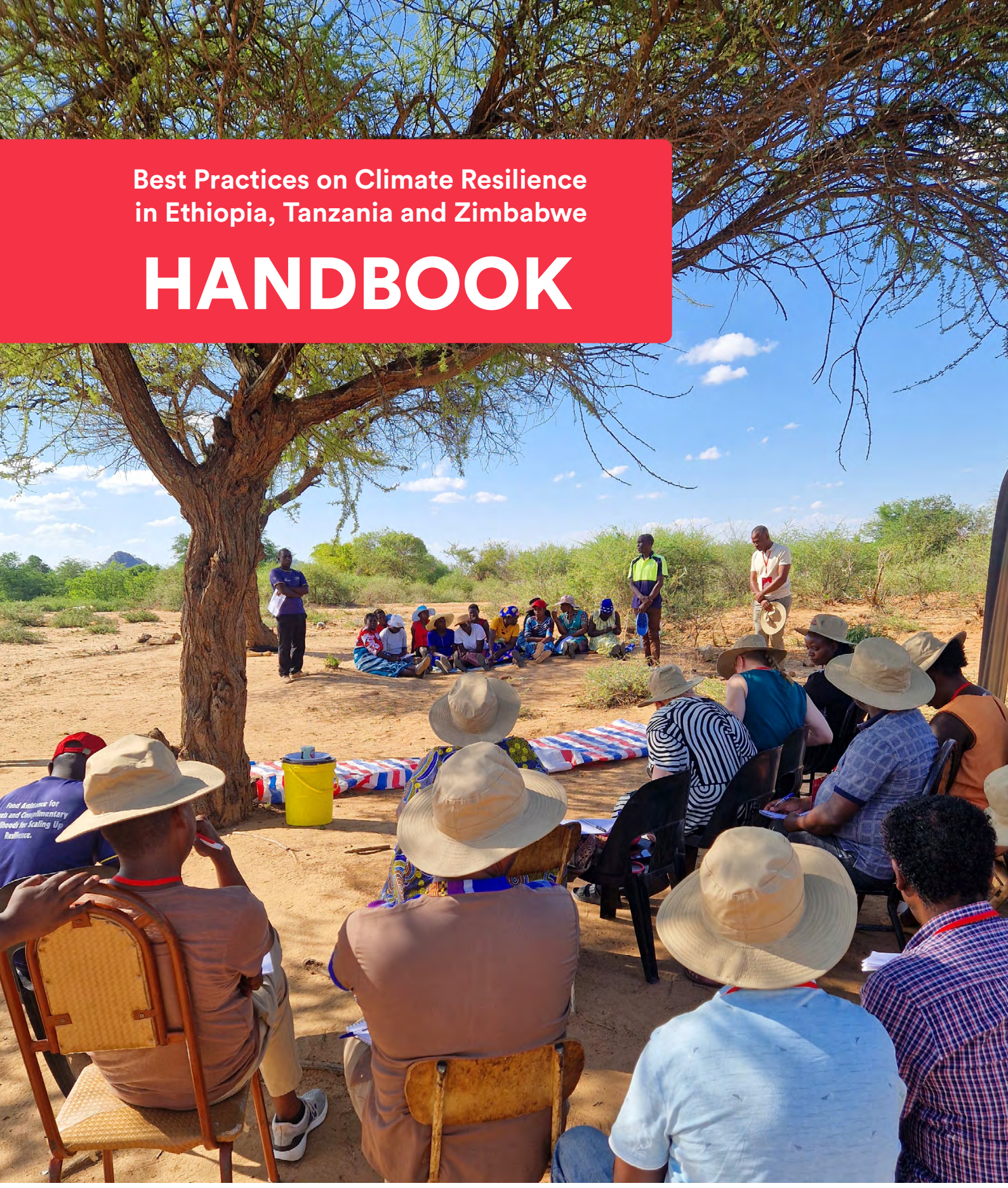
Best Practices on Climate Resilience in Ethiopia, Tanzania and Zimbabwe

