

# STORIES OF CHANGE

## Agroecology as a Climate Adaptation Approach







## Embracing agroecology to promote community resilience to climate change

The impact of the climate crisis is profound and far-reaching, affecting us all in various ways. However, for local African communities, the consequences are devastating and life-altering. The foundations of agriculture and food systems on which they rely are undermined. The stories here emphasise the realisation that Climate Change is recognised as one of the major economic, environmental and social challenges of our times. 85% of Africans depend on the natural environment to meet their basic human needs.

Agricultural production, supply chains, and labour productivity in climate-sensitive sectors are all impacted by climate change, leading to volatile food prices and diminished incomes. Over the last decade, a decrease in agriculture production due to climate change has been recorded, up to 50%. Extreme weather wreaks havoc on crops and livestock while disrupting the delicate water cycle yet agriculture is the biggest land-based economic sector for the majority of countries in Africa, The sector employs about 59% of the continent's workforce, mostly women.

Scientific projections indicate that if current trends persist, the situation in Africa will only worsen. Essential questions arise, demanding our attention: Can our soil meet sustenance and animal feed demands? Will we be able to produce enough food to fulfil our nutritional needs? Will our forests survive to provide crucial weather protection? Can our water resources sustain the requirements of our people, animals, and plants? Beyond the cold calculations of measurements, indicators, and lofty aspirations, these questions demand our focus and action.

African people's lives and well-being lie at the heart of this storm. The critical question is whether they are perceived as the central problem or the key to the solution. Presently, the majority of solutions proposed and funded by governments and donors, though seemingly well-intentioned, often exacerbate the long-term challenges. Under the guise of industrial agricultural methods encouraging excessive use of chemical inputs on plants and soil, which only perpetuates the problem.

AFSA strongly proposes and advocates for agroecology as a sustainable adaptation and mitigation solution to the climate crisis in Africa. Agroecology is driven by food producers to maintain power over their local food systems, protect their livelihoods and communities, and defend every African's right to nutritious and diverse food. Farmers, pastoralists, fisher folks, indigenous peoples and local communities use agroecology to steward their land sustainably, produce nourishing food that celebrates cultural heritage, and strengthen local markets and economies.

To connect with people and change minds, we must HUMANISE agroecology. The core message must be evidenced through storytelling and case studies that describe how agroecology benefits food producers, consumers, youth and women. This publication showcases a collection of case stories that provide compelling evidence for Agroecology as a community-led, sustainable adaptation solution to the climate crisis in Africa.

**Karen Nekesa Samukoya,**  
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## CASE STORY 1

# AGROECOLOGY TRANSFORMING DRYLAND FARMING AS CLIMATE CHANGE ADAPTATION

The The Farmer and Pastoralists Collaboration Project is located in the Mvomero, Kilosa, Same, and Hanang District Councils of Tanzania. It started in 2017 and is still ongoing. The Biovision Foundation and the Central and Local Government Authorities are involved in the project. The beneficiaries are farmers and pastoralist communities, with 3,536 direct beneficiaries. The project has achieved significant outcomes, including improved household food security and nutrition, reduced conflicts, increased income, the adoption of agroecological technologies, the establishment of pastures, and enhanced ecosystem services through tree planting.

## The climate crisis and strategies for adaptation



*Mama Mercy Meena in her diversified, integrated Agroecological farm in Mvomero District, Morogoro*

Climate change has severely affected sub-Saharan Africa, causing negative impacts on livelihoods and food systems, posing a significant threat to food security and nutrition. Despite its extensive land resources of 94.5 million hectares in Tanzania, with 44 million hectares suitable for agriculture, conflicts between farmers and pastoralists persist. Dryland areas in Africa face unsustainable and competing food systems, exacerbating pressure on natural resources and communities. Factors contributing to this issue include climate change, population growth, limited knowledge of agroecological farming and livestock production, inadequate land use planning, increased land pressure, lack of income diversification, limited access to financial services, underdeveloped value chains, and inadequate water availability for domestic and economic use. The consequences include land degradation, higher production costs, low income, land conflicts, injuries and fatalities, migration, and reduced food security.

To address these challenges, agroecology offers a promising solution by harnessing agricultural systems' mitigation and adaptation potential to climate change while enhancing resilience. Agroecology takes a holistic approach, harmonising agriculture and local communities with natural processes to benefit both nature and livelihoods. It considers ecosystem elements like soil properties and plant-insect interactions, integrating social sciences to understand farming practices' impact on rural communities, economic constraints, and cultural factors.

This initiative emerged in response to climate change's severe impacts on a sub-Saharan African rural community, experiencing erratic rainfall patterns, prolonged droughts, and extreme temperatures, devastating livelihoods and food systems. The local agriculture-based economy suffered significantly, leading to decreased yields and heightened food insecurity.

## Our approach

The Farmer and Pastoralists Collaboration Project (FPC) implemented by Sustainable Agriculture Tanzania (SAT) provides farmers with training on adopting agroecology practices in their farming activities. The FPC project focuses on educating farmers about various techniques, such as soil and water conservation, agroforestry, crop rotation, cover cropping, intercropping, and integrating livestock into crop production systems.

## What we have achieved

The project has led to significant improvements in household food security and nutrition, with 80% of the participants now having an average of three meals per day. Additionally, households are able to maintain food security for an average of 8 months through self-produced food. Conflict in the area has notably decreased, as reported by over 65% of farmers who did not experience any conflicts in the past year. Furthermore, there has been an average increase of 15% in income.

The adoption of agroecological technologies in the farming system has shown positive results. Farmers have increased the use of farm residues and animal droppings, leading to enhanced crop health, reduced pesticide usage, and

improved soil biology. Around 63% of farmers are now applying botanical extracts for pest and disease control, resulting in reduced reliance on chemicals and preservation of biodiversity at the farm level. Moreover, farmers have become more aware of the importance of avoiding slashing and burning practices.

The project has achieved significant progress in pasture establishment, covering 283.75% more land. Farmers actively engage in pasture production and conservation, and the value of crop residues as animal feed has increased at the community level, indicating improved awareness and adoption of climate-resilient measures. Additionally, there has been an increased awareness among farmers regarding ecosystem services, leading to a higher rate of tree planting. In fact, farmers have exceeded the targeted number of trees by 218%, contributing to enhanced biodiversity conservation, improved crop health and soil biology, reduced chemical inputs, and increased climate resilience.

**Farmers have increased the use of farm residues and animal droppings, leading to enhanced crop health, reduced pesticide usage, and improved soil biology.**



*Part of a recently established farm with bananas, trees, and maize intercropped with beans*

# How we are enabling the community to adapt to the effects of climate change

Farmers and pastoralists have successfully adopted various approaches to cultivating maize in dryland areas. Techniques such as mulching, residue incorporation on the farm, half-moons, and Vianzi pits are employed to preserve soil moisture. Measures like cover cropping, reduced tillage, fanya juu (Dig up), fanya chini (Dig down), and mulching are used to control erosion and prevent future plant growth in eroded areas. These practices play a crucial role in conserving soil moisture and minimising erosion, vital for crop survival in regions experiencing unpredictable rainfall patterns. Farmers also prioritise crop health by employing methods like crop rotation, intercropping, and integrating livestock, which contribute to overall farm health and diversity while managing pests and diseases.

As human activities continue to exert pressure on natural forests, agroforestry emerges as a sustainable solution to

counter the negative effects of diminishing forest lands. By implementing these techniques, farmers and pastoralists can adapt to the changing climate, ensuring continued food production and sustaining their livelihoods despite increased weather variability and extreme events.

**As human activities continue to exert pressure on natural forests, agroforestry emerges as a sustainable solution to counter the negative effects of diminishing forest lands.**



## Success Factors

Farmers have successfully adapted to the changing climate by implementing agricultural diversity, including cultivating an average of three crops per rainfed field. This diversification serves as a buffer against crop failures caused by unpredictable rainfall patterns. Additionally, reducing slash-and-burn practices plays a vital role in conserving soil and preventing erosion, which can exacerbate the impacts of drought.

*I struggled a lot with crop failure due to erratic rainfall and soil degradation caused by unsustainable farming practices. But since I started using soil water conservation techniques, intercropping, crop rotation, and agroforestry systems, I have seen a significant improvement in my yields even in dry seasons. These techniques helped me adapt to the changing climate and improved my livelihood. I am grateful for these practices and would encourage other farmers to adopt them.*

**James Vumilia**

The adoption of agroecological practices by dryland farmers, such as increased land under agroecological production, successful tree planting efforts, and improved sales of vegetables, cereals, and pulses, contributes to a more resilient farming system. These practices, including reduced tillage and agroforestry, help retain soil moisture and enhance soil health, enabling better crop yields even during drought periods. Cultivating diverse crops not only ensures a variety of food sources but also provides multiple income streams, reducing farmers' vulnerability to crop failure.

**The adoption of agroecological practices by dryland farmers, such as increased land under agroecological production, successful tree planting efforts, and improved sales of vegetables, cereals, and pulses, contributes to a more resilient farming system.**

## Challenges

Although the project has achieved significant success factors, farmers and pastoralists still face challenges, particularly in adapting to the impacts of climate change. One major obstacle is the unreliability of rainfall, with recorded precipitation levels (410.6 mm) and average temperatures (25.7°C) being lower in the first half of 2023 compared to the past two years. This shift in precipitation patterns is disrupting the crop calendar and leading to losses, including poor germination of pasture seeds due to drought spells.

## Conclusions and recommendations



For the continued sustainability and scalability of these practices, the government and other stakeholders must prioritise certain key areas. Firstly, investment in research and development, extension services, and infrastructure is necessary to facilitate the widespread adoption of

agroecological practices. Secondly, policies should be developed to promote sustainable land use practices, conserve natural resources, and protect biodiversity. Additionally, improving access to finance and markets will support the growth of the agroecology sector and encourage the adoption of sustainable practices. Finally, integrating climate change adaptation into national and local development plans is essential, ensuring that policies and investments align with sustainable development objectives. The transition towards a more sustainable and resilient agricultural system can be achieved by addressing these aspects.

*I never thought it was possible to fight against the impact of climate change and still make a living from farming. But now I know it is possible, and I am living proof of that. I am so grateful for the knowledge and support I received from the project, and I hope more farmers can benefit from it too.*

**Mercy Meena**

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## CASE STORY 2

# CREATING BIOLOCAL SEEDS TO GROW RESILIENT COMMUNITIES

The Association Togolaise pour le Togo Développement de l’Agriculture Durable (ATODAD), based in Togo, has achieved the creation of Local Solidarity Partnerships (LSPs) that have brought together 201 farmer-multipliers, over 2,700 agricultural production actors, 9 food processing actors, and more than 9,300 clients and consumers of organic agricultural and food products.

This initiative provides efficient biolocal seeds that are adapted to climatic realities and preserve biological integrity.

## The bio-local seed project

The bio-local seed project, launched in January 2017, aims to improve agricultural product quality via efficient bio-local seeds for diverse climates. The project encourages good practices such as agroforestry, crop rotation, and natural pesticides for resilience to weather and economic changes.

By improving product quality, the project can benefit farmers, aggregators, food processors, and consumer communities. For farmers, higher-quality crops can lead to higher prices, increased demand, and greater economic stability for their families and communities. Aggregators can negotiate higher prices and secure long-term contracts with food processors, while food processors can improve the taste, appearance, and nutritional value of their products. Consumer communities can have access to healthier and more nutritious food products, potentially addressing the issue of food insecurity and malnutrition.

