MERCY CORPS

MERCY CORPS' AGRICULTURE SYSTEMS APPROACH

Climate and Market Systems Resilience in Action

CONTEXT

We are living in a time of unprecedented change and uncertainty — a period posing great challenges and presenting incredible prospects. As our global population increases, the demand on agricultural systems intensifies. Despite the great strides made in agriculture over the last decades, the **global food crisis** has resulted in a rise in the global undernourished population to approximately 860 million – 345 million of whom are suffering from acute food insecurity[1] – and highlighted a significant lack of resilience in our agriculture systems.

Climate, environmental and weather-related shocks and stresses are resulting in changing rainfall patterns and more severe and unpredictable droughts and flooding, especially on degraded landscapes. Increasing climate variability, coupled with **weak macroeconomic conditions** post-COVID-19 and Russia's war in Ukraine have hampered producers' ability to grow and sell crops and livestock, disrupted agriculture markets and global supply chains, decreased related incomes and driven up the costs of feeding families. More people are moving to **urban areas,** shifting market demand towards meat, fresh fruits and vegetables and resulting in labor shortages in rural contexts.

Increasingly, **conflict and fragility** affect communities around the world. The World Bank estimates that, by 2030, up to two-thirds of the world's extreme poor could live in conflict-affected, violent or fragile settings.[2] Conflict disrupts agricultural production and trade, destroys infrastructure and displaces labor. Unemployed youth who lack economic opportunities face specific threats, such as migration or recruitment into armed groups, and are at greater risk of resorting to violence or other negative coping mechanisms.

Concurrent with these challenges, there are also opportunities for agricultural systems to adapt and change, and to capitalize on these shifting global dynamics.

Today's rising **youth demographic** – the leaders of tomorrow's economy – provide the chance to rethink and engage more technology-based solutions in agriculture. **Technology** is rapidly developing, creating opportunities to reach remote or marginalized populations, improve the operations of critical businesses and facilitate the exchange of timely information and transactions. There is an increasing shift towards the use of **climate-smart and regenerative agriculture** practices and a growing trend towards **circular economy** approaches and **reducing food waste** throughout the food system.

Photo credit: E. Millstein / Mercy Corps

› Mercy Corps works against this backdrop – helping communities in the world's toughest places emerge from crisis in the face of conflict and climate change, and build towards a more inclusive, resilient future.

1 Björn Rother, Sebastian Sosa, Lukas Kohler, Gaelle Pierre, and others. 2022. "Tackling the Global Food Crisis: Impact, Policy Response, and the Role of the IMF?" IMF Note 2022/004, International Monetary Fund, Washington, DC.

2 World Bank Fragility Forum https://www.worldbank.org/en/topic/fragilityconflictviolence/overview#1

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From the Middle East to Africa, Asia, the Americas and Europe, for most of the communities Mercy Corps supports, **agriculture systems**, including livestock, form the backbone of people's livelihoods, cultures and social structures. Small-scale producers in these communities experience firsthand the varied challenges and opportunities presented; they – and the market systems that serve them – have to continually adapt and seek innovative solutions to adjust as the contexts around them change. Mercy Corps' agriculture systems work aims to help communities cope, adapt and thrive today and into the future.

PATHWAY TO POSSIBILITY

Mercy Corps' agriculture systems work is a crucial part of its 10-year strategy, Pathway to Possibility. Pathway to Possibility reflects our ambitions to not only meet the basic needs of communities affected by conflict and climate change, but to achieve lasting, transformational change at scale. Critically, through a systems approach, we aim to help communities **cope** in the midst of crisis, **adapt** to climate and conflict threats and **thrive** today and into the future.

Through our programs, partnerships and influence, we work towards four connected and reinforcing outcomes that determine people's wellbeing: greater economic opportunity, increased food security, advanced peace and good governance and increased water security. Underpinning our work is a commitment to be climate smart, creative and innovative, evidence-driven, locally-led and safe, diverse and inclusive.