HANDBOOK



With support from Finland's development cooperation

Felm 1859

ACRONYMS

AGRITEX	Agricultural, Technical and Extension Services
CA	Conservation Agriculture
EECMY DASSC	The Ethiopian Evangelical Church Mekane Yesus; Development and Social Services Commission
FELM	Finnish Evangelical Lutheran Mission
FFA	Food for Assets
IGA	Income Generating Activity
ISAL	Internal Savings and Lending Scheme
LWF	Lutheran World Federation (Ethiopia)
MWASMECD	Ministry of Women Affairs Small and Medium Enterprises Cooperatives and Development
TCRS	Tanganyika Christian Refugee Services
T4T	Training for Transformation
ZCC	Zimbabwe Council of Churches

Felm 2025

Cover: Picture by Ruusa Gawaza

Contents

1. Foreword

This Climate resilience Best Practises Handbook is part of the important section of partners thematic capacity building in Felm's Development Cooperation Programme 2022-2025. The development programme is implemented with support from Finnish development cooperation.

In the programme, Felm gives very strong emphasis in strengthening the capacities of its partners and vulnerable communities in climate resilience, including climate mitigation. Climate resilience is one of the three programme outcome areas and also a cross-cutting objective of the whole programme (Felm 2021). In addition, in the programme there is a recognized need for strengthening the capacities of vulnerable rural communities.

The information and data acquisition of this handbook was carried out in November-December 2024 in a workshop held in Zimbabwe and afterwards processing with its input together with literature review. The main writer is PhD, consultant Byron Zamasiya.

Felm acknowledges that while there is no universal definition of best practices for climate resilience, in this handbook, we combine research knowledge and evidence from the implementers, beneficiaries, partners, and stakeholders participating in climate resilience projects in the three countries. The implementers' definition of a climate-resilient best practice positively impacts livelihoods and effectiveness in addressing the problems caused by climate change. We hope that individuals, households and communities across different climate contexts adopt these best practices to collectively strengthen their capacity to cope with climate change, protect vulnerable populations, and contribute to the broader global effort to mitigate its impacts. Together, we can pave the way toward a more resilient, sustainable, and equitable world.

Byron Zamasiya **Ruusa Gawaza** **Eira Rosberg**

Figure 1: *Participants of the Climate resilience peer-learning workshop in Zimbabwe, November 2024. Picture by Felm.*

2. Introduction

As the impacts of climate change intensify and disproportionately affect people with low incomes, women and youth, the issue of building resilience becomes imperative for individuals, households, and communities. Climate resilience is the ability of these marginalised groups to anticipate, prepare for, respond to, and recover from the adverse effects of climate change. This process involves developing, testing and adopting adaptive strategies to reduce vulnerabilities, safeguard livelihoods, and ensure sustainability in the face of shifting environmental conditions. This handbook on climate-resilient best practices provides a comprehensive guide on the best practices used by Ethiopia, Tanzania and Zimbabwe beneficiaries. These case examples are tried and tested.

The best practices were compiled from the climate resilience projects that are being implemented in Zimbabwe, Tanzania and Ethiopia by Felm partners namely Tanganyika Christian Refugee Services (TCRS) from Tanzania, Ethiopian Evangelical Church Mekane Yesus Development and Social Service Commission (EECMY DASSC) and Lutheran World Federation from Ethiopia, Gwai Grandmothers from Zimbabwe and Zimbabwe Council of Churches (ZCC) from Zimbabwe. The best practices outlined in this handbook have been drawn from diverse regions and climatic contexts, reflecting the multifaceted nature of climate change challenges and responses. This handbook also synthesises critical lessons from implementing these climate-resilient practices, considering successes and setbacks. It offers pragmatic, evidence-based recommendations that can be tailored to specific contexts.

2.1 Overview of Climate Change in project sites in Ethiopia, Tanzania and Zimbabwe

This section presents an overview of climate change at the project sites in Ethiopia, Tanzania, and Zimbabwe.

