

The case for investing in climate resilience



Insights from five years of surveying smallholder farmers

November 2025



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Acumen would like to thank its Trellis and Acumen Resilient Agriculture Fund (ARAF) partners for supporting this work and report: the UK Foreign, Commonwealth, and Development Office, Autodesk Foundation, and the Green Climate Fund.



ARAF would like to acknowledge Soros Economic Development Fund, FMO Finance for Development, PROPARCO, the Children's Investment Fund Foundation, IKEA Foundation, and Global Social Impact Investments. We would also like to thank 60 Decibels and the Frankfurt School of Finance & Management for their collaboration.



Special thanks and appreciation to the companies, their staff, and the entrepreneurs featured in this report for their contributions and for their efforts to build resilience for communities at the forefront of climate change.



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Foreword

Smallholder farmers feed the world. Yet they are also among the most vulnerable to the changing climate. For many, droughts, floods, and unpredictable rainfall are no longer occasional crises; they are a way of life. I saw this reality five years ago when we launched the Acumen Resilient Agriculture Fund (ARAF), and it remains just as urgent today.

ARAF was created with a simple but ambitious mission: to reduce poverty, build climate resilience, and prove that investing in smallholder agriculture can be both impactful and commercially viable. Since 2020, we have partnered with 14 agribusinesses across sub-Saharan Africa. These companies are showing that the sustainability of farmers and the sustainability of businesses are inseparable; that when farmers thrive, enterprises thrive.

The good news is that conversations around adaptation and resilience have grown louder. The challenge is that capital still does not flow quickly or strategically enough to the solutions farmers need most. This report is one step toward changing that. It brings data, evidence, and stories from the field to guide funders and investors toward more informed decisions, and directing resources where they can have the greatest impact.

Climate change is not a distant threat; it is shaping lives and livelihoods right now. While the world must continue the fight to limit it, we must also invest in those already living with its consequences: smallholder farmers and their communities. The most effective way to do this is by backing the entrepreneurs and companies building solutions on the ground – solutions that create resilience today and for generations to come.

I invite you to join us, and the bold entrepreneurs featured in this report, on the journey of building resilient food systems that work for farmers, businesses, and the planet.



Rebecca Mincy
Investment Director
Acumen Resilient Agriculture Fund

Executive Summary



A measurement issue looms large in the agricultural impact investing space: Capital does not move without data, and right now, it is hard for impact managers to know which investments will produce and sustain climate resilience. Capital also does not move without returns, and smallholder agriculture is often viewed as a high-risk, low-return proposition.

For the last five years, Acumen has been collecting data from farmers on key dimensions of climate resilience. Analysis drawn from more than 5,700 farmer surveys working with nine Acumen Resilient Agriculture Fund (ARAF) and two Trellis, Acumen's philanthropic-backed early-stage agriculture initiative, portfolio companies shows a clear pattern:

- Farmers working with Acumen agribusiness portfolio companies earn more, recover quickly from climate shocks, and adopt practices that protect their livelihoods.

- Bundled services and guaranteed market offtake drive the strongest resilience gains.
- Higher incomes correlate with stronger adaptive and absorptive capacity.

And it's not just good for farmers. On average, these 11 companies are:

- Scaling, with top-line revenues increasing year-over-year.
- Attracting significant follow-on investment.

While this is not definitive proof, the data shows a trend in a positive direction. That's enough for us to double down on this work, with Acumen committing \$300 million over the next five years to generate more evidence and scale these models.

Agriculture at the center of climate risk



Lake Naivasha, East Africa



Agriculture is at the forefront of the climate crisis. It feeds the world and employs over 2.5 billion people, but it's increasingly under threat.¹ In the past 30 years, climate disasters have wiped out an estimated \$3.8 trillion in crops and livestock.² In 2022 alone, Kenya's agricultural sector shrank by 1.6% due to drought, dragging down the entire economy with it.³

Yet climate finance has overwhelmingly shied away from the consequences of climate change and toward the shiny solutions to it. Adaptation and resilience are potent buzzwords, but poorly funded

compared to mitigation. In 2023, mitigation finance made up the majority of global climate flows at \$1.78 trillion.⁴ But for every dollar spent on mitigation, just three and a half cents went to adaptation finance.

Even less money reaches vulnerable regions and farmers. Between 2021 and 2022, \$56 billion in adaptation finance flowed annually to developing economies, with Africa receiving about one-fifth (\$13 billion). Of this, only \$5 billion per year supports small-scale agriculture adaptation; a tiny slice of a tiny slice.⁵

Our Work



Since 2020, Acumen has focused on responding to the imbalance of climate finance, investing Patient Capital into companies that help farmers adapt to climate change and build long-term resilience. We do this through two complementary initiatives, each positioned at a different stage of the capital continuum:

- **Acumen Resilient Agriculture Fund:** ARAF is the first adaptation equity fund in sub-Saharan Africa dedicated to smallholder farmer resilience. Launched in 2020 with a first close in 2021, the \$58 million fund has invested in 14 agri-SMEs to date. The thesis: Climate resilience can be scaled by backing commercially viable businesses that deliver bundled services across agricultural value chains.
- **Trellis:** Trellis is a \$25 million, five-year initiative designed to support early-stage agribusinesses with high potential, often as the first institutional investors. Using philanthropic capital to invest, Trellis de-risks innovation at the pre-seed and seed stage by offering tailored financing and hands-on, post-investment support.

While both ARAF and Trellis were founded on theories of change, the intention was always to invest heavily in farmer-level surveying to move the sector beyond theory to rigorous collection and large dataset analysis.

That investment has paid off. We've built a cache of over 5,700 individual farmer responses across more than 25 resilience indicators. We've organized, cleaned, and analyzed this novel dataset, the results of which offer unique glimpses into the real drivers of resilience and the nuances of the farmer experience.

These findings make up the spine of this report, built from a commitment to data and analysis, and move us from anecdote to evidence.