### Problems faced by farmers

In Togo, we are known in the global organic market for our organic and ecological farms, yet we have faced some serious problems (which we are addressing):

- Farmers who grow organic crops are highly vulnerable to extreme weather and economic challenges.
- The seeds they use are often not well-suited to the local climate, leading to decreased productivity.
- Farmers don’t have enough knowledge about good farming practices, which results in lower yields for certified organic farms.
- A major problem is that there’s a shortage of organic supplies, especially certified organic seeds, which goes against the standards set for organic production.

## Creating local seeds

The concept of biolocal seeds refers to seeds that are created and adapted to specific local environments through the collaborative effort of various organisations in the organic and ecological value chains.

By creating seeds that are well-suited to the local environment, **Local Solidarity Partnerships (LSPs)** can help farmers grow crops that are better adapted to the specific climate, soil conditions, and pests of the region. This can result in improved crop quality, increased yields, and more efficient use of resources, such as water and fertiliser. The use of biolocal seeds also reduces the dependence on external inputs, such as pesticides and fertilisers, which can be costly and harmful to the environment.

The goal of LSPs and biolocal seeds is to create self-sufficient and resilient food systems that benefit everyone involved, from farmers and producers to consumers and the wider community. By working together to create sustainable and locally adapted seeds, LSPs can help to build a more equitable and sustainable future for all.

## Our intervention

We form LSPs among those involved in growing organic food, fostering collaboration and strong connections from seed to plate. Throughout the project, we use a participatory, community-based model promoting partnership, solidarity, relocation, and sharing, working together with all stakeholders regardless of sex, gender, ethnicity or religion.

Once the actors involved in the development of the organic commodity chains, specifically soybean, groundnut, and sesame, have been identified, the process begins with the validation of the land plots to be utilised based on their isolation in time (previous crops) and space (neighbouring plots). This is followed by the establishment of contractual commitments that outline the technical requirements specified by the ATODAD community.

## Ensuring good production practices: conformity assessments and learning exchanges

Autonomous cooperative units organise the stakeholders, such as seed growers, producers, processors, and consumers. Meanwhile, ATODAD, our PLS organisation, has an organic-local certification committee that is composed of eleven members. This inclusive committee coordinates and organises visits for conformity assessments and learning exchanges of good production practices at the multiplication unit level, which includes the producer and their plots. The committee works in collaboration with the ATODAD executive team.

A group of at least three representatives conduct visits to survey land and gather data using evaluation forms, which are submitted to the certification committee. The committee aims to conduct a minimum of three visits annually, analysing the data transparently to determine if the local organic label, ATODAD, should be awarded. Producers who don't comply with regulations may face penalties, ranging from warnings to exclusion for up to three years due to chemical contamination risks.

The operational manual outlines compliance criteria and corresponding sanctions, differentiating between minor and major non-conformities. These operations promote optimal productivity and benefit stakeholder communities by preserving biological integrity during seed conditioning.



*Training sessions for farmer multiplier groups in Bangeli*

## Participants on the programme

ATODAD's LSPs unite diverse participants, including 200 farmer-multipliers, 2,700+ in agricultural production, 9 food processors, and 9,300+ clients preferring organic products. We are able to provide access to bio-local seeds suitable for Togo's climate without harming the environment. This strengthens the resilience of Togo's organic sector, enabling individuals to better withstand climate and economic challenges.

## The results and effects of our programme

Our programme provides bio-local seeds that resist pests and climate hazards, increasing resilience to climate hazards. Benefits include improved agricultural productivity, seed autonomy for 12,000+ producers, and 40% better competitiveness of organic agriculture. Our initiative conserves agricultural biodiversity via PLS seeds and a seed marketing system, promoting self-reliance, food security, and food safety for 15,000+ beneficiaries.

## Adapting to the effects of climate change

Irregular rainfall and dry spells cause water stress for our organic crops, reducing growth and productivity. Seed varieties used are unsuitable for the current climate and are often recycled, making them vulnerable to climate-related stresses. These challenges harm our organic production's competitiveness and productivity.

To tackle these problems, we propose an initiative that combines productive performance, climate change adaptation, and biological integrity. It promotes the use of biolocal seeds for sustainable food systems.

## Success factors and challenges

Organic farming in Togo has made progress with over 300,000 kg of locally sourced organic seeds captured through the PLS initiative since 2012. The initiative adheres to ATODAD community standards and has support from stakeholders. However, more education and training are needed for rural and urban communities to enhance growth. A lack of financial partners hampers production capacity and efficient seed collection.



Production equipment and storage infrastructure are also required to expand farming plots and safely store bio-local seeds. Institutionalising the PLS ATODAD initiative is a significant challenge due to informal operations under current seed legislation. Efforts are underway to obtain formal NGO recognition for the ATODAD association.

**This is what some individuals said, who participated in our initiative and experienced positive changes in their lives:**

**“Since 2017, we have distributed 424,000 kg of soybean seeds, 31,300 kg of groundnut seeds, and 5,180 kg of sesame seeds in the local and national seed markets, ensuring their organic integrity while keeping costs low. These seeds are well-suited to local climatic conditions, and their use has led to increased productivity in certified organic farms.”**

– ISMAILA Yaouza, Sales Manager, TROPI-TECHNO in Sarl (Sokodé, Togo) –

**“Our group produces organic soybean seeds that are cheaper and give more crops to our brothers and sisters who sow this in their organic soybean fields!”**

– MAKOUYA Kossiwa, Farmer-multiplier of bio-local seed in Bangéli (Bassar, TOGO) –

**“The seeds that we have been sowing since 2020 are very resistant because we produce them here and use them here at the same time, which is cheaper and with more advantages than the seeds that we buy far away.”**

– TCHEIN Kodjo, President of the TIPOUNE Cooperative in Kabou (Bassar, TOGO) –

**“By planting organic seeds, my organic soybean field yielded 12 bags this year despite the rainfall ceasing in July.”**

– Nakoudja Bilabnanti, Organic Soybean Farmer in Tagnamboul (DANKPEN, TOGO) –

## Conclusions

We are creating a farmer seed system that can be replicated globally to address biological diversity confiscation by the formal seed system, ensuring autonomy, security, and food safety while promoting sustainable and resilient food systems in Africa and beyond. We seek national recognition for our farmers' seed systems. Togo's organic sector growth since 2012 has opened market opportunities for high-performance organic seeds suitable for local climate. Our GSP initiative is supported by all parties, using PLS ATODAD community specs for developing bio-local seeds based on organic and ecological principles.

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**CASE STORY 3**

**FOOD FORESTS FOR CLIMATE RESILIENCE BUILDING**

Farming communities in Western Kenya are embracing food forest gardening in an effort to strengthen local food systems and avert the effects of climate crisis. Champion farmers working in partnership with Bio Gardening Innovations (BIOGI), a local NGO, are at the frontline.

**Shifting weather patterns**

The Vihiga county and its neighboring Kakamega are located in western Kenya, bordering Uganda to the west. The regions are characterised by rolling hills and valleys, with fertile soils that support agriculture, including the production of sugarcane, maize, and tea.

Although the area receives up to 2000mm of rainfall annually, with the peak season in April and short rains in September, government advisory services at both national and county levels still prioritise policies that rely on industrial inputs and a limited range of food sources. In recent years, weather patterns have been shifting, resulting in heavy downpours during the short season (subwe) between August and December. Additionally, the onset periods of the seasons have been fluctuating, with the main season (mwika) being delayed until April.

The regions primarily rely on smallholder farming for their livelihoods, where farmers typically work on small, inherited

land parcels that are often fragmented. Due to continuous cropping with a limited range of staple foods, such as maize and beans, the soil is put under immense pressure, leading to soil infertility and reduced productivity. These regions are characterised by high levels of poverty, deforestation, and soil degradation, which have led to declining agricultural productivity and increasing food insecurity.

Kenya's permaculture learning project began five years ago and is currently ongoing. The project involves several organisations and actors, including Wisconsin University, BIOGI, Laikipia Permaculture Centre, and Drylands Natural Resource Initiatives. The beneficiaries of this project are smallholder farmers and community groups, which consist of 120 households and 700 individuals from BIOGI's focal areas of Kakamega and Vihiga.

## BIOGI steps up to support local communities

In response to these challenges, a local NGO named Bio Gardening Innovations (BIOGI) collaborated with others to promote agroecology through permaculture education. Agroecology presented itself as a viable solution to address various issues such as climate change adaptation, diversification of food sources, and sustainability. The objective was to develop good practices that focus on agroecology through permaculture methods, which can offer sustainable and diversified food sources while preserving local knowledge and resources.

Despite the availability of local knowledge on food varieties and integration, communities face risks associated with relying solely on a few staples, such as maize, and imported foods. Furthermore, official extension services at national and county levels promote industrial production models that rely on external synthetic inputs and narrow food focus, making local populations more vulnerable to food insecurity amidst changing weather patterns.

## Ecosite Learning Hubs

BIOGI set up such learning spaces as ecosites in partnership with champion farmers from focal villages of Kwisero sub-county in Kakamega and Emuhaya and Luanda in Vihiga.

The collaboration involved yearly training sessions facilitated by two professors from the University of Wisconsin, as well as two Kenyan organisations, namely Laikipia Permaculture Centre (LPC) and Dry Lands Natural Resources Centre (DNRC). Permaculture is a methodology grounded in ecological principles and techniques for designing landscapes that promote functional connectivity. For example, a fruit tree like pawpaw can be planted not just for its fruit, but also for its medicinal properties in an area where most of the water is collected for other crops.

The Vihiga/Kakamega regions of Kenya are well-suited for the development of food forests due to their high rainfall and fertile soils. Food forests can be established on degraded lands, steep slopes, or even in urban areas, making them a versatile solution for addressing food insecurity and environmental degradation. Food forests have therefore become a popular strategy for promoting sustainable agriculture, enhancing food security, and restoring degraded land.

**Food forests can be established on degraded lands, steep slopes, or even in urban areas, making them a versatile solution for addressing food insecurity and environmental degradation.**

Food forests, also known as edible forest gardens, are agroforestry systems that mimic the structure and function of natural ecosystems while also producing food. These systems incorporate a variety of perennial crops, including trees, shrubs, vines, and groundcovers that are carefully chosen for their compatibility and ability to provide a range of ecosystem services, such as soil improvement, nutrient cycling, water retention, and habitat for wildlife.

The organisation has established learning hubs, such as ecosites, in conjunction with champion farmers from key villages in Kwisero sub-county in Kakamega, as well as Emuhaya and Luanda in Vihiga.



*Oyamos with bee hives*

## Food Forests, our ecosites, our classrooms

The food forest ecosites in Vihiga/Kakamega are typically composed of multiple layers of vegetation, including canopy trees, understory trees, shrubs, and groundcovers. Each layer provides different functions and benefits, such as shade, nutrient cycling, and erosion control.

The ecosites have transformed into valuable learning environments, with eight model food forest gardens established, to showcase a variety of fruits and crops including arrowroot, passion fruits, pawpaw, bananas, avocados, mangoes, guavas, and coffee. There are also indigenous climbers such as maruku [*Dioscorea alba*] and mkombera [*Mondia whitei*]. These food forests also provide habitat for a wide range of wildlife, including birds, insects, and mammals, creating the diversity needed to promote sustainable forests.