Ethiopia is in the Eastern Africa region between 3°N - 15°N and 33°E - 48°E. Legeheda and Habru districts lie in Amhara, a Region of Ethiopia. This region represents high and lowlands and has diverse climatic conditions. Temperatures range from 15°C to 30°C. Rainfall in the Legeheda district ranges from 800 mm to 1,200 mm and 700 mm to 1200 for the Habru district (Muluget et al., 2024). The rainfall is usually received between June and September. The dry season stretches from October to May. Despite the high average rainfall, Legeheda and Habru districts are susceptible to droughts, especially in low-lying regions. These droughts culminate in crop failure, water scarcity and high food insecurity. The two districts are also vulnerable to localised flooding and significant erosion during the rainy season. EECMY DASSC is implementing the Building Climate Resilient Communities project by empowering women and youths in the Legeheda and Habru districts of the Amhara Region to address climate-induced challenges.

Zimbabwe is in Southern Africa. Felm-funded projects in Zimbabwe are being implemented in Mberengwa and Zvishavane districts. In these districts, average temperatures range from 25-35 degrees Celsius in the wet season, and rainfall ranges from 600 - 800mm though erratic (Mupepi & Matsa, 2023). The districts receive rainfall from November to March and are dry from April to October. These two districts are characterised by semiarid conditions, high temperatures and high variability in weather patterns. The districts are susceptible to droughts (from Nov - March) during the crop-growing season and water scarcity, especially in the dry season (April – October). These erratic weather conditions adversely affect crop production, water availability and livelihoods. Water availability is challenging, especially during the hot, dry season with minimal rainfall. In these two districts, Gwai Grandmothers is implementing a project to address the impacts of climate change. The Zimbabwe Council of Churches is the other Felm-funded partner implementing a project in wards 7 and 16 in the Zvishavane district.

Morogoro is in the central part of Tanzania. The region experiences high temperatures that are above 35oC from October to March. Morogoro has two rainy seasons: March - May and October - December. Average rainfall is 900 mm - 1,200 mm (Paavola, 2008). This area is very vulnerable to flooding during the rainy season, and soil erosion, adversely affecting crop production. Soil erosion is another significant risk, particularly in the hilly areas, as heavy rainfall can wash away topsoil, reducing land productivity and increasing vulnerability to future climate hazards. Extensive soil erosion in the hilly regions washes away the topsoil and leads to poor crop production and loss of income. Kilwa is a coastal district located on the southern coast of Tanzania along the Indian Ocean. The average temperature for Kilwa ranges between 25°C and 30°C. The area has a bi-modal rainfall pattern from March to May and October to December. Average annual rainfall ranges from around 900 mm to 1,300 mm (Megarry, 2022).

Kilwa is vulnerable to flooding and soil erosion, which decimates productive land (Misana & Tilumanywa, 2019). Kishapu is in the Shinyanga Region of northern Tanzania. Semi-arid conditions characterise this region. Average temperatures range from 25°C to 34°C. Kishapu has an unimodal rainfall pattern; most rainfall falls between November, April, March, and May (Matata et al., 2019). Average annual rainfall ranges from 600 mm to 900 mm. From May to October, Kishapu experiences dry and high temperatures. The significant climate vulnerabilities for Kishapu are drought and erratic rainfall. The dry conditions cause poor crop production, threaten livelihoods and soil quality deterioration. The region's livestock is also vulnerable to high temperatures and heat stress, reducing productivity. Poor land management in Kishapu exacerbates soil erosion and reduces agricultural productivity.

3. Best practices on climate resilience Ethiopia, Tanzania and Zimbabwe

This section presents the best practices for climate resilience in Ethiopia, Tanzania and Zimbabwe. Data on the best practices was collected through the peer learning process in Zvishavane and Mberengwa districts, key informant interviews with partners from Ethiopia and Tanzania and live notetaking during the partner presentations during a workshop in November 2024.