Through partnerships with the Frankfurt School of Finance & Management, and 60 Decibels, and alliances like the ClimateShot Investor Coalition (CLIC), Global Resilience Partnership (GRP), and Smallholder and Agri-SME Finance and Investment Network (SAFIN), we've shared learnings and shaped the field alongside others. Collaborative efforts like the Adaptation and Resilience Investors Collaborative (ARIC) are also vital to building shared definitions, aligning approaches, and accelerating progress for farming communities in the face of climate change.

Defining adaptation and resilience

In the past decade, the flood of definitions, frameworks, and tools around climate adaptation and resilience has created more confusion than clarity. With many capital providers reluctant to take a firm stance, fragmentation has only deepened.

Acumen took a different approach. In 2020, with support from Busara, an advisory and research organization focused on poverty alleviation, we developed clear, actionable definitions aligned with leading industry standards (see Appendix B) to guide our investments. These definitions anchor our method of measuring what matters most.

Adaptation

Climate adaptation is a set of actions or shifts – ecological, social, or economic – that help adjust to actual or expected climate impacts. Put simply, adaptation is installing drip irrigation to keep your sweet potatoes alive during drought.

Resilience

Climate resilience is a state of being, a condition in which a person can anticipate climate-related threats, adapt to them where possible, absorb them as needed, and recover in a timely manner. Put simply, resilience is knowing your farm and your family can weather the next major shock and keep going.

Measuring resilience

In 2020, ARAF commissioned impact measurement company 60 Decibels to develop the Climate Resilience Toolkit, a way to track whether farmers were becoming more climate resilient over time. Today, ARAF uses two core survey tools as a part of this toolkit. The first is the Farmer Well-being Survey, which tracks changes in yields, income, practices, and quality of life. The second is the Climate Resilience Survey. Developed exclusively for ARAF, this measures a farmer's ability to absorb and adapt to climate shocks and access resilient products and services.

Each study targets at least 275 farmers per company, with a 90% confidence level and 5% margin of error. Each farmer is surveyed in his or her local language and across 70 unique data points, including indicators like demographics, crop types, animals reared, insurance usage, and agronomy practices.

The toolkit's approach draws from Sustainable Food Lab's "capacities to resilience" guide and the UK Foreign, Commonwealth and Development Office's (FCDO) livelihood framework:

- **Farmer focus:** The tool centers on farmers' absorptive and adaptive capacities, which are key to coping with short- and medium-term climate stress.

It emphasizes factors within a farmer's control: financial resources, on-farm behaviors, and local context.

- **Company focus:** The tool also measures how well agribusinesses support farmer resilience, using indicators they can directly influence.
- **Scorecard:** To enable comparison across models, 60 Decibels developed standard metrics that place farmers on a four-point resilience spectrum: risky (0), vulnerable (1), emerging (2), and resilient (3).

This framework enables companies and investors to assess how they're helping farmers absorb shocks, adapt to them, and access the enablers that make both possible.

Since 2020, Acumen and ARAF, in partnership with 60 Decibels, have conducted over 5,700 in-depth phone surveys across these three dimensions of resilience. The findings – analyzed with support from the Frankfurt School of Finance & Management – not only reveal what's working, but also point to where adaptation finance can go next.

In designing the Climate Resilience Toolkit, we prioritized clarity and consistency between each indicator and its corresponding pillar. That's why practices like intercropping and enablers like financing are placed under "adaptive capacity," while indicators like poverty profile and access to savings serve as proxies for "absorptive capacity."

Resilience Framework

Figure 1:
The pillars, indicators, and
outcomes that measure resilience

Ability to adapt

Farmers' knowledge and application of sustainable farming and natural resource management methods.

Sample Indicators



Intercropping



Crop rotation



Water management



Use of organic material



Reduced or no tilling



Top cover for soil

Access to enablers

Farmers' access to agricultural products that can enable them to better absorb and adapt to a climate shock.

Sample Indicators



Credit



Market



Wastage/ storage



Farming advice



Water source



Improved seed

Ability to absorb

Farmers' experience of coping with shocks and the reservoir of resources available to them to financially withstand those shocks.

Sample Indicators



Poverty profile
(% below the poverty line)



Likelihood of receiving warning



Reliance on farm income



Crop insurance



Expected coping mechanisms

Potential resilience outcomes



Improved way of farming



Increased production/yield



Reduced production costs



Increased sales



Increased selling prices



Increased savings



Increased sources of income



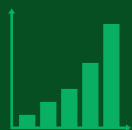
Access to emergency funds

From 5,704 surveys across rural Africa, a clear picture emerged: Climate shocks are both widespread and intensifying, with 68% of farmers reporting shocks such as drought (29%), flood (7%), or irregular weather (16%) in the past two years. Nearly half said they would struggle to access emergency funds in the event of a climate-related disaster.

Farmer survey highlights

These highlights represent a select group of results from data collected by ARAF over five years and nine portfolio companies and Trellis over two years and two portfolio companies. These results (the sample indicators in Figure 1) were used to get an initial understanding of how smallholder farmers across the 11 companies were able to adapt, their access to enablers, and their ability to absorb climate shocks.

Ability to absorb



40%

of farmers surveyed live below the poverty line⁶



34%

were very likely to be warned about a shock⁷

Ability to adapt



34%

practice intercropping



46%

use organic material

Access to enablers



69%

report accessing markets

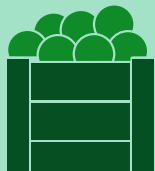


65%

report accessing farming advice

Farmer survey highlights

Resilience outcomes



80%

of farmers report an
increase in production



80%

report an increase
in money earned



68%

report access to
emergency funds⁸



11%

attributed this to
an increase in price



69%

attributed this to an
increase in volume sold

Findings





Kentaste, East Africa

The survey data collection yielded dozens of discrete indicators and data points, providing insight into the practices of smallholder farmers and their perceptions of climate-related challenges. Next, we conducted an analysis of this large data set to examine how these indicators may be interrelated and interdependent. We sought to understand how different

indicators, when combined under a company's business model in a local context, could create a resilience sum greater than the sum of their individual parts.

Taken together, the analysis of the survey results highlights the following important findings.