The project has been instrumental in helping individuals and communities adapt to the impacts of climate change by demonstrating how extreme weather changes, such as droughts and excess rains, can be absorbed. Landowners are able to earn alternative food sources, including fodder

materials and firewood, which can be exchanged and shared during times of greater need.

The practical lessons learned through these changes have provided first-hand experience for local communities, who have also interacted in horizontal farmer-to-farmer relations. Overall, the food forest gardens have become valuable learning tools for the local communities and numerous development agencies.

**The project has been instrumental in helping individuals and communities adapt to the impacts of climate change by demonstrating how extreme weather changes, such as droughts and excess rains, can be absorbed.**

## Looking to the future



*Felectus with her pawpaws (papaya)*

We have achieved success in several areas, including the establishment and maintenance of long-term partnerships with landowners and local farmers. Our emphasis on clarifying the farm's vision and objectives has built trust and fostered the adoption of innovative practices. Additionally, we have invested in community assets, such as livestock and infrastructure, to support the use of natural resources like compost for soil enrichment. Furthermore, we have received support, both material and financial, from the local community and visitors during our outreach and learning events.

Despite these accomplishments, there remain challenges that require attention. For instance, farm assets are at risk of theft, and local farmers' low-income levels may hinder their ability to fully appreciate the value of adopting innovative agroecology practices.

**This is what some participants in the project had to say:**

**“I have seen diverse crops in my food forest surviving harsh climatic conditions compared to previous monocrops and other monocrops in the neighbourhoods.”**

– Felectus Muronje –

**“I will choose and do it again and again if given the chance to choose what type of farming system to adopt.”**

– Esther Digidi about food forest gardens –

**“The adoption of food forests is the base for climate change mitigation in terms of food availability and species preservation in the event of catastrophe. Come, see and learn!”**

– Julius Astiva, a champion of mature food forest farming –

**“My bees work and reward me because I have created space for them in the food forest. I have something extra to harvest from nature even during harsh weather conditions apart from crops in my garden.”**

– Oyamo, a beekeeper in the food forest –

## A change of heart

It is heartening to see western Kenyan farming communities adopting food forest gardening as a means to enhance their local food systems and address challenges related to climate change and food security. Leading this effort are champion farmers, who are partnering with Bio Gardening Innovations (BIOGI). The success of this initiative is also attributed to the technical support provided to local communities by collaborators such as AFSA facilitating on advocacy dialogue and trainers from the University of Wisconsin.

BIOGI has been enlisted into a technical committee for agroecology development in Vihiga county. This marks a

change of heart from the county government personnel, and the organisation plans to utilise the ecosites as a platform to expose decision-makers to enrich policy dialogue that aims to mitigate the effects of climate change.

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*Isaac on his climbing yam*



## CASE STORY 4

# LOCAL COMMUNITY ADAPTS TO THE CLIMATE CRISIS THROUGH LAND RECLAMATION

*Training session on bokashi production*

BIOPROTECT is facilitating the adaptation of communities in Burkino Faso to the impacts of climate change through improved management of water resources, enhanced management of areas affected by drought, mitigation of losses associated with drought, and enhancement of soil structure.

In 2018, the agroecology for Land Reclamation Project, on the restoration of degraded land, was initiated in the village of Soala, a rural commune located in Nanoro, Burkina Faso. Initially, it focused on Soala, but in 2021 it expanded to other villages within the municipality. The project involves various organisations and actors such as BIOPROTECT, women and youth of the Soala village, village elders, farmers from the village and neighbouring areas, as well as agronomy students from the local university. The project primarily targeted thirty women who successfully rehabilitated 3 hectares of degraded land and later an additional 300 farmers who implemented similar practices on their farmlands.

## How it all started

In 2017, BIOPROTECT sought to obtain a piece of land for the purpose of promoting agroecological practices through awareness-raising and demonstration activities. After discovering a 5-hectare plot in Soala that had been abandoned and left uncultivated by its owners, BIOPROTECT selected the most degraded section to implement their initiative. With the approval of the village chief and local elders, thirty women were appointed to rejuvenate the land and convert it into a productive agricultural site.

At the time, farmers in Soala and throughout Burkina Faso were particularly susceptible to the adverse effects of climate change. Conventional farming methods failed to enhance their resilience in the face of the climate crisis, and they often experienced floods and droughts. Furthermore, the use of herbicides and the lack of organic fertiliser only served to worsen soil degradation, trapping farmers in a vicious cycle.

# Our Aim: Testing the practice of agroecology to transform degraded land

The overall aim at the outset was to test whether agroecology could transform land not suitable for agriculture into highly productive areas. The project had these objectives: reclaiming abandoned land, training farmers in agroecological practices, demonstrating how agroecology could build resilience to the climate crisis, and agricultural productivity in the region.

Agroecological practices such as composting, agroforestry, and soil conservation were planned, along with crop association, rotation, and ecological pest control methods. These practices were expected to improve soil quality, reduce soil degradation, and mitigate the effects of drought. Staggered seedling planting would minimise losses due to the rainy season and be supplemented by irrigation during drought periods (thanks to the borehole).

## Implementation of the process

In 2018, the initiative went through stages of site identification, negotiation with village notables, the establishment of a compost unit and wire mesh fence, planting of living hedges, and training of women in composting and soil fertility management. Stone cordons were also created, and documentation was produced.

- In 2019, a solar well was constructed, market gardening activities started, and agroforestry practices were implemented. Compost production and supply of rubble for stone cordons continued. A study on the effectiveness of fertilisers was conducted.
- In 2020, studies were conducted on the effectiveness

of fertilisers on onion and tomato production, and an agroecological production suite was implemented. Compost production and documentation continued.

- In 2021, the initiative focused on compost production and use to improve soil health and reduce waste, and on documentation to ensure accountability and showcase successes and challenges.

Stone barriers were constructed around the land, acting as a natural barrier to slow down the flow of water, allowing it to infiltrate the soil and recharge groundwater reserves, reducing soil erosion and promoting water conservation.

## Compost and Biopesticides

One of the primary methods used in this initiative was the production and utilisation of compost, including the production of Bokashi to introduce and multiply beneficial micro-organisms. The women were trained to make compost using organic waste materials such as crop residue, animal manure, and food scraps.

Additionally, the women were also trained to create and use biopesticides from natural materials such as plants, animals, and micro-organisms instead of chemical pesticides to control pests and diseases in their crops.



*The on-site composting platform*

**One of the primary methods used in this initiative was the production and utilisation of compost, including the production of Bokashi to introduce and multiply beneficial micro-organisms.**



*The degraded land*

## Women leading the way: spreading agroecology through modelling good practice

Our action resulted in the recovery of uncultivated land and the cultivation of various crops, including tomatoes, onions, courgettes, millet, maize, and cowpeas. 30 women were employed on the farm and replicated the practices on their own fields, leading to a spreading effect that attracted the interest of other farmers. Around 100 farmers replicated certain practices, became certified organic farmers, and committed to agroecological production. Our efforts have benefited approximately 350 individuals engaged in organic production in the region, including producers from neighbouring villages.

The farm has diversified production, established a platform for organic matter production, and installed irrigation equipment for production during dry spells. Women's groups have formed to collaborate effectively, and income-generating initiatives using agroecological techniques have been implemented, including compost creation and sales, women-led training, services development, and marketing of agroecological products.

Another primary outcome of the programme is the enhancement of the income of women in the group. Previously, each woman earned only around USD 9 per month, but now, with the programme, they earn an average of USD 60 per month from selling products and services from the farm.

The programme is advancing food and nutrition security, with over 60% of farm production being self-consumed by their households. The programme provides training to students, which is another important outcome.

The primary effects of the initiative are three-fold. Firstly, the entire commune, not just the village, has developed an interest in agroecology and organic farming. Secondly, over 300 farmers have pledged to participate in an organic production programme. And thirdly, the bokashi data sheet has been widely promoted.

**Women's groups have formed to collaborate effectively, and income-generating initiatives using agroecological techniques have been implemented, including compost creation and sales, women-led training, services development, and marketing of agroecological products.**

## Adapting to the climate crisis

Overall, the initiative is facilitating adaptation to the impacts of climate change through improved management of water resources in the area, enhanced management of areas affected by drought, mitigation of losses associated with drought, and enhancement of soil structure.

Success in this context hinged on several key factors, including community mobilisation, women's dedication, the presence of a borehole for water access, proper fencing to prevent animal intrusion, the establishment of income-generating activities, and access to basic equipment like shovels and wheelbarrows.

Through agroecology practices, the communities involved have demonstrated the potential for recovering degraded land and are now better equipped to cope with the challenges brought about by climate change and to sustain their livelihoods.



## Challenges for policy makers

Protecting farmers from land grabbing and addressing land security are critical steps in the recovery of degraded land.

Scaling up agroecological practices will require support for more value addition equipment as well as prioritising market development and valorisation of agroecological products.

*"The application of agroecological practices allows us to suffer less in case of drought. We have better harvests."*  
Zongo Sigui, farmer.

*"The application of agroecological practices allows us to suffer less in case of drought. We have better harvests."*  
Zongo Sigui, farmer

### Acknowledgements

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## CASE STORY 5

# BUSAINO FRUITS & HERBS, NATURED & NURTURED BY THE AFRICAN SUN AND HANDS

The Busaino Fruits & Herbs project in Bugiri, Mayuge, and Jinja Districts in Eastern Uganda benefits small garden owners and their 1056 micro and small-scale enterprises. 534 small garden owners (356 women and 178 men) are involved. In addition, the project works with 12 schools and their communities in Jinja to create “climate-smart schools,” which include learners, teachers, school committees, and parents.

## The loss of traditional livelihoods

Jinja, Bugiri and Mayuge districts lie close to the eastern shores of Lake Victoria – not exceeding 12 km from the lakeshore. Rainfall averages between 1000 to 2200 mm annually. Temperatures range between 22 and 28 degrees Celsius. These are favourable conditions for evergreen trees and shrubs.

As recently as the 1980s, Jinja Bugiri & Mayuge, Districts were referred to as “mumabira” or “munsiko” – the zone of forest or remote bush. Smallholder farmers benefited from diverse food crops and the sale of trees and by-products, including tree nuts, animal fodder, and honey. Tree-climbing plants provided unique marketable fruits and fibres.

These nature-based practices have been lost due to massive deforestation, bad land-use practices, and monoculture

food production practices such as sugar cane and maize. The previous cool mini-climate has been replaced by hot, dry season temperatures and shorter short-season rains. The once-numerous village water wells and ponds are drying up.

Climate change has caused issues such as unpredictable rainfall patterns leading to storms and flooding, unpredictable seasonal patterns resulting in more rainfall-deficient seasons, and increased frequency of severe droughts, which can reduce biodiversity and raise temperatures. These changes have also impacted crop growth, leading to reduced yields and food insecurity for many communities. Many farmers rely on crops such as maize and sugarcane, which may not be suitable for changing climate conditions. This dependency is difficult to break.

## What is needed – Forest Gardening

Planting drought-resistant crops like cassava and jackfruit that have multiple uses can provide both food and income. It is important to focus on crops that serve both food and cash needs, such as cassava, and cultivate drought-resistant crops and animals to ensure a stable income during periods of low rainfall.

Forest gardening presents a promising model for smallholder farmers. Good agroecological practices and value addition create a strong basis for climate adaptations. To develop a sustainable and scalable approach for smallholder farmers in Eastern Uganda, it is recommended to promote agroecology as a way of life, entrench forest gardening, the use of appropriate ICT technology, diversify farm activities, and evolve the model of value addition through artisanal processing of herbs and foods.