3.1 Soil and Water Conservation

3.1.1 Conservation agriculture

Conservation agriculture is one of the best practices for climate resilience that smallholder farmers use to address climate change's impacts. The Food and Agriculture Organisation (FAO) defines Conservation Agriculture (CA) as a farming practice promoting minimum soil disturbance, crop rotations, maintenance of permanent soil cover, and diversification of plant species. The purpose of CA is to improve water-use efficiency, reduce soil erosion, and boost crop production (Carpenter-Boggs et al., 2015). This approach is ideal when the farmer needs to address soil fertility and moisture conservation. CA is suitable for farmers who lack access to draft power and labour and those affected by chronic illnesses (FAO, 2013). In Zvishavane, farmers use conservation basins and mulching. The farmers are organised into groups of ten led by a lead farmer. The farmers then take turns visiting each group member and sink-planting basins on a plot 39m by 16m plot. The farmers sink 52 holes by 28 holes, ensuring food security each month for 52 weeks a year. The group approach helps to address the problem of labour, which discourages the adoption of the basins. The planting basins can

be used for three seasons. The farmers apply manure into each planting station and then use mulch once the seed has germinated. The purpose of the mulch is to help regulate soil temperature and conserve moisture (Kodzwa et al., 2020). Rotting mulching helps improve soil fertility. With CA, the farmer can be food secure even during a bad season, unlike conventional farming.