Our agriculture work is an important contributor to all four outcomes, especially to economic opportunities and food security. For example, supporting market-led climate mitigation and adaptation efforts in the agriculture sector (economic opportunities) and enabling households to access nutritious food year-round through crop and livelihood diversification (food security).

OUR APPROACH: CLIMATE RESILIENT AGRICULTURE SYSTEMS

To support agriculture and livestock producers,[3] their communities and the markets they rely upon to cope, adapt and thrive in the face of diverse and compounding shocks and stresses, Mercy Corps' agriculture systems approach aims to build sustainable climate resilience throughout the agricultural system.

At its core, our work focuses on three elements:

Improving the ecological foundation on which agriculture depends, creating more climate resilient, nutritious and income generating production systems

Stimulating agricultural market systems that drive resilient and inclusive benefits for small-scale producers

Harnessing climate-smart agri-tech solutions to increase productivity and efficiencies for producers and other market actors

> We focus on climate-smart solutions that drive climate resilient agriculture systems.

These three elements are mutually reinforcing. We leverage technological solutions that address barriers identified through our market systems approach, and, together, our market systems and climate-smart solutions drive improvements in the ecological foundation, enabling farmers to develop more resilient production systems.

We believe that:

IF producers build healthy soils, improve water management and increase biodiversity through integrated design;

IF agricultural market systems are inclusive of women, men and youth and support resilient agriculture; and

IF climate-smart technology is equitably accessible and utilized throughout the agricultural system to promote efficiencies;

THEN, agricultural systems are more climate resilient and male, female and youth producers are better able to cope, adapt and thrive in the face of climate, conflict and economic shocks and stresses.

Photo credit: E. Millstein / Mercy Corps

3 Throughout this document, we use the term 'producers' to represent agriculture and livestock producers, most of whom are smallholder farmers and herders.