**To develop a sustainable and scalable approach for smallholder farmers in Eastern Uganda, it is recommended to promote agroecology as a way of life, entrench forest gardening, the use of appropriate ICT technology, diversify farm activities, and evolve the model of value addition through artisanal processing of herbs and foods.**

## How BuFruit helps meet these challenges

BuFruit is a regenerated agro-forest farm that works with small garden owners and school communities as partners. BuFruit has a comprehensive strategy that mainstreams agroecology practices such as diversity, food production, tree production and climate-smart practices. It also focuses on healthy consumption habits such as herbal solutions, food for home and for sale, vegetables, and trees for firewood, into a reimagined African food and health system.

### BuFruit as a nucleus farm

We have used agroecology to develop climate change adaptation practices at BuFruit farm, showcasing techniques like agroforestry, selective weeding, dense planting, and companion crops. BuFruit also uses a forest garden style, including fruits, herbs, trees, and animals, and provides agroecology education for small garden owners and schools. These practices promote sustainable and resilient agriculture, adapting to climate change impacts and improving land health and productivity.

### Small garden owners' adaptations practices

At BuFruit farm, small garden owners cultivate various crops, including beans, groundnuts, soya, and vegetables, alongside fruits and trees. To adapt to changing climates, they employ various techniques such as mixing seed varieties, soaking seeds and vines, companion planting, staggered sowing, using cover plants and mulching, integrating shrubs, and selective weeding.

They also keep drought-tolerant livestock like goats, chickens, and cassava, and practice dense planting and agroforestry. Fishing communities near the farm, located 3km from Lake Victoria, practice fishing governance by regulating fishing times and methods.



*Herbs drying*

## Students and Climate Wise Schools

BuFruit collaborates with schools to create Food Forests using agroforestry practices. We design land use, school plans with green walls, living fences, gardens, fruit trees, playgrounds, water harvesting systems, access routes, and security measures in relation to existing buildings.

## Regenerating old practices from monoculture to value addition

Here, we work with women and girls who hold a lot of indigenous knowledge on plants, especially their medicinal value, as well as the effects of weather patterns on their survival. Through herbal artisanal processing, we work with 1,006 micro and small enterprises that play different roles such as foraging, planting, drying, distilling, and winnowing, among others.



*Young people learning about grafting*

## What is changing?

### Improving micro-climate and regenerating the soil

Forest Gardens have brought positive changes to neighbouring communities by creating microclimates, increasing rainfall, and improving soil health. In Bugiri, villagers in over ten surrounding villages have reported more stable temperatures since the implementation of Forest Gardens and increased rainfall in neighbouring areas. Implementing Forest Gardens has helped retain water and moisture in the soil, leading to the regeneration of soil life.

### Adoption of Forest Gardens and the empowerment of women

The dominance of sugar cane and maize gardens is changing with the adoption of Forest Gardens, where women have a more significant role in decision-making. The cultivation of avocado, jackfruit, and medicinal trees in Forest Gardens provides multiple benefits, including rain creation, shade, firewood, and food. Unlike sugar cane and maize cultivation, which often leads to deforestation, Forest Gardens promote environmental and community benefits in the Busoga area.

## Challenges

Smallholders who have monoculture farms spend much of their income on food, making them vulnerable to rising food prices. Diversifying crops and income through selling crops like cassava and jackfruit is crucial. However, rain-fed agriculture is unreliable, so cultivating drought-resistant crops and animals is important for stable income during low rainfall periods. Effective strategies and support are needed for smallholders to succeed in agriculture.

## Climate adaptation lessons for smallholder farmers and policymakers

To aid smallholder communities in coping with climate change, several strategies need to be promoted:

- Create job opportunities and provide customised training for young adults,
- Integrate climate adaptation messages into non-agricultural activities in a user-friendly format,
- Consider crop and livestock patterns, prioritise low-risk practices preferred by smallholders,
- Maximise rainwater use in water-scarce areas,
- Adapt farming practices by soaking seeds and vines, planting companion crops,
- Using drought-resistant crops and livestock.

To promote sustainable agriculture and improve food security, we need a multifaceted approach that embraces agroecology. This involves using local knowledge to develop farming practices, such as forest gardening. Appropriate ICT technology, like mobile phones and apps, should

facilitate marketing, input access, and post-harvest handling. Family farms producing basic food items should be promoted for year-round income and improved food security. Value addition through artisanal processing can create value-added products like jams, jellies, and dried herbs for income throughout the year. Overall, incorporating local knowledge, appropriate technology, and sustainable farming practices is necessary to promote sustainable agriculture and improve food security.



*Value-added products*

### Acknowledgements

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## CASE STORY 6

# BOUNCING BACK FROM CYCLONE IDAI – THE CASE OF CHIMANIMANI DISTRICT, ZIMBABWE

Cohesive social systems are vital during crises like Cyclone Idai, highlighting the need to identify disrupted components, particularly in food systems. Communities recognise the importance of rebuilding these systems to reduce reliance on external food aid, which weakens local systems. The Chimanimani District in Zimbabwe provides an excellent example of collaborative efforts by organisations like PELUM Zimbabwe, TSURO, PORET, and Knowledge Transfer Africa. Their work has benefited over 15,000 individuals and communities, involving farmers, youth, women, traditional leaders, and local authorities, fostering resilience. Analysing local food systems and the community’s management of natural resources after a disaster yields valuable insights. Careful consideration of the impact on community culture and traditions is crucial, as their loss diminishes resilience. For example, the erosion of traditional leadership due to colonial systems raises important questions about its role. Exploring such inquiries can lead to enlightening and transformative outcomes.

## When cyclone Idai struck

Imagine waking up in the morning with the rumbling sounds of the river on your doorstep and seeing your neighbours’ homesteads being swept away. Amidst the chaos, you see their chickens and goats floating in the nearby river, now flowing with muddy water instead of the usual clean water. Your fertile soils and banana plantations are gone. This is the reality that confronted Ellen Chadini, Enisia Bata, Robert Gundiro, Miriam Shiripinda, and many other villagers in the Rusitu community of the Chimanimani district in Zimbabwe on March 14, 2019, when Cyclone Idai caused extensive destruction.

## Caught by surprise

Cyclone Idai caught the district and the entire country by surprise, causing landslides that destroyed landscapes, forests, rivers, and other sources of livelihood. People lost loved ones, breadwinners, and family labour. They also lost livestock, irrigation systems, natural springs, and fertile alluvial soils along riverbanks, which had sustained their livelihoods for decades.

The scale of destruction was so massive and sudden that some elders still believed there was a spiritual dimension to what happened.

“Maybe the ancestors are still angry about something we have done or not done,” said Robert Gundiro.

Community elders like Miriam Shiripinda still feel that traditional ceremonies should have been conducted as part of cleansing the community and appeasing the forefathers after the devastating cyclone.



## Efforts are shattered

If Chimanimani communities had not dedicated years to building their livelihoods around agroecology, the impact of Cyclone Idai could have been worse. Implementing various initiatives introduced by PELUM Zimbabwe members, like the Towards Sustainable Use of Resources Organisation (TSURO) and Participatory Organic Research and Extension Training (PORET) made a difference in several ways.

Agroecology practices enabled communities to use crop residues like banana leaves as natural manure, which had become a major source of natural fertiliser.

Villagers had also been reclaiming their land and natural resources to create new microclimates through rejuvenating indigenous forests and other restorative processes.

These interventions aimed to promote sustainable agricultural practices and enhance the community's well-being. Unfortunately, the destructive force of Cyclone Idai shattered their efforts, leaving them to rebuild from the ruins of their once-thriving agroecological endeavours.

The cyclone had swept away some banana plantations and local resources, but it did not erase the agroecology knowledge built over the years, which people are now using to rebuild their lives.

## Returning to their roots: agroecology

Villagers who had started dumping indigenous food systems for industrial food production methods are now going back to agroecology, which ensures food diversity and food sovereignty. One of the major comparative advantages of Chimanimani district is that it has all five natural farming regions found in Zimbabwe. Rusitu, which was affected more by Cyclone Idai, is in natural region one, characterised by high rainfall, ideal for fruits such as avocados, bananas, and pineapples.

## The spiritual dimension of agroecology and ecosystems

On the other extreme of the district are dry regions like Nyanyadzi, which is natural region three or four, where indigenous fruits like baobab are dominant and indigenous food systems comprising small grains, legumes, poultry, goats, and cattle. Agroecology is practised in all five natural farming regions of the district, which has become a source of resilience for the entire district, especially after the cyclone.

There are notable changes in mindsets as some communities are returning to their roots in terms of food systems. The spiritual dimension of agroecology and ecosystems are also receiving renewed favourable attention. To Chimanimani communities, agroecology is not defined academically but in common-sense practices that have become part of people's traditions.

“We should not destroy swampy areas and sacred areas that are related to our cultural beliefs,” said one agroecology farmer.

Communities are becoming more conscious of the need to promote what they believe to be the right thing. For instance, they know that poultry manure, tree leaves (Murakami), indigenous fruits, and poultry are the best in their context.

Community members are calling for policymakers to realise that the systems they promote are destroying Indigenous Knowledge Systems (IKS), food sovereignty, and the future of African food systems, weakening local resilience to shocks.



## Community adapting to the effects of climate change

Communities have recognised the value of social capital in the context of agroecology, extending beyond food production. Resilience, a key aspect of this process, is often evident in how communities support one another during challenging times. In the Chimanimani district, specific regions such as Rusitu (region 1), Mhakwe (regions 3-5), and Nyanyadzi (regions 4-5) have implemented irrigation schemes to provide a safety net.

Recently, residents have raised concerns about the extent to which Nyanyadzi communities benefit from these plentiful irrigation schemes. It has been observed that during the rainy season, production in the irrigation schemes significantly declines as farmers revert to cultivating dry lands. These dry lands offer a diverse range of crops, including legumes, small grains, and others, contributing to a comprehensive food basket.

## Building resilience

Resilience is being reinforced as community members see the importance of helping each other. An integral component of the initiatives can be observed in PELUM Zimbabwe and its members like TSURO and PORET collaborating with Knowledge Transfer Africa to build markets for agroecology commodities as part of building community resilience.

By encouraging the establishment of local aggregation centres, this effort has begun to play a fundamental role in revitalising livelihoods through mass food markets that exemplify resilient indigenous commerce, a key aspect of agroecology.



## What is needed

Given that major sources of rural livelihoods are tied to agriculture and natural resources, failure to invest in developing markets undermines community resilience and sustenance because disorganised markets cannot enable farmers to earn income to meet important needs such as school fees and healthcare. More than 95% of their distribution pathways are through mass markets, whose breadth enables wider reach to all corners of the country, unlike neo-liberal market systems such as supermarkets.

Nelson, a local farmer, said, "If I did not participate in agroecology practices, my family would not have recovered from the shock as fast as we did."

Immediate action is required to secure policy support, particularly in expediting the reconstruction of vital infrastructure such as roads, bridges, and water sources. This is crucial for enabling communities to recover and rebuild their lives swiftly. Additionally, it is imperative to implement policies that promote agroecology within current irrigation schemes, prioritising the production of indigenous food over exotic crops that do not contribute to community resilience systems.