Finding 1

Three main factors drive
a farmer’s ability to recover
from climate shocks

Our research suggests that three key attributes of a company’s business model have an outsized ability to help a farmer recover from a climate shock: bundled services, the type of market access, and the length of the company’s relationship with the farmer.

Factor 1

Bundled service offerings achieve better
resilience and impact outcomes, especially
when they include market access

Bundled service delivery has always been a core part of Acumen’s theory of change in agriculture. The idea is that when companies combine multiple offerings, such as quality inputs, market access, and advisory services, that are specifically tailored to smallholder farmers’ needs, the impact is greater. The data set moves the theory to evidence. As shown in Chart 1, farmers who accessed two or more offerings reported stronger outcomes across all indicators compared to those who used just one offering.

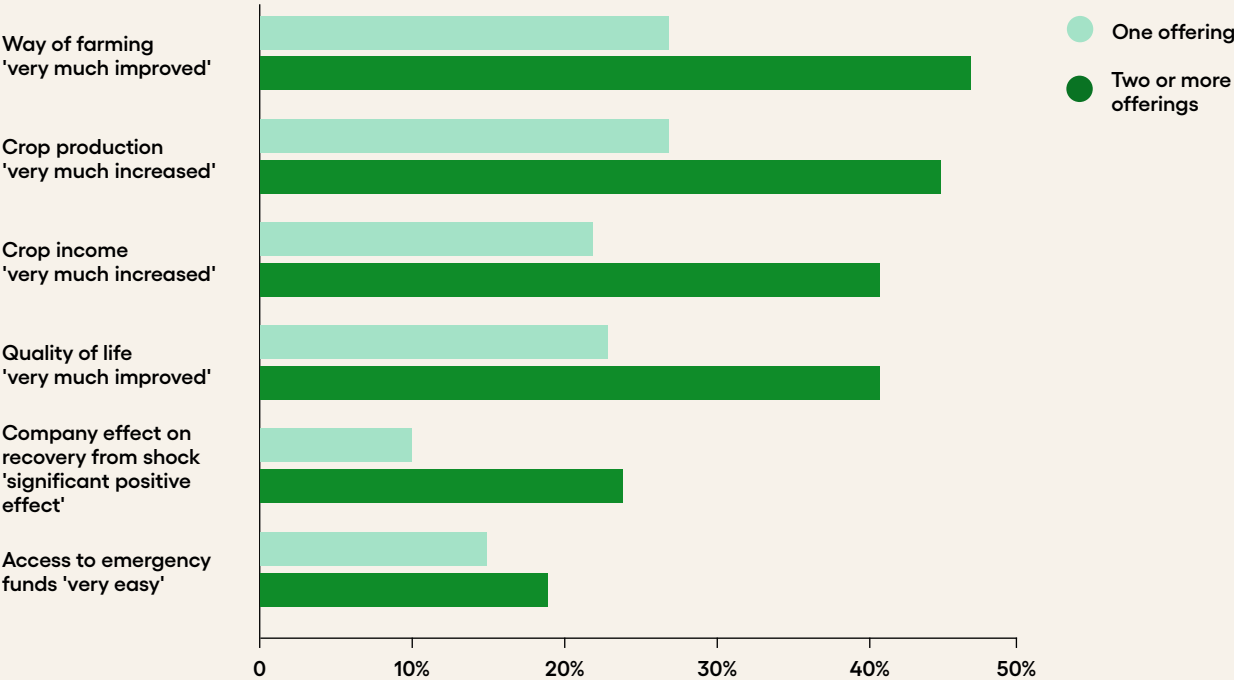


Chart 1:
Farmers who receive bundled services achieve
deeper impact and better resilience outcomes⁹

Source: 60 Decibels

Case Study



Bundled services drive resilience

Founded in 2014, Acumen investee Kentaste was created to provide fair and stable prices to coconut farmers on Kenya's eastern coast. The company processes approximately 10 million coconuts sourced from 4,500 smallholder farmers each year into coconut oil, milk, cream, water, and snack products that are sold in domestic retail and export markets. Kentaste offers a bundle of products and services to farmers that includes technical production training, payment advances, and guaranteed offtake markets.

According to the data, farmers who received the full bundled service were

up to three times more likely to report significant improvements in their quality of life and money earned than those who received only one or two services.

These farmers were also 20 times more likely to feel much more prepared for the next climate shock (40% vs 2%).

In the words of one farmer who sells coconuts to Kentaste, "[Kentaste] offers helpful training on different topics. This equips us farmers with the knowledge we need to better our farms and reap good profits. Kentaste is transparent and pays farmers; they have never conned farmers like the brokers used to. They offer loans to farmers, which has helped to manage many family aspects, be it farming or other family obligations."

Factor 2

The type of market access offered to farmers makes the difference in farmer recovery from a shock

Both Trellis and ARAF identify market offtake as a key driver of smallholder impact. But new data shows that how offtake is structured plays a critical role in farmer recovery.

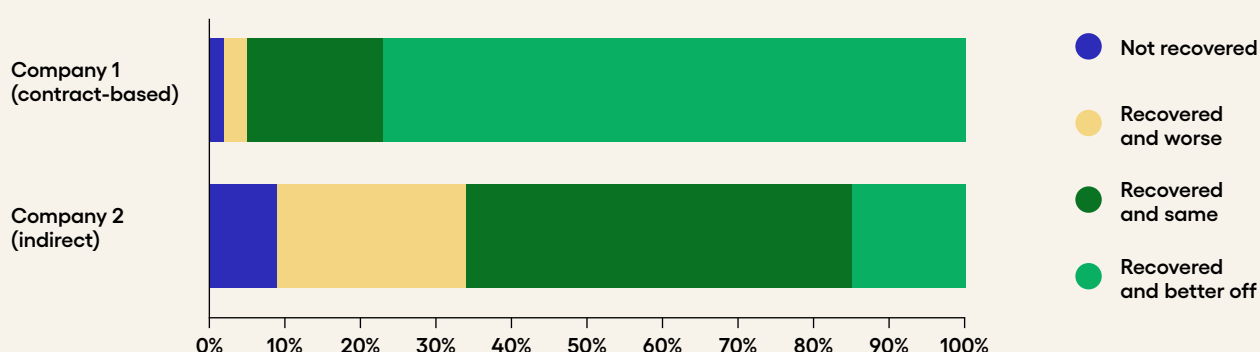


Chart 2:

Contract-based offtake results in better recovery than indirect offtake¹⁰

Two of our investees, identified here as Company 1 and Company 2 for anonymity, offer similar services, including market access, in comparable value chains. But their approaches to offtake differ. Company 1 provides contract-based offtake, guaranteeing purchase at the start of the season and working closely with farmers to meet contract terms as opposed to uncertain on-the-spot market purchases. Company 2, by contrast, offers indirect market access through a proprietary digital platform, connecting farmers to buyers when products are ready for sale.