INCLUSIVE, CLIMATE RESILIENT AGRICULTURAL SYSTEMS

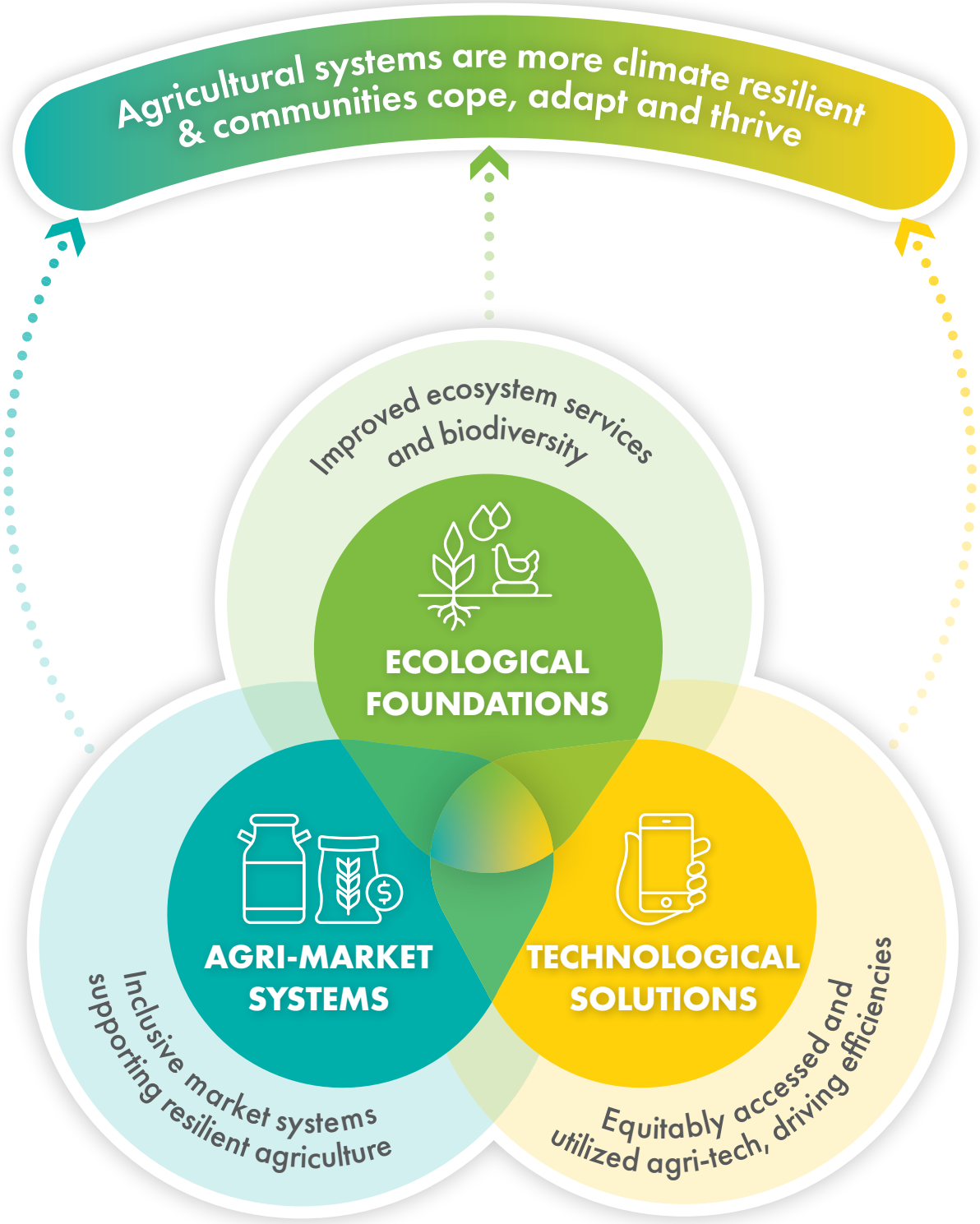

Photo credit: E. Millstein / Mercy Corps

BUILDING THE ECOLOGICAL FOUNDATION

Improving ecosystem services and biodiversity to support climate resilient production systems

WHY?

Harmful environmental and agricultural practices have culminated in a global climate emergency – a crisis that is most felt by the communities that have least contributed to it. Today, natural ecosystems have declined by 45%, soil degradation has reduced the productivity of 23% of the land on Earth, and biodiversity is declining faster than at any time in human history.[4] Conventional agriculture has provided economic returns in the short term but to the detriment of ecosystem services[5] – such as soil and water – on which sustainable agricultural production relies.

Compounded by a depleted resource base, weather- and climate-related shocks and stresses further exacerbate the effects of drought, floods, seasonal changes, pests and diseases. Climate-smart innovations are helping to counter these challenges, such as drought-resistant seeds, irrigation technologies and precision farming, but their lasting impact remains limited without prioritizing the health of the resource base at a global scale.

Building the ecological foundations – improving ecosystem services and increasing biodiversity – is essential for producers to cope, adapt and thrive in the face of climate change.

Biodiversity is the variety of all living things (e.g., animals, plants, fungi, and even microorganisms like bacteria) and their interactions.

Ecosystem services are the benefits provided by the ecosystem to humans, e.g., soil formation, water, pollination.

4 IPBES (2019): Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. S. Díaz, et al. IPBES secretariat, Bonn, Germany. 56 pages. https://doi.org/10.5281/zenodo.3553579

5 Ecosystem services benefits can be: supporting services (e.g., soil formation, nutrient cycling, primary production); provisioning services (e.g., food, fresh water, wood for fuel, fiber, genetic resources); regulating services (e.g., climate regulation, disease regulation, water purification, pollination); and cultural services (e.g., spiritual and religious, recreational and ecotourism-related, aesthetic, educational).

HOW?

