time. The pilot ran in two phases: a dry-season validation (May–July 2025), followed by an extreme rainfall stress test (October–December 2025) validating automated payouts under real conditions.



REDUCING CLIMATE VULNERABILITY THROUGH INSURANCE-EMBEDDED MSME LOANS IN KENYA

3BLOCK3IMA



The pilot demonstrates that blockchain infrastructure can fundamentally change the economics of insuring populations previously considered too risky to serve.

- **Operational efficiency is the mechanism that makes inclusion possible.** When the cost of delivering a micro-policy approaches zero, the financial logic that has historically excluded informal traders from insurance no longer holds.
- **On-chain repayment data creates a new asset for previously excluded borrowers.** Verifiable records of creditworthiness during climate shocks close the information gap that leads lenders to treat climate-exposed borrowers as unbankable — and over time, can support better credit terms and broader access to financial products.

322

POLICIES ISSUED
embedding insurance into
microloans

\$12.5K

CAPITAL UNLOCKED
for 203 informal market
traders

3,000X

REDUCTION
in settlement costs vs.
traditional settlement

97%

REDUCTION
in settlement time when
traders were most at risk

100%

NEW CUSTOMERS
for Fortune Credit

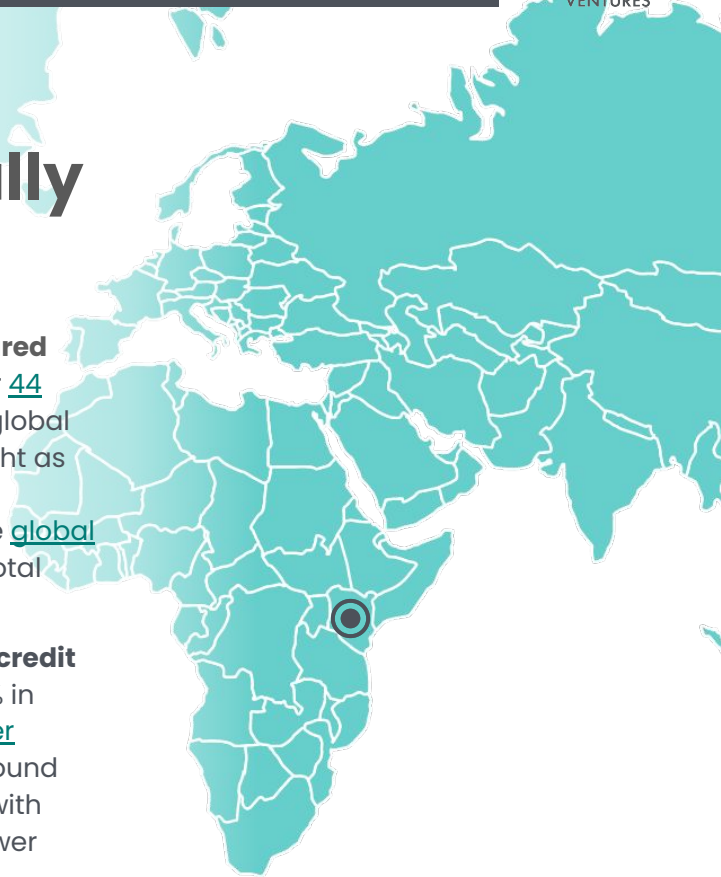
77%

REPAYMENT RATE
vs. typical 60% rate
for this demographic

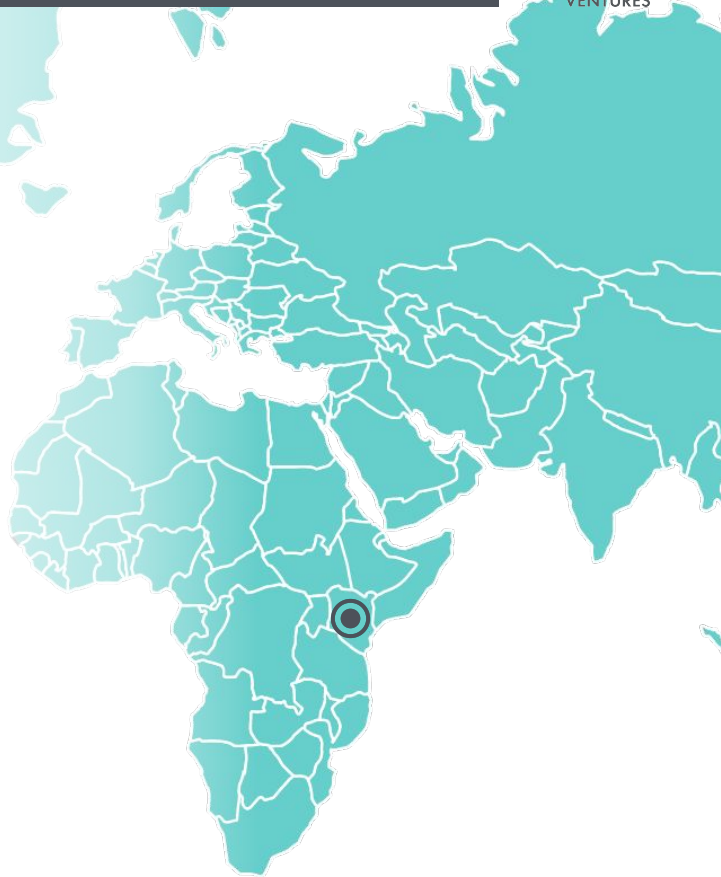
OVERVIEW

Informal market traders in Sub-Saharan Africa are chronically exposed to climate risk.