### Acknowledgements

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## CASE STORY 7

# IMPROVING WOMEN'S RESILIENCE TO CLIMATE IMPACT

Zingisa Education Projects (ZEP), in the Eastern Cape of South Africa, is a community-based organisation focused on developing and implementing sustainable livelihood projects. One such project is a social movement on agroecology, led by Zingisa in partnership with Ilizwi Lamafama, with a specific focus on South Africa's Eastern Cape province. This movement is part of the global agroecology network, a platform for exchanging ideas and experiences. Over 2,700 farmers are participating in the agroecology practice, and the number of indirect beneficiaries, such as children and relatives, could triple this figure.

The prominent role played by women farmers in the movement has sparked a transformation in deeply ingrained gender disparities within society and culture. Traditional leaders are now acknowledging the crucial contribution of women in food production, especially in light of heightened food insecurity caused by climate change. This shift in mindset is exemplified by the newfound access women have gained to land and livestock ownership, a practice that was once considered taboo. These changes provide women farmers with a twofold advantage: the ability to utilise arable land and the knowledge and expertise to make it productive, even in the face of climate change challenges.

Nomvuselelo Baso demonstrating land preparation to other farmers at a new urban agroecology plot in Mdantsane, Eastern Cape:

*"We learn from our colleagues in agroecology; they share their experiences, and that's mostly how we learn from them. We are very encouraged because now that we are in this [agroecology], we are joining [learning] groups on WhatsApp groups and Facebook pages, we are learning every day, and we are very motivated, we are very encouraged."*

## Background and rationale

Starting in 2018, the project is ongoing, with Ilizwi Lamafama and Zingisa collaborating with various organisations, including Imvotho Bubomi Learning Network, Rhodes University, University of Fort Hare, and African Centre for Biodiversity (ACB), among others. Over 2,700 farmers are participating in the agroecology practices, and the number of indirect beneficiaries, such as children and relatives, could triple this figure.

# Enhancing climate resilience and adaptation through agroecology

The Eastern Cape province, which is the main focus of the movement, is characterised as one of the poorest and most susceptible regions to climate change in South Africa. The combination of climate vulnerability and limited socio-economic opportunities has resulted in widespread abandonment of traditional farming practices, known as de-agrarianisation.

Many communities have shifted their focus to alternative livelihoods, such as seeking employment in urban areas, resulting in a significant decline in food self-sufficiency. This decline has had far-reaching consequences, including persistent food insecurity, poverty, malnutrition, and unemployment. Against this backdrop, the movement aims to play a vital role in revitalising agriculture and reintroducing sustainable food systems that benefit all members of the community, aligning with the province's historical traditions.

One key strategy involves the formation of agricultural cooperatives rooted in agroecology principles, aimed at promoting collaboration among community members who are interested in advancing agricultural practices suitable for drylands in their province. This initiative is an integral part of a local Community of Practice (CoP) dedicated to enhancing climate resilience and adaptation. The CoP is

united by a shared commitment to farmer-led research and the collaborative development of solutions crucial for fostering resilience to climate change. Particularly, these efforts are focused on supporting smallholder farmers who heavily rely on rainfall and depend on agriculture for their livelihoods.

Nonkululeko Sobandla in a green t-shirt demonstrating mulching and planting distance at an agroecology school in Mdantsane, Eastern Cape:

*"We collaborate with other African countries like Zimbabwe, Tanzania, and even outside Africa with countries like Brazil. We see agroecology as the best method that farmers can use to withstand water challenges, rising temperatures and to address increasing challenges such as land degradation."*

**... farmer-led research and the collaborative development of solutions crucial for fostering resilience to climate change.**



## Description of the intervention

In the past 30 years, Zingisa projects have primarily aided women farmers in acquiring land for agroecology. They have helped around 1200 women obtain nearly 50 hectares of land in Buffalo City Metro Municipality, Mahlati Municipality, and Raymond Mhlaba Municipality. These lands are used for livestock and crop production in homesteads and community gardens.

The movement also negotiates for more arable open spaces in government institutions like offices, pre-schools, schools, and clinics. Moreover, they support urban farmers, especially women, in reclaiming open spaces for agroecology plots or gardens that are often misused as dumping sites.

Agroecology sites have become valuable learning sites for students, teaching them about climate resilience and environmental preservation. These sites offer practical exposure to climate change adaptation methods, empowering students to share knowledge with their communities and raise awareness about climate action.

## Results

Using modern research, traditional practices, and learning from other examples, the movement has attracted interest from farmers and non-farmers who appreciate its ability to consistently yield high-quality crops despite worsening climate conditions. In the Eastern Cape alone, over 2700 climate-resilient agroecology farmers are part of this movement.

Communities are increasingly recognising the importance of home-grown healthy food, establishing home gardens, and sharing best practices without much assistance from our

organisation. Participating farmers have reported positive changes in their diets, with improved health outcomes attributed to their access to traditional food.

Moreover, improved climate adaptation has led to increased food production, allowing farmers to sell the surplus and use the income for various expenses like school fees and savings for uncertain times caused by climate change. The establishment of cooperatives has also fostered social cohesion within the communities and introduced agroecology principles.

## Adapting to the effects of climate change



*Ntshoko Food Garden*

The movement enables communities to access a diverse learning network beyond South Africa, fostering inspiration and learning through examples. This network is vital in visualising the path towards improved adaptability by sharing seeds and knowledge within and beyond the country.

Seed sharing grants farmers access to resilient traditional cultivars, some of which are rare and climate-change-resistant. Knowledge sharing preserves local wisdom and ensures its continuation. The movement comprises both

young and experienced farmers who have witnessed their communities' resilience during dry spells.

The increased adoption of agroecology by more farmers has bolstered community food security, especially amidst escalating food prices. Agroecology not only improves food accessibility but also promotes healthier and more affordable options. It equips communities with essential tools and practices such as mulching and furrows, which are crucial in areas with limited water resources.

## Success factors

The success of the movement can be largely attributed to the effective collaboration among the participating organisations, which provide resources, financial support, and training. Equally important are the contributions of political and community leaders who offer land resources and facilitate access to their communities. Finally, the dedication of the participants is crucial in ensuring the sustainability and triumph of the movement.

## Challenges

Initially, agroecology faced resistance from farmers and extension officers due to uncertainty about its effectiveness and ability to address challenges. However, positive changes observed over time increased interest in agroecology. Nevertheless, some extension officers still prefer chemical agro-inputs.

Incorporating indigenous knowledge into agriculture has been hindered by challenges related to the utility and relevance of indigenous languages in the local context, impacting agroecology adoption. Climate change and global warming present ongoing challenges, including recurring droughts, increased proliferation of pests and diseases, and land degradation.

While progress has been made in land access, particularly for women farmers with limited rights, some agroecology enthusiasts still lack land access.

Agroecology practitioners face limited access to conventional markets, which are mainly controlled by commercial producers.

Ntombezayo Hele, with an orange dress standing in the agroecology plot she works on with other women from her community:

*"We are gaining a lot out of this [agroecology]; we are no longer buying vegetables, and we are eating healthy. Working in the farm keeps us fit, and we are also selling and getting some income. We are not dependent on government grants only. We are independent."*

## Conclusions and Recommendations

The government should fast-track the national agroecology policy so that small-scale producers can access the relevant support like the industrial agriculture farmers. There should also be inclusive consultations with small-scale producers in building the agroecology policy.

Resources investment to support agroecology projects should be made in consultation with the intended beneficiaries to avoid the destabilisation of existing work relations and the culture of practice among members of the projects.



### Acknowledgements

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## CASE STORY 8

# RESTORING AND REGENERATING DEGRADED RANGELAND AND CROP FIELDS IN THE TIME OF THE CLIMATE CRISIS

A major source of conflict in rural communities is based on natural resources such as land, water, fuel, grazing areas etc. To work peacefully and in harmony with farmers, Chikukwa Ecological Land-Use Community Trust (C.E.L.U.C.T) introduced a programme called Building Constructive Community Relations (BCCR) in the Chikukwa Communal Land in the Chimanimani District, Zimbabwe. The programme works with 221 farmers, including 173 livestock owners and 48 non-livestock owners, actively participating in agroecology activities. 25 of the livestock owners are women. The programme is currently working with three self-motivated groups known as “Core Groups” to improve livelihoods.

The programme helped to capacitate the community to understand conflict in a better way, to develop innovations around holistic land and livestock management and to help small-scale farmers with improving their crop fields. Holistic planned grazing enhances the practices of agroecology and Permaculture and is user-friendly to our environment. The land of Chikukwa Communal was transformed and is now greener compared to the early 1990s.

The programme focuses on six villages in Chikukwa, targeting livestock owners as the main beneficiaries. However, evidence shows that anyone negatively affected by climate change can benefit from restoring rangelands, croplands, and water sources.

## Core Groups

Chikukwa Communal Land, in the Chimanimani District, Zimbabwe, was identified as a community which could benefit from this programme. The programme was launched in 2012 and is still ongoing. Several organisations and actors are involved in this programme, including the Africa Centre

for Holistic Management (ACHM), Towards Sustainable Use of Resources Organisation (TSURO TRUST), Veterinary Services, Agricultural Research and Extension Services, Local Traditional Leaders, Chimanimani National Park, and Local Communities in Chimanimani District.

CELUCT enhances small-scale farmers' capabilities in climate change adaptation through agroecology practices. They provide hands-on training and outreach programmes to educate rural communities about sustainable land use and

natural resource management. Farmers showcase soil and water conservation through rainwater harvesting, organic farming, local/traditional seed varieties production, and soil fertility improvement via animal impaction.

## Holistic land and livestock management

Droughts in Africa affect more people than any other natural disaster and are worsened by human activities, especially in communal grazing areas. Even in years with sufficient rainfall, soil erosion and environmental degradation threaten the lives and livelihoods of those living on communal land. *Holistic Land & Livestock Management* and planned grazing provide a solution by restoring degraded land and reducing the occurrence and severity of droughts.

CELUCT's Holistic Land and Livestock Management programme is rooted in the scientific principles of Holistic Management, which small-scale livestock farmers have used to restore rangeland and water sources in various Zimbabwean communities. The programme includes the Holistic Planned Grazing procedure, which allows farmers to increase forage and ground-covering litter by forming a community herd and practising rotational grazing in designated areas. This method promotes plant regeneration and helps prevent overgrazing. The movement of the animals also enhances growing conditions for plants when the area is rested. CELUCT is currently operating in three core communities, utilising 3,290 hectares of grazing area. Within a single season, positive yields can be observed if this approach is implemented properly.

In the rangeland, moveable kraals are utilised to gather community herds together for grazing at night. A minimum of 3 square meters is required per cattle, so the size of the kraal is determined based on the number of cattle to ensure efficient accommodation. The kraal is relocated to a new position every seven days.



Chikukwa in 2012



Chikukwa in 2023



### Esther Matirekwe:

*"Before the Holistic Land and Livestock Management programme started, my animals once destroyed Mr Matoro's maize crop, and we had a big quarrel. I actually developed high blood pressure from that conflict. Many stock owners had to go to the Chief's court and pay fines to compensate for the damaged crops of our neighbours. The Holistic Planned grazing programme has brought about peace and tranquility amongst neighbours." I am now old Ambuya, 83 years and not fit to chase after my cattle every day. My cattle are being looked after by community herders, and I pay them on monthly bases, which is cheaper. I thank CELUCT for bringing this programme to our community".*

## Dialogue: Strengthening relationships, community resilience & traditional knowledge systems

Farmers have established educational and demonstration sites to showcase their success in soil and water conservation techniques such as rainwater harvesting, organic farming, utilising traditional seed varieties, and improving soil fertility through animal impact. To effectively empower the community and disseminate information, dialogue is employed, focusing on transferring knowledge from elders to youth. This approach helps to reinforce community resilience and traditional knowledge systems and practices in agroecology.