We support farming communities to regenerate their land by building **healthy, living soils** to enhance productivity and reduce erosion; prioritizing **water management** to ensure water is banked into the healthy soils and available for productive uses; and enhancing **biodiversity** to improve pest/disease resistance, increase access to a diversity of nutritious foods and diversify income opportunities.

Mercy Corps' Resilience Design in Smallholder Farming Systems (RD) Approach is our primary practical method of regenerating agricultural lands. Guided by a set of principles, Mercy Corps supports land design processes that work with surrounding natural systems, integrating context-appropriate practices and technologies to improve soil health, water management and biodiversity, and produce diverse products to optimize market, income and nutritional opportunities. It can be scaled from the garden-level (termed permagarden), through to the landscape-level, depending on the need and context.

In crisis settings, our focus is on short-term nutrition and income returns while laying the foundations for longer-term resilience, such as developing permagardens and facilitating access to diverse seed sources. In more stable contexts, we support producers and other actors, such as producer groups and extension service providers, to design and develop the ecological foundations of their landscapes, monitor progress and iteratively adjust over time.

IN ACTION

Reducing soil erosion and increasing soil quality on hillsides in South Kivu, DRC

Producers in South Kivu, Democratic Republic of Congo (DRC) experience high levels of food insecurity and poverty, with low agricultural productivity and few off-farm income opportunities. The USAID Bureau for Humanitarian Assistance (BHA)-funded, Mercy Corps-led Food Security Project (FSP) worked with producers in South Kivu to strengthen agricultural productivity and food security using market-based approaches in a conflict-affected, shock-prone area.

One component of this multi-sectoral program focused on reducing soil erosion and combating low soil fertility on the hillside farmland nestled between Lake Kivu and Kahuzi Biega National Park. By coupling the RD approach with interventions related to land governance, land tenure and conflict mediation to create the Hill Approach (Approche Colline), FSP supported the rehabilitation and improvement of farmland on 18 hills between 2017 and 2022. Results include reduced soil erosion and increased soil quality on the hills; increased vegetation cover and biodiversity on the hill and improved micro-climate; increased yields; and improvements in land tenure security for tenant producers on the hills. Learn more here.

Sugarcane production for income and erosion control in Nepal

Mercy Corps' Managing Risk through Economic Development (MRED) program supported vulnerable households in smallholder farming communities to be more resilient to the adverse effects of climate change and natural disasters in Nepal and Timor-Leste. Through a resilience approach that integrated disaster risk reduction (DRR) and risk-sensitive livelihoods, MRED promoted the adoption of agricultural commodities that have economic growth and income-earning potential while supporting climate adaptation and disaster preparedness, such as sugarcane plantations along flood-prone riverbanks to provide erosion control.

The sugarcane intervention enabled communities to gain income diversity, increase productivity on barren lands and reduce erosion. As a result, MRED saw a 328% increase in average household revenue from sugarcane and, by the end of the program, 84% of households were confident in their ability to face future flood disasters (up from 58% at the beginning of the program.) Using satellite mapping, researchers found higher levels of riverbank vegetation in areas where MRED was working, indicating communities adopted sugarcane cultivation, and found less riverbank movement in years after MRED was active, compared to before.

Photo credit: E. Millstein / Mercy Corps

SUPPORTING AGRI-MARKET SYSTEMS

Facilitating inclusive market systems to support resilient agriculture

WHY?

Agriculture market systems include **interconnected and interdependent sets of actors** – such as producers, input suppliers, seed producers and multipliers, traders, agro dealers and consumers – supported by **market functions** including transportation, information services, financial services, storage and infrastructure, and **rules**, such as social norms, trade and agricultural regulations and standards. Shocks and stresses can impact and disrupt actors at all these levels, who may struggle to cope and recover, further disrupting market functions. However, even during prolonged crises, markets rarely collapse entirely;[6] people often find new economic outlets during crises and depend on their local markets and support systems, often more than humanitarian aid.[7,8]

Market-based programming targets essential market functions, businesses and institutions. If applied correctly, it can improve the capacity of markets to provide producers and households with critical benefits – such as seed, basic services and credit. Traditionally, however, market-based programming has focused mainly on conventional agriculture and select value chains, and missed opportunities to incentivize climate-smart approaches that enhance the agricultural resource base. With the climate crisis and fragmentation of global trade and supply linkages, it is clear that conventional agriculture systems approaches are no longer resilient to the multitude of economic and environmental shocks and stresses they face; more local supply chains and diverse markets are needed, building climate resilience and providing an opportunity for marginalized producers to fully participate in their local formal and informal economies.