- **Micro, Small, and Medium Enterprises in East Africa remain deeply underinsured against escalating climate shocks.** Sub-Saharan Africa's MSMEs number over [44 million](#) and account for up to 80% of all jobs. Africa is warming faster than the global average, and by 2030, [an estimated 118 million Africans](#) may face severe drought as extreme weather events grow more frequent and severe. Kenya's insurance penetration stood at [2.4% in FY2024](#)— unchanged from 2023 and well below the [global average of 7.0%](#)— with climate-linked products accounting for less than 1% of total premiums.
- **Climate shocks are pushing already-vulnerable borrowers out of the formal credit system.** Digital lenders in Kenya have seen loan default rates soar from 15–20% in 2020 to [nearly 40% by 2024](#), as climate-driven income shocks [intensify borrower vulnerability](#) and force tighter credit terms for those most at risk. A 2021 study found that only [around 17% of SMEs in Kenya](#) accessed loans for climate adaptation, with many forced to downsize or sell assets to cope. The result is traders left with fewer resources to weather the next shock.



- **Women entrepreneurs face a compounding "triple differential" vulnerability.** Women own roughly one-third of MSMEs in Sub-Saharan Africa, but face disproportionate barriers to climate resilience. They are more concentrated in climate-exposed sectors, and face greater structural barriers to accessing adaptation finance, – leaving women-led businesses among the most exposed and least protected.
- **Existing insurance products are not designed for this population.** Traditional insurance requires claims filing, documentation, and adjudication processes that are inaccessible to low-literacy, time-constrained informal traders. Africa contributes barely 2% of global agricultural insurance premiums, despite agriculture accounting for roughly 30% of Sub-Saharan Africa's GDP, and fewer than 17% of farmers on the continent are insured.



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02. **Embedding climate insurance in microloans will expand credit access for climate-vulnerable MSMEs while reducing lender risk.**
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The Partnership to Build Climate-Resilient MSME Credit through Blockchain-Enabled Parametric Insurance

BlockBima's parametric insurance infrastructure allows Kenyan informal market traders to access climate protection embedded directly in their loans, with payouts triggered automatically by verified rainfall data.

The pilot is a partnership between BlockBima, Fortune Credit, RiskShield, Shamba Network, and Mercy Corps Ventures.

BlockBima is a web3 infrastructure provider for parametric insurance, enabling automated policy issuance, oracle-verified triggers, and on-chain payout execution on the XRP Ledger. The platform allows insurers and lenders to embed climate insurance into credit products without the operational overhead of traditional claims processing, making micro-policies viable for informal MSME borrowers.

Fortune Credit is a Kenyan MSME lender serving informal market traders and small business owners with short-cycle working capital loans. Through the pilot, Fortune Credit bundles climate insurance into its loan origination process, distributing protection to borrowers whose income is highly exposed to rainfall variability.

RiskShield is an actuarial consultancy. RiskShield designed the policy structure, defined the rainfall trigger parameters, and assesses portfolio risk across the pilot — using on-chain records and oracle data to monitor exposure and payout execution in near-real time.

Shamba Network is a decentralized climate data oracle providing satellite-verified rainfall measurements to smart contracts on the XRP Ledger. Shamba's data feeds determine when policy triggers are met, enabling automated, tamper-resistant payout execution without manual claims adjudication.

The Pilot Participants

Mercy Corps Ventures and BlockBima provided access to a new platform that supports a virtuous cycle of climate shock recovery and microloan repayment for informal traders.

INFORMAL MARKET TRADERS

- **203 market traders and micro-enterprises**, operating in informal or semi-formal markets.
- **76% of respondents were women**, consistent with the pilot's goals to increase access for women.
- **54% had previously been denied a loan** — with insufficient collateral and low credit scores as the most common reasons cited.
- **97% of all traders said excessive rainfall affects their business**, making it by far the dominant climate risk. Flooding was cited by 68% of respondents.

LENDERS

- **1 lender for the pilot, Fortune Credit**, operating in the Kenyan MSME space.
- Prior to the pilot, Fortune Credit indicated it **did not lend to traders without permanent structures due to climate risk** and a rising rate of defaults.



Blockchain-enabled insurance can materially improve climate resilience for MSMEs by automating payouts, lowering distribution costs, and embedding protection directly into credit products.