The impact is stark: 76% of Company 1's farmers said they recovered from a

climate shock and ended up better off. For Company 2, only 14% recovered and were better off afterward.

This gap suggests that how market access is delivered matters. **Contract farming not only boosts incomes, but it also gives farmers the confidence to invest in their farms when they know they have a guaranteed buyer.** This confidence compounds over time, making them more resilient to future shocks. It also aligns incentives, as companies with contracts are more likely to support farmers through tough seasons.

Factor 3

The tenure of a farmer's engagement with a company matters

The data shows that the longer a farmer works with a company, the stronger their ability to recover from climate shocks. As shown in Chart 3, almost 20% of farmers in their first year reported not recovering, compared to 12% of those after a year of engagement. And among those who did recover, up to 40% of long-term farmers said they were better off post-shock, versus less than 20% of newer ones.

- Not recovered yet
- Recovered and worse than before
- Recovered and the same as before
- Recovered and better off than before

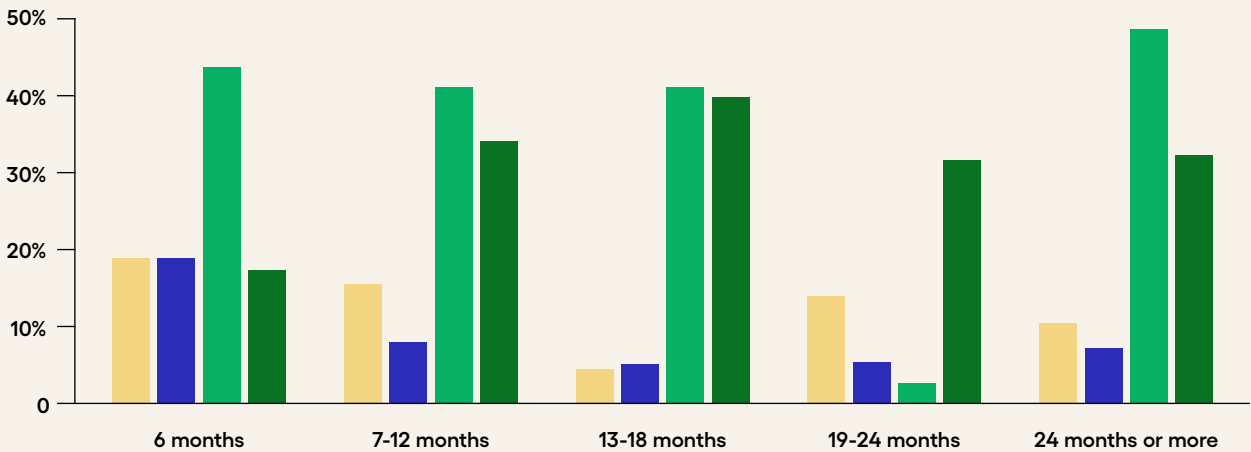


Chart 3:
Ability to recover gradually increases over time¹¹

Case Study

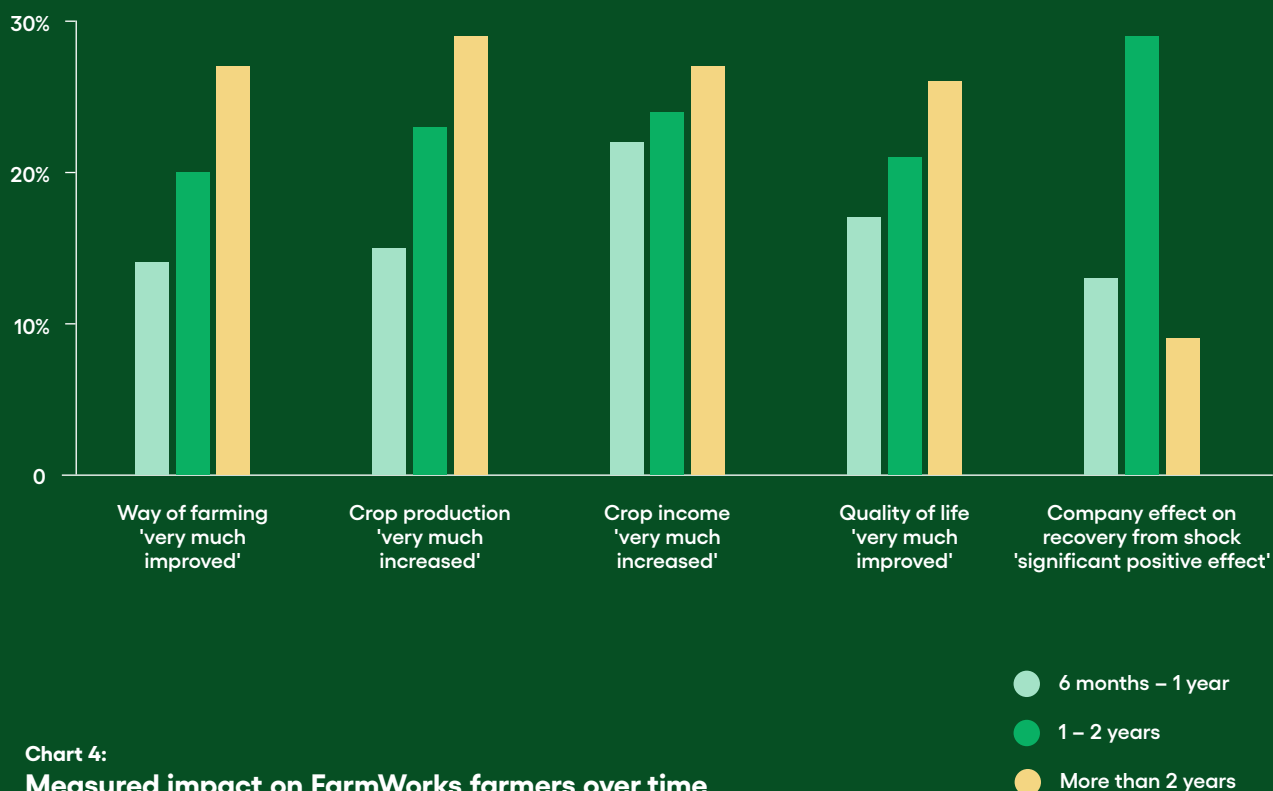
FarmWorks

Long-term farmer engagement increases impact

FarmWorks, an ARAF investee, is a horticulture company in Kenya. The company operates through a hub and spoke model that leverages clusters of smallholder farmers to provide access to intensive agronomy training, quality and cost-effective farm inputs, and direct access to markets. The company enhances the resilience of farmers by addressing

their key pain points, including a lack of sufficient agriculture expertise, a dearth of affordable and quality inputs, and high post-harvest losses.

As Chart 4 shows, 29% of farmers who have worked with FarmWorks for one to two years reported the company had a significant positive effect on their recovery from a climate shock, compared to only 13% who had worked with the company for six months to one year.





Finding 2

Better incomes provide the foundation for resilience

Our analysis of 5,700 farmer surveys from 11 portfolio companies suggests that increasing farmer incomes provides the foundation for resilience. Three-quarters of farmers reported that their incomes had improved as a result of a company's product, service, market access, or a combination of the three. Those farmers scored higher on their overall resilience score than their counterparts whose earnings stayed flat or fell, and notably higher across two key indicators:

- **Recovery from a shock:**
Thirty-three percent of farmers who reported increased income also reported that they had recovered and were better off after facing a climate shock. Compare that to farmers who saw decreases in income (24% recovered and were better off) or no change in income (18%).
- **Acquiring emergency funds:**
Farmers who reported increased income were also more likely to be easily able to acquire funds in an emergency (55%) than farmers who saw decreases (46%) or no change in income (47%).

This, combined with strong correlations between an increase in money earned and the ability to adapt and access enablers (see Appendix C for correlation analysis), tells us that these farmers were more likely to implement more new farming practices, like cover cropping and intercropping, and improve their access to enablers such as markets, storage, and credit.