6 Alison Hemberger, Sasha Muench, and Dave Algoso, Beyond Cash: Making Markets Work in Crisis (Portland, OR: Mercy Corps, 2018). https://www.mercycorps.org/sites/default/files/2019-11/CashMarketsMercyCorpsApril2018_0.pdf

7 Megret, Frederic. (2009) Beyond the "Salvation" Paradigm: Responsibility to Protect (Others) vs. the Power of Protecting Oneself. Security Dialogue 40 (6): 575–595. (Jose and Medie 2015; Baines and Paddon 2012; Megret 2009).

8 Howe, K., Krystalli, R., Krishnan, V., Kurtz, J., & Macaranas, R. (2018). The Wages of War: Learning from how Syrians have adapted their livelihoods through seven years of conflict. Washington, DC: Mercy Corps.

HOW?

From our seed system responses in emergencies to our longer-term development programming, we apply market-based and market systems approaches, even in crisis-affected areas. Our approach hinges on conducting robust and iterative agriculture market system analyses – which include environmental and nutritional elements – to identify key bottlenecks and leverage points, and on developing mutually beneficial partnerships with a diverse range of public and private sector partners. Our approach is adaptive. We focus on long run sustainability and scale by responding to local actors' incentives and supporting their roles in markets rather than delivering goods and services ourselves. We also pivot in the face of shocks, providing stronger support to sustain (and not undermine) the long run market networks small-scale producers rely on most to cope, adapt and thrive.

We start by understanding the role of small-scale producers within market systems, then we learn about the incentives of other market actors before designing interventions that address underlying causes of market dysfunction and support systemic change. We work to remove the constraints that impede small-scale producers from benefiting from markets, whether facilitating access to finance, identifying untapped operating models that improve rural access or linking market actors to share knowledge and solve business problems affecting small-scale producers.

We also bring climate resilience into the core of our market system activities. We facilitate improvements in the regulatory environment with a specific focus on promoting agricultural trade, equitable access to markets and jobs, financial services, technology and protection of the environment – helping communities and businesses alike become climate resilient. We support market actors whose operating models incentivize the protection, restoration and regeneration of ecosystems and foster opportunities for sustainable economic growth that shift incentives towards climate-smart solutions. We work with actors such as processors and transporters to be more climate-smart in their operations, for example by increasing energy efficiency and saving water, and reducing food loss through cold chain opportunities.

With facilitation rather than direct implementation at its core, our market-based activities address constraints that exclude the most marginalized from benefiting from their economies and drive climate resilient solutions, more sustainably and at scale.

IN ACTION

Facilitating improved access to climate-adapted seeds in Northeast Nigeria

Mercy Corps leads the Feed the Future Rural Resilience Activity (RRA) in Northeast Nigeria, a five-year (2019-2024), US$49 million program funded by USAID to facilitate economic recovery and growth in vulnerable, conflict-affected areas by promoting systemic change in market systems. To address the market constraints in Northeast Nigeria, RRA facilitates farmers' access to agricultural inputs such as high-quality certified seeds, organic and inorganic fertilizers and innovative farm mechanization. RRA bridges the information and connectivity gaps among market actors through identifying and incentivizing key market players, including agro-inputs companies, community-based seed producers and input suppliers, and linking them to prospective buyers (farmers) whose capacities are built through private sector-led interventions. As part of these activities, RRA has onboarded 215 new seed entrepreneurs in the Northeast, resulting in approximately 3291 MT of seed offtaken by seed companies, and hosted 11 market linkage events and agricultural input fairs, increasing access to quality agricultural inputs and generating sales of NGN 46,756,600 (approximately USD 336,000) in six months. Learn more here.