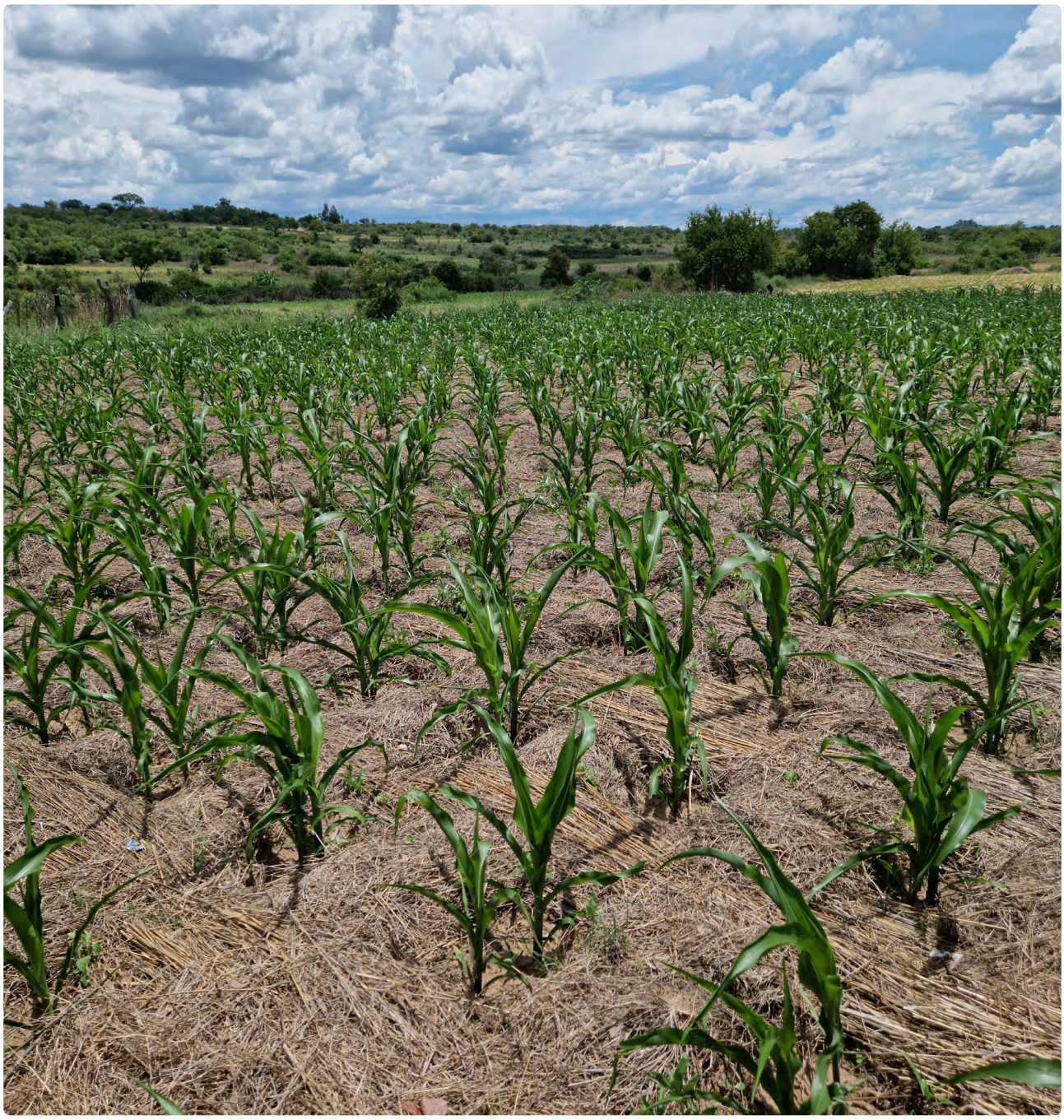


Figure 2: *Mulching. Picture by Ruusa Gawaza, Felm.*

3.1.2 Check dams in gulleys

EECMY DASSC is promoting the establishment of check dams, meaning hurdle or barrier that hinders erosion along gulleys. The checks are constructed using wood, rocks, and cement deep in the gulleys. Check dams are key for protecting the sliding away of productive farmland and with vegetation they reduce peak runoff of stormwaters. They also help in trapping silt. The farmers either plant crops on the check dams or trees and grasses are planted on the sides of the check dams.