Reinvestment into farming operations is a reassuring signal for the agriculture sector. In a separate qualitative analysis of 17 different companies across Acumen's agriculture portfolio between 2022 and 2024, 21% of farmers stated that they directly reinvest the money earned from selling products to the company back into their farming activities.

"Thanks to the farm training and timely payments I receive from Kentaste, I have been able to improve my farming skills, increase my produce, and earn more income. This has allowed me to comfortably support my family financially and even invest in buying more land."

– Kentaste Farmer

Given the many competing demands on a smallholder family's income, from school fees to medical expenses to basic household needs, this level of reinvestment represents a promising indicator of both a farmer's growing financial confidence and commitment to long-term farm productivity.

The finding is clear: Companies that improve a farmer's income, whether through increased yields, better prices, or reduced costs, also increase the farmer's resilience.

Finding 3

It’s harder to bounce back without a safety net

Of the three pillars of resilience that ARAF and Trellis measure (ability to adapt, access to enablers, and ability to absorb), we see that a farmer’s ability to absorb climate shocks is the biggest challenge for agribusinesses. Our analysis of 5,700 farmer surveys from 11 portfolio companies found that when a climate shock occurs, companies are unable to significantly improve a farmer’s access to the financial resources that would help them cope and recover.

As Chart 5 shows, a farmer’s ability to absorb a shock is significantly lower on the four-point resilience spectrum compared with other dimensions of resilience.

Of the indicators included in the scoring (referenced in Figure 1), a lack of insurance had a significant downward impact on the ability to absorb scores. Only 4% of the more than 5,700 farmer respondents across all 11 companies reported having purchased insurance from either a formal (3.89%) or informal (0.23%) source, dragging down the ability to absorb scores across the portfolio.

ARAF’s experience shows that most smallholder farmers are unfamiliar with insurance, find it difficult to understand, and distrust claims. They tend to invest in productivity gains, such as solar irrigation to boost yields, over risk mitigation products like insurance. High premiums, complex terms, and slow, opaque payout processes further erode interest, especially when payouts don’t match actual on-farm losses.

To address the insurance gap, ARAF

invested in IBISA, a pioneering insurtech making climate insurance accessible at scale. IBISA designs and operates parametric insurance products using satellite data and enables insurers, reinsurers, and local partners to bring them to market. These products provide farmers with fast, objective payouts when climate shocks hit, giving them the timely resources to cope. Our analysis shows that while insurance is a critical feature of resilience, its reach and effectiveness expand when embedded within bundled services such as finance, inputs, and market access. Bundling not only strengthens farmers’ overall outcomes, but it is also the practical strategy that makes insurance accessible at scale. Because insurance is a complex product that many farmers do not yet understand or trust, embedding it within other services is essential to drive adoption and impact.