Livestock and honey market systems development in Georgia

Since 2008, Mercy Corps has implemented a series of Swiss Agency for Development and Cooperation (SDC)-funded MSD programs aiming to facilitate interventions in the livestock and honey market systems in Georgia, Armenia and Azerbaijan. Since 2014, the programs have been dubbed the Alliances Caucus Programmes (ALCP), which have worked to safeguard ongoing sustainable growth and promote new growth in these systems, including ensuring access for small and medium enterprises (SMEs) and livestock and honey producers to cross-border and access other export markets. ACLP 1 focused on entrepreneurialism and job creation, especially for women; access to finance and financial literacy required for SMEs and start-ups; and stabilizing access to quality inputs to increase productivity and reliable output markets. ACLP 2 will work in the rural product core market system and with associated supporting functions and rules. Its purpose is to increase incomes and improve livelihoods through better, sustainable productivity, resilient market access, local employment opportunities and more equitable inclusion in local natural resource use. Learn more here.

Photo credit: J. Mulwa / Mercy Corps

LEVERAGING TECHNOLOGY

Co-developing agri-tech solutions to drive innovation and change

WHY?

Technology offers a huge opportunity to elevate climate-smart solutions, from production through to processing, packaging and transportation. It offers ways to reach remote or marginalized populations, improve the operations of agri-businesses, reduce waste, energy and other inefficiencies in agri-food systems and facilitate the exchange of timely agricultural information and transactions.

At the same time, technology has the potential to drive an imbalance between those that have access and those that do not. The digital divide between women and men continues to persist; for example, around 90 percent of adolescent girls and young women do not use the internet in low-income countries, while their male peers are twice as likely to be online.[9] However, almost three-quarters of the global population aged 10 and over now own a mobile phone and youth aged 15-24 years are the driving force of connectivity, with 75 per cent of young people worldwide now able to use the Internet.[10]

This connectivity presents an enormous opportunity to engage the growing youth demographic in tech-enabled agriculture.

Agri-tech opportunities such as precision farming, food traceability, solar processing and automated irrigation are increasingly accessible and cost-effective; the challenge is to ensure equitable access for marginalized populations. Technology, if inclusive and harnessed correctly, provides an opportunity to drive climate-smart innovation at scale, unlocking opportunities for producers and market actors to build their resilience.

Agri-tech is the use of technology and digital tools in agriculture with the aim of improving yield, efficiency and profitability.

9 UNICEF, 2023. Bridging the Gender Digital Divide: Challenges and an Urgent Call for Action for Equitable Digital Skills Development. https://data.unicef.org/resources/ictgenderdivide

10 International Telecommunication Union. Measuring digital development: Facts and Figures 2022. https://www.itu.int/en/ITU-D/Statistics/Pages/facts/default.aspx

HOW?

We harness the power of technology to increase the access to, and efficiency and timeliness of, critical services and information that enables real-time decision-making on issues that impact agriculture market actors' lives and livelihoods. We utilize context-appropriate technology solutions in our programming to increase efficiencies, conserve and improve natural resources and, ultimately, to build producers' climate resilience.

To design appropriate solutions, we partner with technology companies, financial institutions and other non-traditional partners to test, adapt, and scale the most promising tech-enabled solutions and cutting-edge technologies. From cold storage technology to digital agricultural services, we employ user-centered design processes to ensure solutions are relevant and appropriate for our participants and partners.