Dialogue is one of the most effective approaches we use to empower the communities and cascade information. Since we are working with different age groups, we seek to empower youth. This is done by knowledge transfer from elders to the young generation. It helps to strengthen community resilience, traditional knowledge systems and practices in agroecology.

## Animal impact, conservation and agroecology practices

CELUCT facilitates the process of enhancing soil fertility and crop productivity in croplands by using animal impact and conservation and agroecology practices. Livestock can be effectively utilised with conservation agriculture techniques to keep cropland soils covered, particularly during non-growing seasons, and provide natural fertiliser in the form of cattle dung and urine to nourish soil life and fertilise other plants. The use of overnight kraaling by farmers has contributed to improving the quality of land and soil while saving money. This method involves bunching livestock on croplands to deposit dung and urine, a cost-effective and straightforward approach to naturally fertilise the soil and maintain its fertility for an extended period. This technique is more profitable than transporting manure from a livestock pen to cropland since the urine, which contains Nitrogen, is lost.

**To effectively empower the community and disseminate information, dialogue is employed, focusing on transferring knowledge from elders to youth. This approach helps to reinforce community resilience and traditional knowledge systems and practices in agroecology.**



*Moveable kraal is being used for night kraaling in the rangeland and shifted after seven days to another position.*

## Impact on the broader community

**Adaption to the Climate Crisis:** CELUCT educates farmers and the wider community on agroecology, resulting in restored water sources, increased vegetation, and reduced water loss and runoff. The flourishing vegetation in communities where CELUCT works demonstrates the efficacy of their agroecological training and implementation efforts. The success of the Chikukwa community serves as a model for Zimbabwe and beyond.

CELUCT's education on agroecology equips farmers to adapt to the climate crisis through sustainable farming practices. This includes soil conservation and biodiversity preservation through practices such as water harvesting, crop rotation, intercropping, and cover crops.

**By reducing reliance on synthetic fertilisers and pesticides, the community has reduced greenhouse gas emissions and contributed to mitigating climate change.**

By reducing reliance on synthetic fertilisers and pesticides, the community has reduced greenhouse gas emissions and contributed to mitigating climate change.

**Economic sustainability:** Farmers earn money by selling livestock and crops while reducing expenses on synthetic fertilisers through crop field management techniques. Controlled breeding practices lead to higher market value for livestock.

**Gender and disability sensitivity:** Much work has gone into the awareness of the role of women and creating opportunities to empower and acknowledge them. Moreover, CELUCT's gender and disability-sensitive approach has ensured that everyone in the community has access to information and resources to participate in these efforts, which has contributed to building a more resilient and adaptive community.

## Success and challenges

The programme had a slow take-off as community members still had a large focus on agro-industry methods. This required significant time and energy to educate and raise awareness and shift thinking and habits. Limited resources hindered plans for upscaling and extending the programme's reach, compromising its sustainability and long-term success.

However, there have been many successes. At the forefront is the significant shift in the development of community structures and local ownership. By involving local leaders, the programme has aligned with cultural values, which helped build relationships and credibility amongst the elders and leaders of the community. Additionally, a new commitment to find and use sustainable ways to restore the environment has been awakened through the community's willingness to participate and help each other.

Out of all these experiences, the *Three Circles of Knowledge* training manual was designed by the Chikukwa community, providing a comprehensive and practical insight into understanding conflict at a grassroots level.



### Acknowledgements

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## CASE STORY 9

# AGROECOLOGY AS A CLIMATE CHANGE ADAPTATION SOLUTION

During the 2022/2023 farming season, the Environmental Management Trust (EMT) initiated an agroecology project in Ward 15 of Bikita District, Zimbabwe. The project has benefitted 80 vulnerable women, 5 children and youth, and 15 male heads of households, including individuals with disabilities.

A total of 100 households were trained in agroecology principles and implemented them in their fields. As a result, maize crop yields increased by 50%, leading to improved food self-sufficiency and higher income. Approximately 80% of families harvested enough maize to sustain themselves for the entire year, with an additional tonne available for sale at a value of US\$335. These various agroecology practices have significantly strengthened the community’s resilience to climate change impacts.

## Life in Ward 15 of Bikita District

Ward 15 in Bikita District, Masvingo Province, has a population of 7,162 across 1,704 households, with 3,123 males and 4,039 females. The area experiences scorching temperatures and minimal rainfall of only 59.35 mm per year. The farming season, aligned with the onset and cessation of rainfall, occurs from November to May. Peasant farming is the primary livelihood for most households, cultivating crops including maize, sorghum, rapoko, millet, groundnuts, bambara nuts, vegetables, pumpkins, and cowpeas. These crops are processed into mealie meal and consumed with various relishes. Livestock such as cattle, goats, donkeys, and sheep are also raised alongside fruit trees like mango, avocado, banana, lemon, guava, and sugar cane.

In Ward 15 of Bikita District, Zimbabwe, the effects of climate change are increasingly threatening the livelihoods, agriculture, and overall well-being of the community. The region’s growing season has become shorter, characterised by droughts and other climate-related phenomena that pose significant risks to human livelihoods, crops, livestock, infrastructure, and property. Heat waves and extended mid-season droughts have become common occurrences, resulting in devastating droughts throughout the district.

Land degradation is also a pressing issue in Ward 15, stemming from erosion, deforestation, and overgrazing. This has transformed once-fertile land into badlands and deserts. The expanding population has led to farming practices encroaching on streambanks and steep hillsides without adequate erosion prevention measures, exacerbating the degradation. As a result of leaching, around 20% of the land has become infertile.

The residents of Ward 15 face high levels of poverty, with a poverty prevalence rate of 72.1%. Approximately 66% of households are classified as poor, while 20% live in extreme poverty. Additionally, 51% of households experience food

insecurity, leading to malnutrition rates of 55% and a child stunting rate of 27% due to inadequate food intake.

Conventional industrial farming practices, which rely on expensive inputs such as synthetic fertilisers, pesticides, and seeds, further limit food production. Moreover, these practices have negative socio-economic and biophysical impacts, including deforestation, water scarcity, soil degradation, loss of biodiversity, and greenhouse gas emissions.

Addressing these challenges requires sustainable agricultural approaches, such as agroecology, which prioritise resilience, resource conservation, and community well-being.

**Conventional industrial farming practices, which rely on expensive inputs such as synthetic fertilisers, pesticides, and seeds, further limit food production. Moreover, these practices have negative socio-economic and biophysical impacts, including deforestation, water scarcity, soil degradation, loss of biodiversity, and greenhouse gas emissions.**

## The Project

Environmental Management Trust (EMT) launched the agroecology project in Ward 15 of Bikita District in Zimbabwe during the 2022/2023 farming season. This is a sustainable approach towards improving household food security, health, nutrition status, income, soil fertility, environmental sustainability, and biodiversity while contributing to climate change adaptation and mitigation.

Project objectives:

- Improve vulnerable households' organic and ecosystem-based farming skills.

- Practise soil and water conservation.
- Prepare thermal compost and animal manure.
- Reduce food waste and post-harvest losses.
- Use natural methods to control weeds, pests, and diseases.
- Monitor and evaluate progress in a participatory manner.



*Joe and Kufa are doing the final touches to their thermal compost while Nancy looks on*

*After completing the compost, Nancy said: "I can't waste my hard cash travelling to distant shops to buy expensive ammonium nitrate and Compound D fertilisers. All fertiliser ingredients are available on my farm. What is required is to bring the resources together and make good manure."*

## How we began

As members of EMT, we first obtained permission from the appropriate local authorities, namely, Ward Councillor, Chief, Headmen, village heads and Bikita Rural District Council. Afterwards, we conducted an initial survey to engage the community and identify and select project beneficiaries. Selected beneficiaries included 80 vulnerable women, 5 children and youth, and 15 male heads of households, including individuals with disabilities. We then provided theoretical and practical training on aspects of agroecology, which included:

- The 10 elements of agroecology
- Production of thermal compost
- Soil and water conservation through the use of basins, mulching, and minimum tillage
- Control of pests and diseases using organic pesticides and herbicides
- Reduction of food waste and post-harvest storage losses
- Selection, treatment, storage, and sharing of seeds
- Marketing of farm produce, including value addition and digital marketing
- Keeping records and bookkeeping
- Participatory project monitoring and evaluation

## Our approach and the results

We trained one hundred households in agroecology, sharing maize varieties obtained from the 2022 Good Food and Seed Festival. Adopting practices like reduced tillage, mulching, crop rotation, and composting improved soil quality, moisture retention, and pest control. Maize yields increased by 50%, ensuring better food self-sufficiency and higher income.

Nearly 80% of households harvested enough maize for the year, with a surplus sold for \$335. Twelve farmers used the proceeds to support vulnerable families and established a collaborative network to share agroecology experiences. The initiative benefited pregnant women and child-headed households, allowing them to work at their own pace without labour-intensive tasks.

Agroecology proved vital in adapting to climate change, mitigating crop damage from winds, erosion, and heat waves. However, competition from the government's climate-smart agriculture programme posed challenges, providing free inputs. Despite this, farmers embraced agroecology as an alternative to costly conventional farming, enhancing sustainability and resilience.



*Physically challenged, Ledwine and her husband, Hiklas, removing maize cobs from harvested plants*

*Ledwine: "I love the idea of farming with nature! It empowers us women to take care of the environment and the natural resources God has given us. Farming this way lets the soil stay where it is and allows the vegetable matter to break down naturally. This is how farming used to be done back in the times when people didn't have access to a lot of artificial fertilisers and pesticides!"*

## Challenges

While the initiative has achieved successes, there have been challenges. Some farmers have expressed concerns about competition from the government's "climate-smart agriculture" or pfumvudza programme, which provides beneficiaries with free hybrid seeds, pesticides, and artificial fertilisers. Despite this, the transition from conventional farming to agroecology has been well-received by farmers burdened by high input costs and unpredictable rainfall patterns.

## Recommendations

Agroecology has the potential to transform household food systems, as demonstrated by the lucrative maize harvests in Ward 15 of Bikita District realised in the 2022/3 farming season. However, its adoption has been limited to small portions of farms, with larger portions reserved for conventional industrial farming. There is a need for total political support for the initiative. The government and non-state actors should provide affordable organic seeds and fertilisers to vulnerable farmers.

Establishing agroecology as a national priority requires funding from the national budget to subsidise the acquisition of organic seeds, fertilisers, environmentally friendly pesticides, and machinery.

## A Final Word

Agroecology is increasingly considered a crucial approach to addressing food and nutrition insecurity, household poverty, and environmental degradation. It is a sustainable way to produce nutritious foods while safeguarding the ecosystems. By integrating organic and ecological farming practices, farmers can enhance their resilience to climate change and improve their income and food security.



*Elliot and Blessing selecting maize cobs to get seeds for the next season*

Their mother, nee Chitereka, had this to say:  
*"I am proud as a women household head. This year my family will harvest 5 tonnes of maize and 160 kg of beans. We intercropped beans and maize. We used to harvest less than a tonne annually. Ecological organic agriculture is becoming a new normal way of producing crops, vegetables and fruits."*

### Acknowledgements

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## CASE STORY 10

# BUILDING RESILIENT COMMUNITIES TO CLIMATE CHANGE THROUGH AGROECOLOGY IN UGANDA

The agroecology and Sustainable Natural Resources Management project at PELUM Uganda helps communities in the Acholi and Teso Sub-regions of Uganda build their resilience to climate change through agroecology. Reaching 35,000 smallholder farmers, with 60% being women.