KEY BENEFITS OF BLOCKCHAIN-ENABLED PARAMETRIC INSURANCE



Automated, Trigger-Based Payouts

Smart contracts execute payouts automatically when conditions cross defined thresholds — eliminating the need for borrowers to file claims, submit documentation, or wait through adjudication. Payouts reach traders during the shock, not after it.



Lower Costs

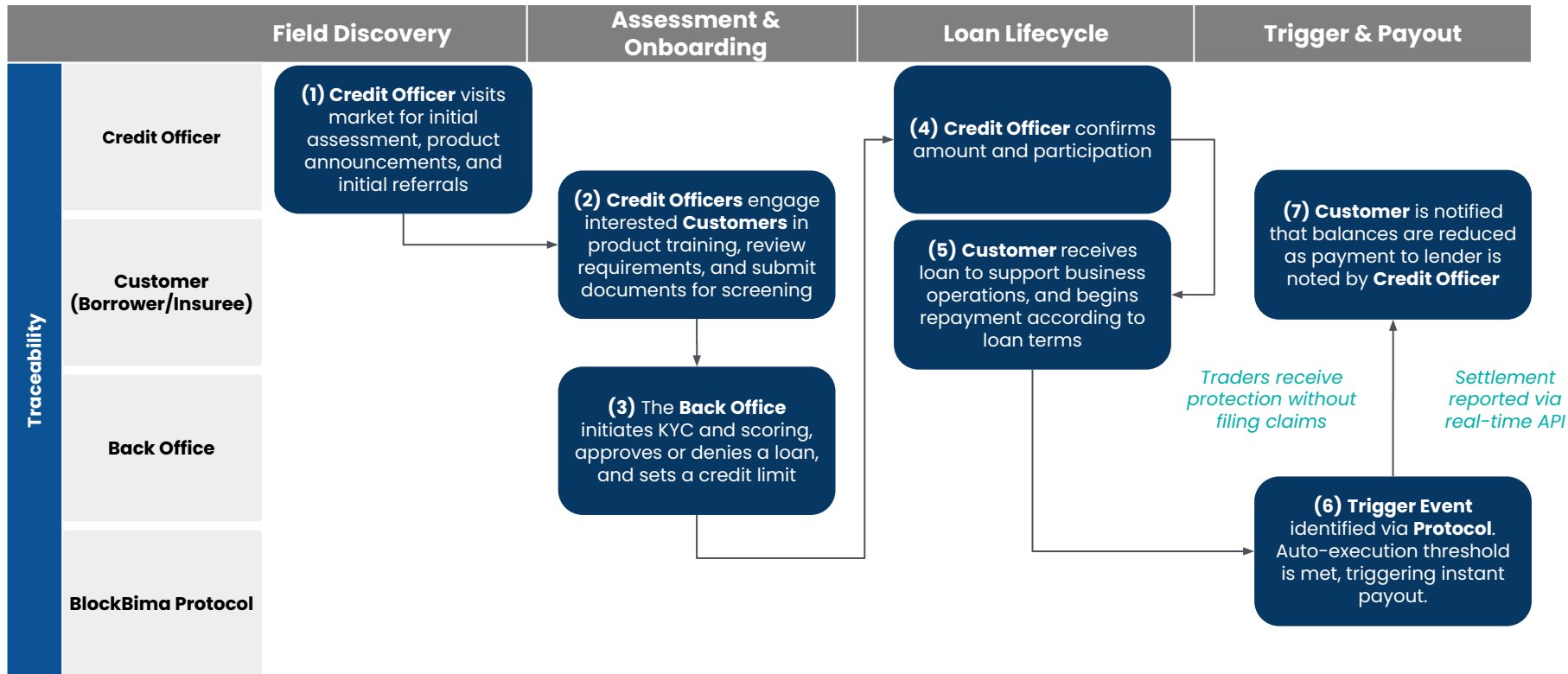
On-chain policy registration and oracle-verified triggers reduce the operational burden of underwriting, claims handling, and reconciliation. This makes it economically viable to offer micro-policies to segments traditionally excluded from because individual policy administration costs exceed premium revenue.



Verifiable, Auditable Records

Every policy issuance, trigger event, and payout is recorded immutably on-chain (XRPL), creating a single source of truth accessible to all parties — insurer, lender, reinsurer, and funder. This reduces reconciliation disputes, simplifies regulatory reporting, and enables downstream actors (reinsurers, donors, impact investors) to verify performance without relying on intermediary attestations.