IN ACTION

An integrated mobile-based platform for digital services tailored for producers

Since 2012, Mercy Corps AgriFin has been working to address the inclusion gap for producers who lack access to affordable, accessible, demand-driven financial products and services that drive higher productivity and income for their households. Over the last decade, Mercy Corps AgriFin has reached more than 8 million producers through its regular programming and has the potential to generate 1 million meaningful jobs for youth by 2025 in Kenya alone. The largest AgriFin program to-date, AgriFin Accelerate (AFA), was funded by Mastercard Foundation and ran from 2015-2021. AFA registered 2.3 million producers onto DigiFarm, which is Safaricom's integrated mobile-based platform for digital services tailored for producers. DigiFarm's platform model opens up the marketplace for producers to access products and services from financial institutions, agri-input providers, and other value-added service firms, enabling producers to easily source, transact, learn and grow. The program reached 828,000 women and 1 million male producers through digital services developed through the program across Kenya, Tanzania and Zambia. Learn more about AgriFin here.

Applying a market systems development approach to water saving technologies

The Water Innovation Technologies (WIT) program was one of the first large-scale applications of the MSD approach to water conservation, and the first one of its kind in Jordan. WIT's main objective was to save water through the sustainable adoption of water-saving technologies (WSTs) and practices by producers and households. Through the use of WSTs, the program led to total savings of 28 million cubic meters (MCM) of water in the agricultural sector and at community and household levels. These savings exceeded the original target of 18.5 MCM by 51% and are equivalent to 11,000 Olympic-sized pools.

Agriculture water savings amounted to 24 MCM, which represent almost 10% of all the underground water consumed by the agriculture sector in 2017. Through their market systems interventions, the program achieved these results at extremely low costs per MCM, compared to more direct approaches. Furthermore, the rate of return for producers who invested in WSTs and approaches was approximately 450%.

App to help pastoralists make informed migration decisions in Ethiopia

Through a USAID-funded Resilience in Pastoralist Areas (RiPA-North) program in the Afar and Somali regions of Ethiopia, we are expanding the AfriScout digital app and integrating it into our disaster risk reduction and livestock markets activities. The AfriScout App helps pastoralists to locate water and pasture resources available within their traditional grazing areas. It includes feedback systems so herders can verify the quantity and quality of pastures and water or add pin drops where there may be issues with wildlife and human conflict or other important occurrences. Initial evidence from AfriScout pilot activities point to increased livestock production, namely year-round consistency of livestock body condition and reduced morbidity and mortality.

RESEARCH & PARTNERSHIPS

Our central clients and partners are producers themselves - their knowledge and aspirations drive our work. We believe that those impacted by the world's most complex challenges are best placed to determine their solutions, and that those solutions are fundamentally stronger and more sustainable as a result. We recognize that program partners and participants are agents of change and should drive the decisions that matter most in their lives.

In support of producers, we partner with a broad range of private, government and civil society actors to foster an inclusive enabling environment in which male, female and youth producers can access the goods and services they want and need to strengthen their climate resilience. We also partner with research institutions and knowledge networks to ensure we apply global best practices in our programming and continue to innovate in our programs. These partners include the Consultative Group on International Agricultural Research (CGIAR) such as the International Potato Centre (CIP) and International Livestock Research Institute (ILRI), and both local and international Universities.

Through a suite of global and regional programs that specifically focus on learning and sharing, we conduct pilot research projects, document and share lessons learned with global practitioners. These include the Foreign, Commonwealth & Development Office (FCDO)-funded Supporting Pastoralism and Agriculture in Recurrent and Protracted Crises (SPARC) activity; the USAID/BHA-funded Strengthening Capacity in Agriculture, Livelihoods, and Environment (SCALE) Award; and the SDC-funded Integrated Seed Sector Development in Africa (ISSD Africa) program.

Join us at
http://www.mercycorps.org/what-we-do/agriculture

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About Mercy Corps
Mercy Corps is a leading global organization powered by the belief that a better world is possible. In disaster, in hardship, in more than 40 countries around the world, we partner to put bold solutions into action — helping people triumph over adversity and build stronger communities from within. Now, and for the future.