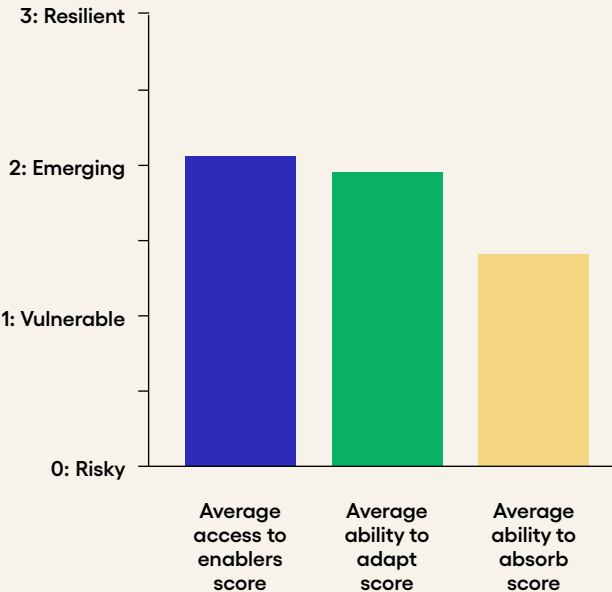


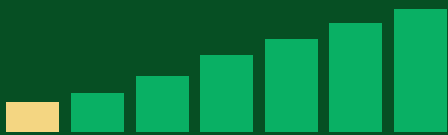
Chart 5:
Ability to absorb is harder to impact than enablers and adaptive practices¹²

Farmer resilience and company growth



Portfolio Snapshot¹³
As of December 2024

ARAF



2.6x portfolio
revenue
growth

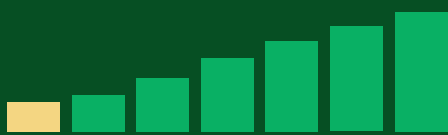


5.6x follow-on
funding
leveraged



129% increase in
the number
of employees

Trellis



2.5x portfolio
revenue
growth



4.2x follow-on
funding
leveraged

The business case for resilience is theoretically simple: Companies can't grow if their farmer supplier/customer base has been devastated by a climate event.

This makes farmer-level data not just important for impact reporting, but a critical tool for building stronger businesses. In the examples below, both FarmWorks and Kentaste show how operational decisions grounded in farmer resilience data can unlock growth.

ARAF portfolio

FarmWorks: Strengthening farmer practices

Resilience surveys revealed that many FarmWorks farmers were underperforming in their use of adaptive farming practices, key to withstanding climate shocks. In response, the company launched an enhanced technical assistance program, partially funded by an ARAF technical assistance grant. A follow-up resilience survey revealed measurable improvements in both farmer behavior and adaptive capacity scores, with the proportion of farmers classified as resilient in this bucket increasing from 54% to 60%. Notable gains were observed in practices such as crop rotation, application of organic material, and soil testing. These gains in resilience translated into stronger, more reliable supply chains for the company. FarmWorks saw a 221% year-over-year growth in revenue between 2023 and 2024, and in 2024, after the technical assistance project, the company became the largest supplier of staple vegetables to local markets in Kenya.

Trellis portfolio

Kentaste: Turning crisis into resilience strategy

Between 2021 and 2023, prolonged droughts slashed coconut yields for Kentaste's farmers by 38%, threatening the company's supply chain and financial health. Resilience data underscored the urgent need to support farmer recovery. Acumen responded by leading a bridge financing round and restructuring the company's debt through a catalytic follow-on equity deal. This liquidity lifeline allowed Kentaste to expand its farmer network from 3,500 to over 4,500, including new sourcing in Tanzania. The company also continued delivering bundled support, including training, credit, and guaranteed offtake, and established a demonstration farm to promote a faster-growing, drought-resilient coconut variety. Kentaste went on to record a doubling of coconut sourcing, a 47% increase in revenues, and a 25% increase in the number of farmers that it sourced from.

These two cases show that when companies act on resilience data, they don't just build better outcomes for farmers; they strengthen their own businesses in the process.

Where we're going next



Matching financial instruments to reality

There's a fundamental mismatch between the type of financing available to agriculture companies building climate adaptation and resilience, and what these companies actually need to grow. Debt is prohibitively expensive and often in hard currency. Equity capital is scarce and frequently ill-suited to agriculture, where success depends on building out entire value chains.

High-performing agriculture companies have worked with investors to structure financing around their unit economics, using tools like mezzanine finance that align growth with cash flow. Since 2020, ARAF and Trellis have deployed various instruments, including self-liquidating equity, revenue-based

financing, convertible working capital, and put options. These Patient Capital instruments are designed to fit the realities of early-stage agribusinesses on the continuum to scale.

Working capital presents another persistent barrier. Early-stage agribusinesses sourcing from smallholder farmers face recurring liquidity needs, especially during planting and harvest, when cash is tied up in inputs or crop purchases for months. In sub-Saharan Africa, these needs are tough to meet – interest rates hover around 25%, and the region faces an estimated \$65 billion working capital shortfall.¹⁴ International lenders can help, but foreign exchange volatility is a major risk; the median currency has lost half its value since 2019.