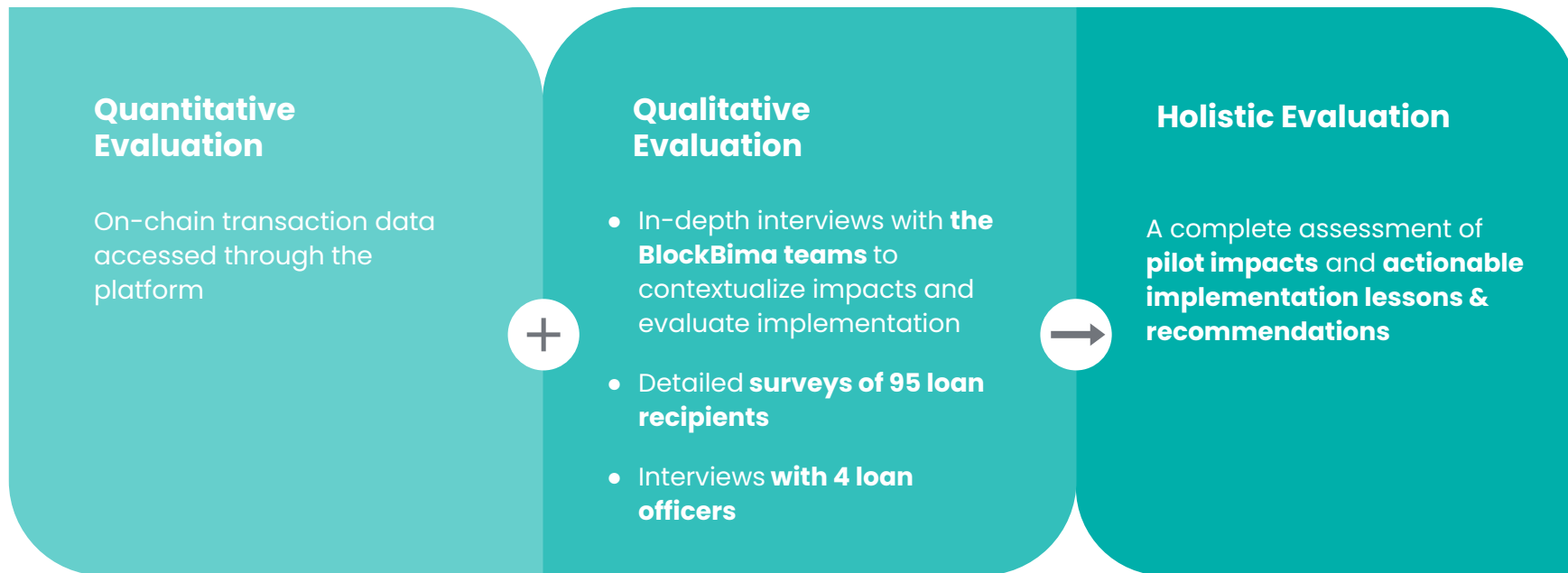
The pilot uses smart contracts to provide an automated climate insurance platform that any lender can connect to via API.



EXAMPLE PARTICIPANTS	ONBOARDING	PILOT ENTRY POINT	PILOT ENGAGEMENT	OUTCOMES
A 35 to 45 year old woman who runs a small produce stall in a Nairobi open-air market	She is introduced to the pilot by a Fortune Credit loan officer, who explains that her new loan will come bundled with a climate insurance product at no additional cost to her.	She accepts the bundled loan and insurance product. Her loan details are registered with BlockBima, linking her policy to rainfall data for her specific market area via the Shamba Network oracle.	She continues operating her stall as usual. During the loan period, if rainfall in her area triggers the policy parameters, she receives a payout directly. She is notified by SMS or through her loan officer.	Over time, reliable protection against weather shocks may strengthen her repayment history, reduce reliance on informal coping mechanisms (borrowing from family, selling assets), and support continued access to formal credit.
A loan officer at Fortune Credit who manages a portfolio of MSME borrowers , including informal market traders. Climate-related shocks among her clients are a recurring source of missed repayments and portfolio stress.	She is trained by Fortune Credit and the BlockBima team on the new bundled loan product. She learns how the product fits into her existing loan origination workflow.	As she onboards new borrowers or renews existing loans during the pilot window, she introduces the insurance component, explains the parametric trigger in plain language, and confirms borrower understanding and consent.	She services her portfolio as usual but now has visibility into which clients have active policies. When payouts are triggered, she may communicate with clients about what to expect, answer questions, and observe how payouts affect repayment behavior in her portfolio.	Insurance payouts reduce default and arrears among climate-exposed borrowers in her portfolio, improving portfolio health and reducing the time she spends on collections and restructuring.

PILOT EVALUATION METHODOLOGY

Mercy Corps Ventures pilots are evaluated along quantitative and qualitative measures to measure pilot impacts and identify implementation lessons.



KEY FINDINGS

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The pilot demonstrates a pathway for increasing access to credit for climate-vulnerable traders while reducing risk for lenders.