## Where did all the bees go?

Climate change is a global phenomenon, and its impacts are felt worldwide. Like many other developing nations, Uganda is not immune to its effects. In particular, the Teso and Acholi sub-regions of Uganda have been significantly impacted by climate change. The search for sustainable livelihoods in these regions has led to widespread deforestation for charcoal production. The indigenous tamarind and shear nut trees have been the most affected due to their demand for hard charcoal, which is used for cooking and heating. Deforestation contributes to climate change by reducing the number of trees that absorb carbon dioxide from the atmosphere, but it also has other negative impacts, such as soil erosion, loss of biodiversity, and habitat destruction.

*"I have learnt that agroecology is a divine way of farming where we mimic God's plan in the Garden of Eden. The Garden of Eden had everything: animals, plants, insects and other micro-organisms all living in harmony. Similarly, I have adopted the same principles from agroecology to diversify my farm by integrating animals for synergies. Before, we could clear all bushes, burn the trash and then plant either maize alone, sunflower or cassava. Little did we know that we could put them to use. We also ventured into beekeeping which has enhanced our income from the sale of honey, propolis and wax."*

Inappropriate use, overuse, and poor storage of chemical fertilisers, pesticides, and hybrid seeds have also contributed to the loss of biodiversity. These products were introduced under the pretext of addressing food insecurity, malnutrition, and poverty. However, the negative consequences of their use have been observed, including the reduction in beneficial organisms such as bees, butterflies, dung beetles, wasps, and birds. These organisms are important for pollination, pest control, and nutrient cycling in agricultural ecosystems.

Additionally, adopting hybrid seeds has led to seed insecurity and the loss of seed sovereignty. The dependence on these hybrid seeds has made farmers vulnerable to market forces, as they have to buy seeds from seed companies every season instead of saving and replanting their own seeds as they used to. This has led to a loss of traditional knowledge and practices related to seed saving and plant breeding.

## A time for change

To make land use systems in Uganda more sustainable and climate-resilient, a transformative approach was required to ensure the survival of communities. Agroecology has been proven to be the transformative approach needed as it reintegrated agriculture into nature and fostered comprehensive adaptation responses that evolved over time. Agroecological practices offered the most effective means of adapting to climate change. The use of compost, mulching, and reducing soil erosion improved the health, structure, and nutrition of the soil, which in turn enhanced plant health and the ability of the soil to absorb and retain water. The principles of recycling, input reduction, soil health, biodiversity, and economic diversification served as entry points for climate adaptation.

**To make land use systems in Uganda more sustainable and climate-resilient, a transformative approach was required to ensure the survival of communities. Agroecology has been proven to be the transformative approach needed as it reintegrated agriculture into nature and fostered comprehensive adaptation responses that evolved over time.**



*Compost made by Samuel*

## Strategies for change

We developed and implemented various strategies and activities to address climate change adaptation, including integrating farmers' indigenous knowledge with ecologically sound innovations. Our approach involved three proven models: the Climate Resilient Agro-Ecosystems Model (CRAEM) integrated with Participatory Assessment of Climate and Disaster Risks (PACDR) tools, the Gender Action Learning System (GALS) Methodology for gender mainstreaming, and the Community Managed Seed Security (CMSS) Model for promoting community-led seed security.

The CRAEM-PACDR model empowered farmers to take the lead in building their own resilience to climate change, with activities such as stakeholder analysis, mobilisation and sensitisation, climate risk and vulnerability assessment, and training on agroecology, agroecological practices, and establishment of agroecology farmer level learning centres.

The GALS methodology was used to challenge and change gender inequalities and promote gender justice, with activities that included training on visioning at household and community levels, the gender balance tree, and the empowerment map.

The CMSS model provided a participatory farmer-led approach to promoting seed security and sovereignty, with activities like training on participatory plant breeding, seed enterprise development, seed multiplication, quality control, establishing community seedbanks and seed security committees, learning visits, and indigenous seed and food fairs. These approaches and activities aimed to systematically integrate agroecology for climate action and disaster risks into community planning and development with subsequent activities.

*"In our culture, home gardens were left for women to work on. These gardens were basically for growing vegetables. When I was introduced to (GALS) methodology, I was motivated to embrace agroecology to realise our household vision. Adopting agroecological practices like agroforestry, recycling animal wastes into compost, mulching, and integrating bees has led to higher yields and diversity, which has improved my household nutrition and resilience to climate change shocks. we no longer sell productive assets like poultry, goats during the dry season when most families have no food." Samuel Angiro*



*Samuel and his wife harvest kale for supply to the local market*

## Doing it together

Composting and manure usage have improved farmers' adaptability to climate change by enhancing soil health, structure, and nutrition, reducing erosion and improving plant health. Biodiversity has also been enhanced, resulting in better synergies on farms through pollination and nutrient recycling. Agroecological practices have positively impacted farmers' economic and social well-being, achieving improved food security and nutrition, economic resilience, and self-sufficiency. Family involvement in shared work has promoted social cohesion, reduced poverty and social exclusion, and increased income diversification.

Women and youth have been provided with training in climate risk assessment and agroecology, enabling them to develop agroecology strategies to adapt to the impacts of climate change. The participatory approach to agroecology farm planning and assessment has proven to be particularly effective in engaging them in climate change adaptation. By involving them in the decision-making process, they have been able to apply their newfound knowledge and skills to adapt their farming practices to changing environmental conditions.

Community seed banks have played a crucial role in supporting community-driven approaches to climate change adaptation. These seed banks store local genetic resources that can be used to adapt crops to changing climate conditions, promoting biodiversity and the conservation of traditional crops. This approach helps to maintain local food systems and supports sustainable agriculture practices.

Ngurani Simon Peter:

*"Thirty years ago, we could predict the start of the rains & onset of the dry season. This enabled us to prepare adequately and plant our crops which we could dry and store for the dry season. It's not the case of late, as things have changed. When you think the rains are on with some showers, the drought sets in, and all our crops dry. The conservation and utilisation of the indigenous local tree and crop species have made it possible for us to survive in the face of climate change. We have adopted planting of the indigenous crops that are adapted and are drought tolerant."*



*Simon in his orchard of oranges*

## Our support and challenges

The initiative's success factors include integrating various models, such as CMSS, CRAEM-PACDR, and GALs, combining indigenous and modern knowledge, and investing in climate-resilient agroecological technologies through VSLA. The Natural Resources Management committees were crucial in advocating and showcasing agroecological practices. Empowering women and orphans to access land necessitated investment in agroecology. However, mobilising actors was expensive, and integration took time. Private sector involvement was limited, and agriculture received limited resource allocation, with national priorities not reflecting local government priorities.

### Acknowledgements

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**CASE STORY 11**

**CHANGING THE FUTURE FOR THE BETTER**

*A SCOPE school in northern Malawi*

SCOPE provides Integrated Land Use Design training to teachers and students to educate them on permaculture, agroecology practices, and WASH. SCOPE Malawi has constructed disability-friendly toilets and rainwater harvesting tanks in schools to improve access to water for learners throughout the year. Currently, SCOPE Malawi is working with 50 schools, over 1250 youths both in and out of school, and over 480 households, of which 50% are female-headed in 12 project districts in the current 3 projects.

In the hills of Livingstonia in northern Malawi lives a young boy with his mother and four sisters. Chimwemwe loves to go to school, and nowadays, he no longer has to attend classes on an empty stomach.

*“I love to see a tree grow and bear fruits. It makes me happy to know that the fruits I’m eating I grew with my own hands. And look how beautiful our garden is.”* With a smile that shows how proud he is, he turns around and points at all the different vegetables and fruit trees growing in his mother’s garden. *“Now I can practice at home what I learn at school, and sometimes I can even teach my mother something.”*

**Chimwemwe,**  
14 year old learner at Mantchewe primary school

Since SCOPE started a partnership with Mantchewe School, things have changed for the better.

Not only can Chimwemwe eat three meals a day, but what he eats is also more nutritious, and the environment around his home and school has completely transformed.

Dry, infertile, and bare grounds belong to the past. Groundcover, trees, and vegetable beds full of different food are present. Chimwemwe no longer only learns about mathematics and science. He also helps to take care of the school garden, is taught how to harvest rainwater, and learns how to respect and work with nature.

*“My garden has changed, especially this year. I have planted more diversity than in the past. People visit and admire my garden, and I also eat from the same garden. When I look at my garden, I feel proud. Friends who come to admire my garden ask me for tips on how I work so they can learn from me.”*

**Ellen Mhango**

## Things are changing in Livingstonia, Rumphi district Malawi

In 2012, SCOPE Malawi and LUKWE decided to work with learners at schools, teachers, and the parents of the learners in Livingstonia in Malawi.

Malawi is one of the poorest countries in the world. Around 80 per cent of the population depends on agriculture. Government efforts are geared towards promoting productivity through improved agriculture, with a strong focus on mechanisation, hybrid seeds, and increased chemical use. Indigenous knowledge about climate-resilient and nutritious seeds, organic manure and natural pesticides are in danger of disappearing.

On top of that, climate change is causing extreme weather conditions, such as long periods of droughts and floods, which make farming unpredictable. The soils are degraded, and harvests are poor.

All these factors lead to a long, lean period of up to 6 months a year during which people simply don't have enough food to eat. This also affects children, who then have to go to school on an empty stomach. Poor grades, missed classes, and high dropout rates are the consequences. The school grounds are often bare and dry, with little to no vegetation. As a result, children do not learn how to care for the land and grow enough food to become food secure at home and school.

*"Life was indeed difficult for us. Our land was degraded and not favourable for the crops we grow. I had no knowledge of making manure like bokashi to apply to the crops. Consequently, the crops that I grew could not grow well, and the harvests were always low. Right now, I grow a variety of crops, including sweet potatoes, sugarcane, and maize. As a result, I am able to increase my returns."*

Ellen Mhango

## The work of SCOPE



**At SCOPE, parents and children can work hand in hand and even learn from each other. When working with the community, we aim to follow existing structures and involve chiefs and community leaders from the beginning.**

At SCOPE, parents and children can work hand in hand and even learn from each other. When working with the community, we aim to follow existing structures and involve chiefs and community leaders from the beginning. Throughout the different project phases, we incorporate community feedback and act according to the current need.

Currently, SCOPE Malawi is working with 50 schools, over 1250 youths both in and out of school, and over 480 households, of which 50% are female-headed in 12 project districts in the current 3 projects.

SCOPE Malawi's approach to creating a healthy environment involves working with households, teachers, and students to promote sustainable practices at home and in schools. SCOPE provides Integrated Land Use Design training to teachers and students to educate them on permaculture, agroecology practices, and WASH. SCOPE Malawi has constructed disability-friendly toilets and rainwater harvesting tanks in schools to improve access to water for learners throughout the year.

Mantchewe primary school received a rainwater harvesting tank with a storage capacity of 10,000 litres and an underground tank with a capacity of 56,000 litres.

As part of our efforts to promote sustainable living, SCOPE Malawi helps schools form permaculture clubs, providing tools and teaching materials to support them. The lessons taught at the clubs equip the children with lifelong practical skills and the knowledge to change their future for the better. The permaculture club at Mantchewe meets every week.