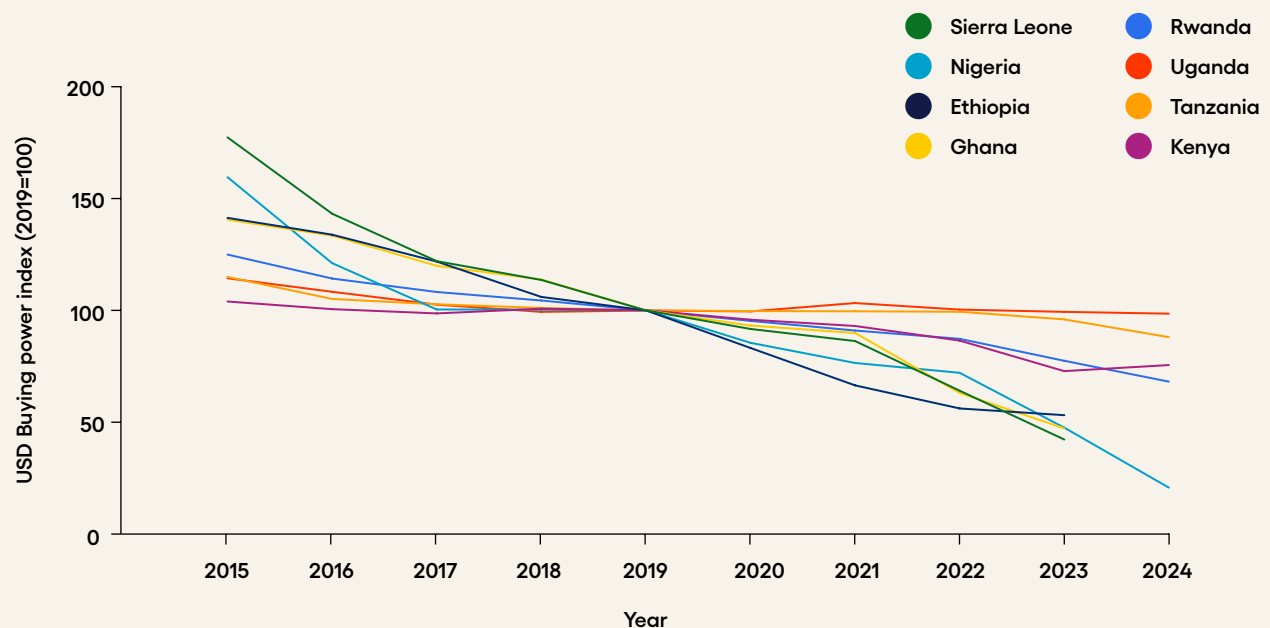


Chart 6:

Buying power of local currencies (in USD) has decreased over the last decade

Source: [Exchange-Rates.org](https://www.exchange-rates.org)

Improving measurement practices

Measuring resilience starts with listening. Through Trellis and ARAF, we've spent over five years developing a farmer-centric approach that does just that. We've learned which questions uncover true resilience and which don't. There are several ways to continue to support the field of resilience measurement, including:

- **Control groups:** Our Lean Data approach captures the experience of farmers served by portfolio companies, but the counterfactual, what would have happened without the intervention, remains a gap. Understanding this control case is key to revealing the true impact.
- **Scoring system:** Is access to credit more valuable than multiple income streams? Do emergency funds matter more than adaptive farming practices? We're refining how different factors are weighted in contributing to resilience.
- **The long arc of resilience:** ARAF's approach includes measuring farmer resilience at multiple points during the fund's engagement with businesses. We've also begun revisiting past farmers through studies like our Drivers of Income report.¹⁵ That said, we recognize that the arc from risky to resilient is longer than five years, and continued, repeated surveying across the full fund lifecycle of 10 to 12 years is critical for noting changes in resilience over the long term.

- **Unpacking the role of place:** Our data revealed clear resilience differences between countries. National macroeconomic factors, such as inflation or policy shifts, can dramatically shape resilience outcomes. Pairing farmer-level insights with third-party contextual data will be critical to normalizing results across the portfolio.
- **Resilience by supply chain:** Farmers in livestock and poultry tend to be more resilient than those in bulk crop value chains like grains or maize. Understanding the dynamics of specific value chains – whether cocoa, tomatoes, or coconuts – can reveal how climate shocks affect them, where supply chain bottlenecks exist, and how value and risk are distributed. This insight is critical to designing targeted, equitable interventions.
- **Mind the gender data gap:** Thirty-six percent of respondents (1,950 women) participated in the survey. While we acknowledge there may be sampling bias, we also noted that for certain sub-indicators, such as access to market, women showed statistically significant underperformance. Future efforts must dig deeper to better capture more of these disparities and further unpack gender-based equity imbalances in the sector.

Both the ARAF and Trellis teams are committed to the ongoing collection of data, which is critical to our evidence building and ongoing large data analytics.

Conclusion

Five years ago, Acumen embraced a hard truth: Climate adaptation and resilience are complex. But ignoring that complexity was no longer an option. So we began breaking it down, piece by piece, building a practical, farmer-centered approach to measuring what truly drives resilience.

What the data makes undeniable is this: When the right capital backs the right agribusiness models, farmers become more resilient, financially, operationally, and climatically.

When those farmers become more resilient, they become a healthier, more reliable consumer base for agribusinesses, which in turn leads to more sustainable company growth and scale.

That's why Acumen is committing \$300 million to agricultural adaptation investing over the next five years. But we can't do it alone.

The call now is to all of us, investors, funders and entrepreneurs, to act on what we've learned, close the gaps we've uncovered, and scale the models that work. The resilience of smallholder farmers and the future of our food system depends on it.

Endnotes

¹ Roser, Max. Employment in Agriculture. Our World in Data. 2023.

² Food and Agriculture Organization of the United Nations. The impact of disasters on agriculture and food security. 2023.

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⁴ Naran, Baysa et al. Global Landscape of Climate Finance 2025. Climate Policy Initiative. 2025.

⁵ Chiriac, Daniela et al. The Climate Finance Gap for Small-Scale Agrifood Systems. Climate Policy Initiative. 2023.

⁶ The poverty line is country specific based on the World Bank poverty index.

⁷ This represents data collected by ARAF over a five-year period across nine portfolio companies.

⁸ The metric “emergency funds” assesses a household’s ability to mobilize an amount equivalent to a country defined benchmark for unexpected needs. For example, in Nigeria this is phrased as: “Imagine tomorrow that you have an unexpected emergency and need to come up with 51,300 Naira within the next month. What would be your primary option for coming up with the money?” The benchmark amount (e.g., 51,300 Naira) varies by country to reflect local income levels and cost-of-living standards.

⁹ This represents data collected by ARAF over five years and nine portfolio companies and Trellis over two years and two portfolio companies.

¹⁰ This represents data collected by ARAF over a five-year period across its portfolio companies.

¹¹ This represents data collected by ARAF over a five-year period across nine portfolio companies.

¹² This represents data collected by ARAF over a five-year period across nine portfolio companies.

¹³ The portfolio snapshot represents portfolio performance data from 14 ARAF companies and 12 Trellis companies as of December 2024.

¹⁴ Luft, Jack et al. Commodity-backed financing for agri-SMEs: Opportunities and challenges for scaling up commodity-backed working capital loans for agri-SMEs in Africa. Small Foundation. 2024.

¹⁵ Acumen. Drivers of Income report. 2025.

¹⁶ IRIS+ is a set of tools and guidance, developed by the Global Impact Investing Network (GIIN), for impact investors to measure, manage and optimize their impact.

¹⁷ Purchasing Power Parity helps to assess economic conditions and determine poverty lines.