HYPOTHESIS	KPIs	RESULTS
H1: Embedded insurance and microcredit will strengthen MSME climate resilience.	Share of borrowers who feel more resilient to climate change after access to loans	71% of borrowers reported some improvement in resilience (14% a significant improvement) 71% of borrowers also reported having extra funds after a climate event that they reinvested in their business
	Share of borrowers who use the credit to invest in climate adaptation solutions	86% implemented or planned to implement at least one climate adaptation measure
	Average change in credit scores of borrowers	71% of borrowers reported improved credit scores
H2: Embedding climate insurance in microloans will expand credit access for climate-vulnerable MSMEs while reducing lender risk.	Total first-time Fortune Credit borrowers (broken down by gender, % who would otherwise not qualify for loan)	100% new Fortune Credit customers ; 76% of borrowers were women and 54% had previously been denied a loan
	Total loan repayments and value covered by insurance payouts	17% of policies triggered repayments during the wet seasons (Phase 2) KES 88,635 (USD \$690) in repayments covered , when traders' income was most at risk due to flooding
	Comparison of actual default rates with expected rates for the demographics	77% of non-subsidy recipients repaid on time or easily , against a ~40% digital lending default rate baseline for this demographic
H3: The use of smart contracts will result in better operational efficiency and faster claim payouts to MSMEs.	Reduction in claim processing time (baseline: 30 days)	97% reduction in settlement times – 1 day settlement time vs 30 days baseline
	Reduction in operational costs	3,000X reduction in costs vs traditional payment 100% automation of claims

HYPOTHESIS 1

Embedded insurance and microcredit will strengthen MSME climate resilience.

KEY METRICS	OUTCOMES
Share of borrowers who feel more resilient to climate change after access to loans	71% of borrowers reported some improvement in resilience (14% a significant improvement) 71% of borrowers also reported having extra funds after a climate event that they reinvested in their business
Share of borrowers who use the credit to invest in climate adaptation solutions	86% implemented or planned to implement at least one climate adaptation measure (<i>e.g. improved drainage, elevated inventory storage, weather-resistant structures</i>)
Average change in credit scores of borrowers	71% of borrowers reported improved credit scores

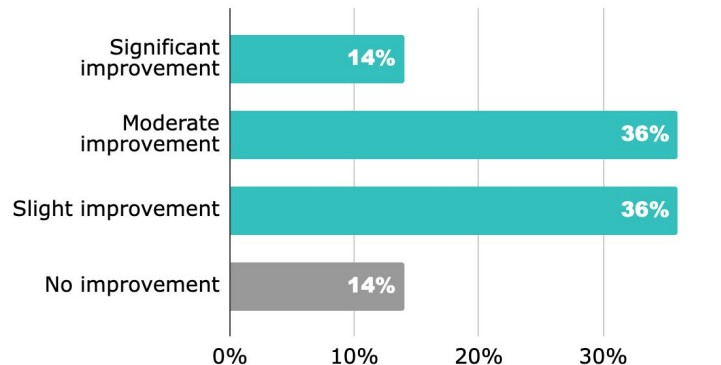
Borrowers demonstrated improved resilience and faster recovery from climate shocks.

71%

IMPROVED RESILIENCE

- **Before the pilot, traders in open-air markets faced a compounding crisis during heavy rainfall: loss of income from closed stalls, and continued loan repayment obligations.**
 - 97% of all traders said excessive rainfall affects their business making it by far the dominant climate risk.
 - 93% said they wanted access to credit, with access to affordable credit being the single most cited support need; while 97% of respondents had prior loan experience, access was largely informal with higher costs.
 - 39% did not understand insurance at baseline, suggesting low prior awareness of insurance as a tool.
- **The majority of participants reported improved resilience, though most reported slight or moderate improvements.**
 - Borrowers may have been motivated to ask for larger payouts; however 71% reported having extra cash as a result that they reinvested in their businesses.

How has this loan with embedded insurance improved your business resilience to excessive rainfall?



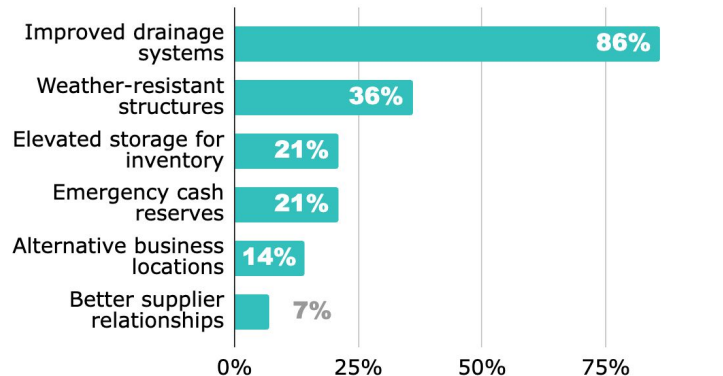
When the heavy rains come, we lose everything... The loans that normally help us restock become a burden because we can't generate the income to repay them.

Market Trader

Use of funds suggests a two-tier resilience dynamic: immediate recovery and longer term adaptation.