SCOPE Malawi recognises the importance of mindset change at a young age and youth empowerment but also acknowledges the value of indigenous knowledge in communities. For this reason, SCOPE works with households around schools to reintroduce local seed varieties and promotes seed-saving methods and intercropping, using ground covers and organic manure to improve food security in the community.

## SCOPE Malawi recognises the importance of mindset change at a young age and youth empowerment but also acknowledges the value of indigenous knowledge in communities.

### Community-school approach

The community-school approach involves all community members in improving education and achieving sustainable development goals. It aims to create a mindset change that permeates the entire community. Hands-on, locally sourced training is a key aspect of the approach, making training relevant and sustainable. Permaculture clubs provide students with opportunities to learn about sustainable agriculture and ecological conservation. School competitions can motivate teachers and students to strive for excellence and create a culture of achievement. The capacity development organisation SCOPE supports local organisations and communities to implement sustainable development projects independently.

Every school has the potential to be turned into an environment in which children learn not only their regular curriculum but also lifelong skills such as permaculture. With climate change posing risks, especially to the most vulnerable communities, agroecological practices can change people's lives for the better.

*"Before I learned about permaculture, we did not have enough to eat. The children were hesitant to go to school on an empty stomach. Children love to go to school when they have eaten and are energetic. They sometimes pretended to be sick just to stay home and not go to school."*



With climate change posing risks, especially to the most vulnerable communities, agroecological practices can change people's lives for the better.

# A community adapting to the effects of climate change

**Soil conservation:** By implementing permaculture practices and agroecological methods, SCOPE has helped to prevent soil erosion and degradation. This makes the soil more resilient to climate extremes, such as drought and heavy rainfall.

At Mantchewe, the school ground used to be bare, which invited weeds and caused erosion. After working with SCOPE, students started to keep the ground permanently covered with mulch and ground-cover plants.

**Water conservation:** Mantchewe school is based on a slope which causes heavy water flows and soil degradation. By digging swales and pits and planting trees and ground cover plants, students can now slow down the water, let it sink into the soil, and spread it.

**Biodiversity conservation:** The introduction of indigenous trees and fruit trees, along with the promotion of intercropping and companion planting practices, has helped to

increase biodiversity on school and household lands. Capacity development regarding seed-saving methods (seed banks) and seed multiplication has led to a rising number of seed varieties within the communities.

**Carbon sequestration:** The introduction of trees on school and household lands also contributes to carbon sequestration, helping to mitigate the effects of climate change by removing carbon dioxide from the atmosphere.

*“When I look back, I see my life as a changed one as I am now able to do a lot of things that I have learned from permaculture. I am mentally relieved as I am now able to figure out means of sourcing money from various alternatives, for example, producing and selling chili. My kids are also able to go to school knowing that when they come back home from school, they will find food to eat from the garden that we have here.”*

**Ellen Mhango**



## Acknowledgements

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## CASE STORY 12

# WOMEN FARMERS AT THE CENTRE OF THE TRANSITION TO AGROECOLOGY AND FACING THE CLIMATE CRISIS

The East and Southern Africa Small Scale Farmers Forum (ESAFF) in Zambia initiated a project in 2020 to support small-scale farmers in four villages in Zambia's Western Province. The project primarily targeted resource-poor small-scale farmers, including women, men, and youth, with 200 households benefiting. The project directly impacted almost 1,000 individuals, including 650 women, 270 men, and 80 youths. Community awareness of climate change adaptation and agroecology significantly increased, with farmers now aware of the climate crisis and what they can do about it.

## Context

Zambia heavily relies on rural small-scale farmers for its food supply, but they face significant challenges. High input costs and unpredictable weather caused by climate change make it difficult for farmers to meet daily food needs. Consequently, rural poverty persists at a staggering rate of 77%.

Mining has traditionally been Zambia's economic backbone, but agriculture is gaining importance. However, climate change severely affects agriculture. Unsustainable practices like excessive chemical use, monocropping, and reliance on maize harm the environment and people's health. Vulnerable households lacking resources and farming marginal land suffer the most from climate change.

Over 90% of Zambia's rural population engages in agriculture but remains poor. This underscores the urgent need to shift from chemical-based farming to sustainable agriculture. However, the cost of sustainable practices makes them unattainable for small-scale farmers and rural communities. Subsidised programmes like the Farmer Input Support Programme and Food Reserve Agency contribute to environmental degradation.

Agroecology is recognised as a production system to address agriculture's challenges, but Zambia lacks government support regarding policies, programmes, and budget. Urgent action is required to promote agroecological farming practices among small-scale farmers and foster food sovereignty for a more equitable food system.

## The project

ESAFF Zambia initiated a project in 2020 that aimed to support small-scale farmers in four villages: Nakasheke, Sibata, Nalikolo, and Kazulu, located in the Sefula Community, Mongu District, in Zambia's Western Province. The project primarily targeted resource-poor small-scale farmers, including women, men, and youth, with 200 households benefiting. Among these households, Nalikolo had 50, Nakasheke had 60, Sibata had 50, and Kazulu had 40.

The project impacted 1,000 individuals, including 650 women, 270 men, and 80 youths. Not only did the primary beneficiaries benefit, but other community members involved in the agricultural sector, such as landless agricultural labourers, fisherfolk, local traders, and farm input suppliers, also experienced reduced vulnerabilities and sustained incomes.



*"I am so happy about the project with ESAFF. Now I am preserving the local seeds for planting the next season because they are healthy. I use ash or lemons to preserve my maize, beans, groundnuts, cowpeas and pumpkin seeds for reuse the next season. I couldn't do this with the hybrid seeds. The project has taught me about agroecology and how to take care of the environment and save our indigenous seeds."*

**Anne Mutalse**

Sefula is a peri-urban community in the Western Province of Zambia, about 20 kilometres east of Mongu town. The community consists mainly of small-scale farmers who rely on agriculture for their livelihoods. They grow crops like maize, sweet potatoes, cassava, rice, and indigenous vegetables. Livestock rearing, including cattle, goats, sheep, and chickens, is common.

Despite having abundant water resources, Sefula relies on rain-fed cultivation, which makes them vulnerable to floods and droughts caused by climate change. In 2018-2019, severe droughts hit Zambia, including Sefula, resulting in crop failures and reduced yields. Livestock production also suffered due to limited pasture and water, affecting household incomes and seed reserves. The community also faced challenges from floods and the impact of COVID-19, worsening their socio-economic situation. In response to these difficulties, some community members turned to charcoal burning for income generation.



*"During the planting and harvesting season, we women help each other. We get together and share what we know with each other. This makes us all strong. At my age, I don't have the strength to pick all the vegetables from my home garden, so my neighbours always help. I don't eat meat. I eat our traditional vegetables and crops for my food. The project has taught me I can best grow our traditional crops and keep my animals and chickens healthy."*

**Margaret Habenzu**

*"Yes, climate change is real! For me, the project has helped me understand and be aware of how climate change impacts my life and my community and how we can build resilience and adaptation through agroecology!"*

**Mary Sakala**

# The Climate Change and Covid-19 Emergency Response Initiative – (CCCERI)

CCCERI was created to tackle the following challenges:

1. Inadequate food and nutrition security among community members, particularly small-scale farmer households, due to unsustainable farming practices.
2. Scarcity of water for domestic use, livestock, and gardening, resulting in reduced incomes and financial hardships.
3. Alarming loss of biodiversity and environmental degradation in the area.

The CCCERI focuses on capacity building for the local community, particularly women who are seen as custodians of cultural heritage and key players in food production and seed conservation. However, the project also includes men and youth for a more inclusive approach. The implementation process includes the following:

1. **Community Awareness:** Recognising the importance of community understanding, efforts were made to raise awareness about the benefits of addressing climate change and adopting agroecology in agriculture.
2. **Field Visits:** Farmers were given practical experiences in the field to learn about agroecological farming methods. This involved identifying groups of 50 farmers from each village, providing them with agroecology training sessions, and supplying

necessary farm inputs and equipment. Regular monitoring and evaluation were conducted to track progress in implementing sustainable practices.

3. **Project Review Workshop:** Conducted with stakeholders to assess the project's advancement and establish future plans. The workshop had multiple objectives, including raising awareness about climate change, agroecology, and gender perspectives among small-scale farmers and community members. It aimed to promote agroecology as a sustainable agricultural system for these groups while restoring household incomes through livelihood diversification. Additionally, the workshop sought to emphasise the importance of preserving biodiversity and protecting the environment within the community through training sessions on agroecological farming techniques, livelihood diversification and income restoration.

During the workshop, the focus was on acquiring and distributing locally sourced seed varieties, small ruminants, and essential farming equipment. We also undertook the rehabilitation and construction of boreholes and fishponds. Additionally, the project was closely monitored and evaluated while documenting the most effective techniques and approaches as best practices.

**The CCCERI focuses on capacity building for the local community, particularly women who are seen as custodians of cultural heritage and key players in food production and seed conservation.**



## What has changed?

The initiative successfully empowered small-scale farmers and local communities with agroecological knowledge, raised climate change awareness, collaborated with similar organisations, gained support from community leaders and government institutions, and incorporated local Indigenous knowledge. As a result, community awareness of climate change adaptation and agroecology significantly increased, with farmers now aware of the climate crisis and what they can do about it.

Farmers embraced environmental conservation practices, leading to increased land productivity, crop diversification, and improved farming methods. They achieved an average production of 70 x 50 kg bags of local maize per hectare on a two-hectare farm. Additionally, they successfully cultivated other crops such as groundnuts, sweet potatoes, beans, cowpeas, traditional vegetables, and fruits on a rotational basis.

The community reduced reliance on industrial inputs by promoting farmer-managed seed systems and organic manures like Bokashi. This resulted in annual savings of ZMW 4000 on farm inputs for households. The resilience and economic well-being of small-scale farmers and community members significantly improved, leading to a 20% increase in household incomes. Access to clean water greatly improved as the community rehabilitated existing boreholes and constructed new ones, benefitting over 200 households. Previously distant water sources are now available within less than one kilometre of homes.

However, challenges remain, including low literacy levels limiting access to information, a lack of local language materials for knowledge sharing, and biased government policies favouring industrial agriculture over sustainable and inclusive practices.

**As a result, community awareness of climate change adaptation and agroecology significantly increased, with farmers now aware of the climate crisis and what they can do about it.**



## For the future

We must promote drought-tolerant crops, ensure fair access to food and water for vulnerable households, empower farmers for climate adaptation, improve soil fertility and ecosystems, and enhance household incomes, food security, and nutrition.

## Conclusions and recommendations

Agroecology is vital for sustainable food production, environmental protection, and combating climate change. Educating farmers and communities about climate change is crucial to achieving the Sustainable Development Goals. Recommendations include raising awareness among small-scale farmers, engaging policymakers to support agroecology, integrating it into higher education, promoting agroecology as a climate change solution, and prioritising climate justice and increased financing.

### Acknowledgements

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#### WHO IS AFSA?

The Alliance for Food Sovereignty in Africa (AFSA) is a broad alliance of different civil society actors that are part of the struggle for food sovereignty and agroecology in Africa. These include: African farmers' organizations, African NGO networks, specialist African NGOs, consumer movements in Africa, international organizations which support the stance of AFSA, and individuals. Its members represent smallholder farmers, pastoralists, hunter/gatherers, indigenous peoples; faith based institutions, and environmentalists from across Africa.

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