¹⁸ ClimateShot Investor Coalition (CLIC) is an action-oriented group of investors working in agriculture and food systems.

Appendix A

Companies included in this analysis

Company	Description	Countries
Complete Farmer	Complete Farmer is an agri-tech company that has built a demand-driven platform that matches buyers with local farmers. The company offers farmers the knowledge and tools required to meet demand.	Ghana Togo
East Africa Fruits	East Africa Fruits sources and aggregates fresh horticultural produce from smallholder farmers. The company then transports, cleans, sorts, packages, and delivers the produce to different clients, including informal vendors, hotels, restaurants, and retail chains.	Kenya Tanzania
Farmerline	Farmerline is an agri-tech company that leverages its technology platform, called Mergdata, to provide smallholder farmers with access to training, farm inputs, and markets.	Ghana Cote d'Ivoire
FarmWorks	FarmWorks provides farmers with finance, inputs, training, and reliable access to markets. The company distributes fresh food domestically, with a portion of products sold to the export market.	Kenya
Hatch (Uzima Chicken, Flow Equity Africa Ventures)	Hatch is the parent company to Uzima Chicken and Flow Equity Africa Ventures. The model is a poultry business supplying fast-growing, highly productive, and highly resilient day-old chicks, feed, vaccines, and training to rural smallholder farmers.	Cote d'Ivoire Ethiopia Ghana Kenya Rwanda Uganda
SunCulture	SunCulture is a Kenya-based solar irrigation company that designs, assembles, finances, and services Internet of Things (IoT)-enabled solar energy systems and irrigation equipment.	Kenya Uganda

Company	Description	Countries
Tomato Jos	Tomato Jos is a vertically-integrated tomato processor that provides high-yielding seeds on credit, direct market access through offtake agreements, and training to farmers.	Nigeria
Kentaste	Kentaste purchases coconuts from farmers and creates products such as coconut oil, milk, and cream. The company harvests the coconuts, transports them to its processing facilities, and distributes the premium products.	Kenya Tanzania
CropSafe	CropSafe operates rural hubs equipped with industrial dehydrators that dry and preserve grains. The company also offers market access to smallholder farmers and reduces their post-harvest losses through its drying and preservation process.	Nigeria

Appendix B

Mapping ARAF's tool to other industry standards

Ability to adapt

Indicator	Matching IRIS+ or related metric ¹⁶	Code / Standard
Intercropping	Sustainable agriculture practices adopted	IRIS+: OI1124 (general fit)
Crop rotation	Sustainable land use practices	IRIS+: OI6912
Water management	Water conservation techniques used	IRIS+: PI2387 (proxy)
Use of organic material	Soil quality improvement practices	IRIS+: OI1124 (general fit)
Reduced or no tilling	Sustainable cultivated land area – Direct	IRIS+: OI6912
Top cover for soil	Soil conservation / erosion control methods	Aligned with SDG 2.4
Soil testing (y/n)	Use of soil testing	IRIS+: OI1047

Access to enablers

Indicator	Matching IRIS+ or related metric	Code / Standard
Credit	Clients receiving credit	IRIS+: PI5164
Wastage/storage	Post-harvest loss reduction	IRIS+: PI2990
Market	Clients with market access	IRIS+: PI8725 (or PI7851)
Advice for farm	Farmers receiving extension or advisory services	IRIS+: PI4581
Water source	Clients with access to improved water sources	IRIS+: PI2822
Improved seed	Clients using improved inputs (seed, fertilizer, tools)	IRIS+: PI4582

Ability to absorb

Indicator	Matching IRIS+ or related metric	Code / Standard
Inclusivity score	Client poverty assessment (using PPP) ¹⁷	IRIS+: PI3193
Reliance on farm income	Income source breakdown	IRIS+: OI8824
Likelihood of receiving warning	Early warning system access	SDG 13.1 proxy
Crop insurance	Clients with agricultural insurance	IRIS+: PI8700
Expected coping mechanisms	Household resilience strategies	Aligned with 60 Decibels / CLIC; ¹⁸ qualitative
Access to savings	Clients with access to savings mechanisms	IRIS+: PI9327

Appendix C

Correlation analysis between money earned, ability to adapt, and access to enablers

Source: Frankfurt School of Finance & Management

Labels	Enablers Score	Adapt Score	Absorb Score
Imp_CropOrLivestock_Money_Earned_ Tran_Increased	19.17%	21.5%	9.77%
Imp_CropOrLivestock_Money_Earned_ Tran_Blank	-16.04%	-19.56%	-12.38%
Imp_CropOrLivestock_Money_Earned_ Tran_Decreased	-0.24%	2.36%	-4.01%
Imp_CropOrLivestock_Money_Earned_ Tran_No Change	-10.87%	-11.51%	0.77%
Imp_CropOrLivestock_Money_Earned_ Increase_Reasons_mc-ms_v1_ENG - Selected Choi.1_Increase in volume sold	18.31%	17.24%	12.91%
Imp_CropOrLivestock_Money_Earned_ Increase_Reasons_mc-ms_v1_ENG - Selected Choi.1_	-19.17%	-21.54%	-9.75%
Imp_CropOrLivestock_Money_Earned_ Increase_Reasons_mc-ms_v1_ENG - Selected Choi.1_Increase in price	-1.69%	5.94%	-7.51%
Imp_CropOrLivestock_Money_Earned_ Increase_Reasons_mc-ms_v1_ENG - Selected Choi.1_Reduction in cost	0.63%	-2.72%	1.01%
Imp_CropOrLivestock_Money_Earned_ Increase_Reasons_mc-ms_v1_ENG - Selected Choi.2_	-9.58%	-13.67%	-4.97%
Imp_CropOrLivestock_Money_Earned_ Increase_Reasons_mc-ms_v1_ENG - Selected Choi.2_Increase in price	7.32%	18.11%	7.43%
Imp_CropOrLivestock_Money_Earned_ Increase_Reasons_mc-ms_v1_ENG - Selected Choi.2_Reduction in cost	4.97%	-3.79%	-2.22%



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