- The majority of pilot participants operate in open-air markets without permanent structures, making physical climate adaptation measures both more necessary and more difficult to implement.
- 86% of endline respondents had implemented or planned at least one climate adaptation measure.
 - 86% invested in improved drainage systems, 36% invested in weather-resistant structures, and 21% invested in elevated inventory storage
 - 14% sought to move business locations entirely
 - 21% invested in emergency cash reserves
- However, when subsidy recipients had extra cash from reduced repayments, 71% used it to restock inventory or invest in business improvements rather than adaptation measures.
 - This reflects the economic reality of informal traders operating on thin margins: maintaining business continuity takes precedence over capital investment.
 - While longer-term adaptation investment (drainage, structures) is occurring, it likely requires more sustained financial support to scale.

What climate resilience solutions do you have or plan to implement in your business?



We have no fear in replacing lost stock (with insurance).

Market Trader

When they are compensated the money they were to pay for the loan, they bought more stock. So their businesses also grew in some extent.

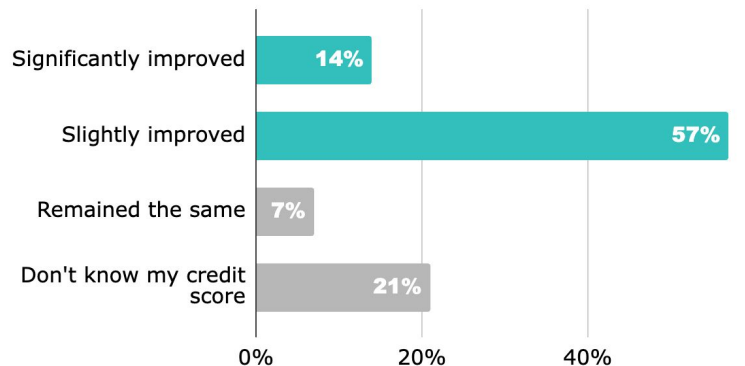
Evans, Loan Officer, Fortune Credit

Borrowers demonstrated improved resilience and faster recovery from climate shocks.

- **71% of endline respondents reported their credit score improved since participating in the pilot.**
 - Maintaining credit standing during climate events — rather than defaulting — is itself a resilience outcome, enabling continued access to credit in future cycles.
- **Repayment data can contribute to the longer term development of credit scoring for borrowers that may have previously been outside of the formal credit system.**
 - While the majority borrowers say their credit score only “improved slightly,” only 3% had previously borrowed from a formal bank, while 34% had borrowed from a micro-finance institution and 48% had borrowed from a shylock (informal moneylender).
 - This suggests that both consumer education and longer term benchmarking might better serve borrowers in building their credit ratings.

71%
**IMPROVED
CREDIT SCORE**

How has your credit score changed since receiving this loan?



HYPOTHESIS 2

Embedding climate insurance in microloans will expand credit access for climate-vulnerable MSMEs while reducing lender risk.

KEY METRICS	OUTCOMES
Total first-time Fortune Credit borrowers (broken down by gender, % who would otherwise not qualify for loan)	100% new Fortune Credit customers ; 76% borrowers were women and 54% had previously been denied a loan
Total loan repayments and value covered by insurance payouts	17% of policies triggered repayments during the wet seasons (Phase 2) KES 88,635 (USD \$690) in repayments covered , at moments when traders' income was most at risk due to flooding
Comparison of actual default rates with expected rates for the demographics	77% of non-subsidy recipients repaid on time or easily, against a ~60% digital lending default rate baseline for this demographic

The pilot reached a borrower segment that was previously excluded from formal credit entirely.

100%

BORROWERS

were new Fortune Credit customers

54%

BORROWERS

previously denied a loan (formal and informal)

- **97% of participants had prior loan experience, but none had borrowed from Fortune Credit before.**
 - 54% had previously been denied a loan, citing insufficient collateral (39%), low credit scores (17%), and in some cases, climate-related risk in their area as explicit denial reasons.
- **Prior to the pilot, Fortune Credit did not lend to traders without permanent structures.**
- **This policy effectively excluded a large number of female market traders, who operate with higher structural barriers to capital and resources.**
 - 76% of pilot borrowers were women, expanding access to a new demographic of underserved business operators.

“

Without that insurance, it was far more difficult to give somebody who I know could be disturbed by rain or flood. But with insurance, it gave me confidence.

Titus, Loan Officer, Fortune Credit

“

These borrowers which don't have permanent structures — they normally set up along the path of the market — are the ones who are now qualified.

Benson Mgobo, Fortune Credit

“

Our partners, Fortune Credit were able to lend to these market women — a group that previously would not have qualified because the risk of default was very high.

Kennedy Nganga, BlockBima

Insurance improved lender confidence and generated organic demand.

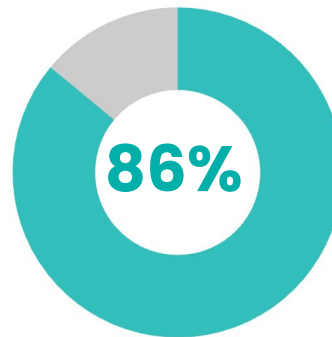
- The pilot issued 322 insurance-backed loan policies to 203 unique individuals, with some borrowers taking out multiple policies.
- Market traders who borrowed had favorable views of the insurance product:
 - 86% of endline respondents preferred the loan with embedded insurance.
 - 100% said they would take another loan with embedded climate insurance in the future.
 - Borrowers valued automatic payouts and protection from weather events.
- There were strong signals that the product created genuine perceived value, not just passive uptake.
 - Fortune Credit loan officers noted strong word-of-mouth demand, with enrolled borrowers telling their friends about the product during onboarding.
 - 86% of respondents said they would be willing to pay for standalone climate insurance in the future (of which 57% indicated cost would be a factor).

86%

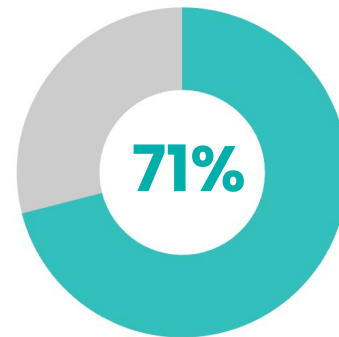
prefer embedded insurance to traditional loans

100%

would take out another loan with embedded insurance



value automatic payouts



value protection during rainfall events

Insurance materially reduced default risk during climate events, and is creating a data market for previously excluded borrowers.

- **By reducing the risk associated with lending to vulnerable groups and building transparent data over time, lenders can be made more confident and more willing to lend.**
 - During actual triggering events in October–December 2025, 49 policies paid out KES 88,635, directly protecting those borrowers from default.
 - The repayment data from borrowers who did not receive weather triggered payments — all of whom experienced rainfall impacts but received no payout — underscores the importance of data collected during the pilot to demonstrate creditworthiness to lenders.
- **Among non-subsidy recipients whose businesses were still affected by rainfall, 77% managed to repay.**
- **This compares favorably to the broader Kenyan digital lending market:**
 - Default rates rose from approximately 15–20% in 2020 to nearly 40% by 2024 — across a demographic that substantially overlaps with the pilot's target borrowers.

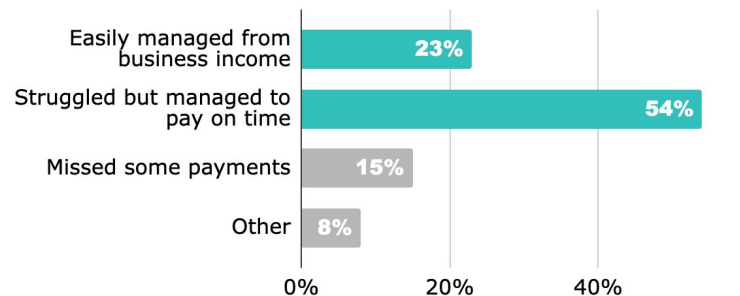
77%

**borrowers
without subsidy
repaid**

15%

**borrowers
without subsidy
missed some
payments**

How did you manage loan repayments during the period?



HYPOTHESIS 3

The use of smart contracts will result in better operational efficiency and faster claim payouts to MSMEs.

KEY METRICS	OUTCOMES
Reduction in claim processing time	• 97% reduction in settlement times – 1 day settlement time vs. 30 days baseline
Reduction in operational costs	• 3,000X reduction in costs for onchain insurance payment vs. traditional parametric payment • 100% automation of claims

Settlement times were dramatically reduced for borrowers and lenders, providing real-time relief to impacted small business operators.

- **With one-day settlement, borrowers had funds immediately available to address climate impacts to their businesses in the form of loan payment savings.**
- **The one-day settlement time was a deliberate design choice:**
 - The single day of delay was built in to allow all oracle data required for settlement to be fully available before triggering payouts, negating manual processing requirements.
- **Settlement and policy time design improvements could better support participants in the future.**
 - Rather than attaching insurance to each individual 5-day loan, it was suggested that a seasonal policy covering a 3-month period could ensure borrowers remain covered even between loan cycles — closing a gap where borrowers who repaid early were left uninsured until their next loan.

97%

**REDUCTION IN
SETTLEMENT TIME**

**1 day vs.
30 days**

**BASELINE FOR
TRADITIONAL
SETTLEMENT**

Smart contract infrastructure significantly reduced operational costs relative to traditional methods.

100%

AUTOMATION
of claims and payments

3,000X

REDUCTION IN COSTS
vs. traditional parametric payments

- **Manual claims processing was entirely eliminated from the pilot via automation by smart contracts.**
- **On-chain settlement cost \$0.006746 for two aggregated payout transactions.**
 - Compared to an estimated \$21.70 under a traditional parametric insurance model, this represents a cost reduction of over 3,000x.
- **At this cost structure, the economics of micro-insurance change fundamentally.**
 - It becomes viable to underwrite very small loan amounts, at high frequency, for populations that traditional insurance infrastructure cannot serve profitably.

“

The whole aspect of making insurance claims is abstracted. Nobody needs to go make a claim — the insurance happens automatically. If a threshold is met, it is recorded on chain, the payout is made on chain.

We are eliminating the claims adjuster. We are putting that logic on chain, letting the smart contract execute and determine how much will be paid out.

**Kennedy Nganga, Co-Founder
BlockBima**

“

Our task was only to onboard customers — they would get a message if they are affected and would be receiving a payout.

Titus, Fortune Credit loan officer



LESSONS LEARNED

LESSONS LEARNED | FUTURE OF THE PROJECT

The pilot validated embedded parametric insurance as a viable model for protecting climate-exposed MSME borrowers. Bundling cover into loan origination removed the friction of separate insurance purchase decisions and reached borrowers through a channel they already trust. Operations were structured so that policy issuance, trigger monitoring, and payout execution ran in the background — borrowers experienced insurance as an automatic feature of their loan, not a product they had to engage with.

The pilot demonstrated a hybrid technical architecture. On-chain infrastructure on XRPL anchors policy issuance, trigger execution, and payout records; off-chain components handle loan servicing and borrower experience. This pattern minimizes operational complexity while preserving the auditability that matters to insurers, lenders, and reinsurers.

This design approach positions BlockBima to scale beyond rainfall-indexed cover for Kenyan MSME traders. It pairs XRPL infrastructure — handling policy registration, trigger execution, and audit trails — with embedded distribution through credit partners borrowers already use. The result is climate protection delivered without requiring borrowers, loan officers, or insurers to interact with blockchain directly. Next steps include expanding to additional perils (drought, temperature), additional borrower segments (smallholder farmers, agri-MSMEs), and additional lending partners across East Africa.



1. Lenders should treat embedded climate insurance as portfolio risk infrastructure, not a borrower benefit.

- **Bundling parametric cover into loan products converts an uninsurable risk into a managed one and protects portfolio performance.** Climate shocks are a material driver of MSME default and arrears, particularly for traders and informal businesses whose revenue is weather-sensitive. While there were some missed payments, all borrowers were able to repay their loans in the pilot with climate-insurance support.
- **Parametric, oracle-triggered payouts reduce the operational cost of insurance delivery, making micro-policies viable for informal borrowers** — a segment traditionally excluded from climate insurance because individual policy administration costs exceed premium revenue. As the report finds, costs to trigger payments were reduced by 3,000 times, from \$21.70 under a traditional parametric model to just \$0.006746 for two on-chain payments.

Key stakeholders:

MSME lenders; microfinance institutions; digital lenders in climate-exposed markets

Secondary stakeholders:

Reinsurers; development finance institutions; central banks and financial regulators

2. Use parametric insurance and verified climate data to expand credit access for climate-exposed borrowers.

- **Lenders often price climate risk into credit terms or exclude exposed borrowers entirely.** Embedded parametric cover gives lenders a verifiable mechanism to hedge that risk, which may support more favorable credit terms or expanded access.
- **On-chain records create a shared, auditable performance dataset across lender, insurer, and reinsurer.** This can simplify reporting, and support stronger commercial agreements between partners that span a wider range of use cases. This includes:
 - *For lenders:* Credit scores for borrowers who are typically excluded from formal credit assessment; repayment behavior data, including how repayment changes after a payout event; portfolio-level climate exposure mapped to borrower geography; loss data tied to specific weather events, supporting more accurate provisioning.
 - *For insurers and reinsurers:* Verifiable trigger event records; payout execution logs with timestamps; loss ratios by region, peril, and policy cohort; basis risk evidence — comparing parametric payouts against actual borrower losses.

Key stakeholders:

MSME lenders; parametric insurers; reinsurers; climate data providers

Secondary stakeholders:

Financial and insurance regulators; development finance institutions; impact investors

3. Leverage blockchain as infrastructure, not interface — adoption scales when users never interact with the ledger directly.

- **The pilot's distribution model kept blockchain invisible to borrowers and loan officers.** Borrowers interacted with Fortune Credit through their normal loan relationship; loan officers used existing origination workflows. Platforms designing for scale in informal or low-digital-literacy contexts should prioritize familiar interfaces with on-chain logic operating in the background.
- **On-chain functionality adds the most value at coordination points between actors who do not fully trust each other.** In parametric insurance, these gaps sit between specific pairs of partners: insurer and lender disputing whether a trigger event occurred and whether the resulting payout matches policy terms; insurer and oracle on whether rainfall data is accurate and tamper-resistant; insurer and reinsurer on whether portfolio-level loss data reflects what happened in the field; and all partners and funders or regulators on whether reported outcomes are verifiable rather than self-reported. The pilot leverages smart contracts so that a previously trust-dependent transaction can be verifiable by any party. This minimizes cost and complexity while preserving the auditability that matters most to partners, reinsurers, and funders.

Key stakeholders:

Web3 infrastructure providers;
parametric insurance platforms;
embedded finance/insurance
technology developers

Secondary stakeholders:

Donors and development
finance institutions funding
climate insurance pilots;
policymakers developing digital
finance and climate adaptation
frameworks; XRPL and other
blockchain ecosystem partners



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