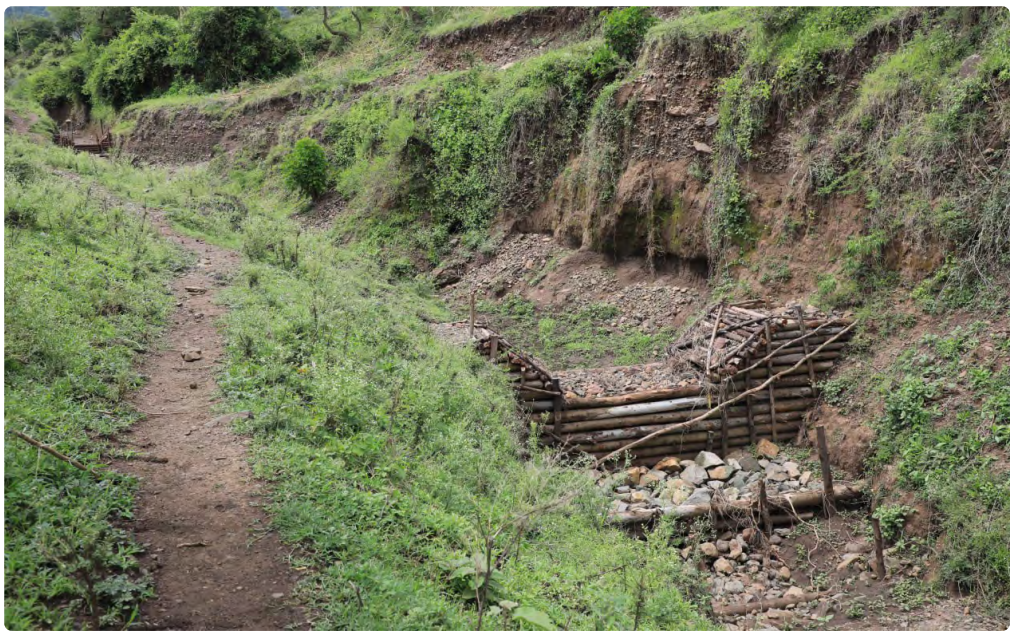


Figure 3: *Check dam along a gulley. Picture by EECMY DASSC.*

3.1.3 Half-moons bunds/Earth smiles

Half-moons or earth smiles are soil or land management practices used by smallholder farmers to conserve water (through rainwater harvesting) and prevent soil erosion (Zougmore et al., 2013). Half-moon is usually a basin with 2 m in diameter dug manually with a hoe (Zougmore, 2018). Each of the half-moons is provided with animal manure or compost. Half-moons are applicable in dry areas or on highly degraded soils. The purpose of the half-moon bunds is to reduce the speed of runoff and capture rainwater, which would wash away on bare soil and prevent or reverse gulley erosion. Farmers who use half-moon bunds can slow down runoff and store it behind the bund to facilitate infiltration into the soil. The main advantage of half-moons is that they allow seeds in the soil to germinate due to water availability. If combined with other strategies, such as applying ogre, half-moons can help improve soil fertility and productivity, improving smallholder farmers' resilience (Winterbottom et al., 2013). Farmers in Tanganyika are using half-moons to regenerate degraded lands. The strategy is quite helpful as it helps farmers to utilise the limited rainfall and improve productivity.

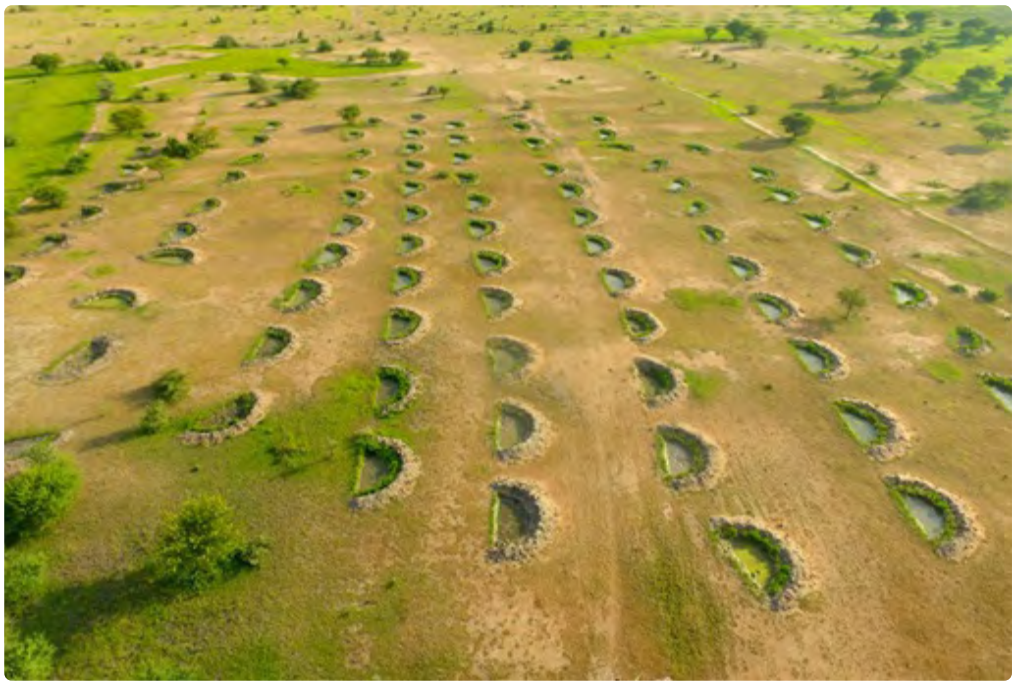


Figure 4: *Half-moon bunds in Tanzania. Picture by TCRS.*

3.1.4 River diversion

This is a technique for improving water availability and irrigation infrastructure. To use this approach, smallholder farmers construct a concrete canal diverting river flow to irrigable land. The method enhances water availability so farmers can produce three times a year. In Ethiopia, EECMY DASSC facilitated the construction of water canals. Water canals are made of concrete, which cuts leakages significantly. The negative aspect is the high carbon footprint of ordinary concrete used in the construction of canals. Through this technique, farmers have reduced water shortage and improved their productivity. Unemployed youth can now work in agricultural production through improved access to water gainfully. The increased productivity makes the farmers better able to supply their households with food throughout the year. They can also generate additional cash resources from disposing of the extra produce. The main strength of river diversion is that it reduces dependency on rainfed agriculture and improves resilience to adverse impacts of climate change through its production. Although the technique does not control the entire river flow to save water for river ecosystem and downstream uses, it is applicable in countries that allow river diversion. Also changing the river flow may have various negative environmental impacts. The environmental impact analysis is done in the planning phase of every project.

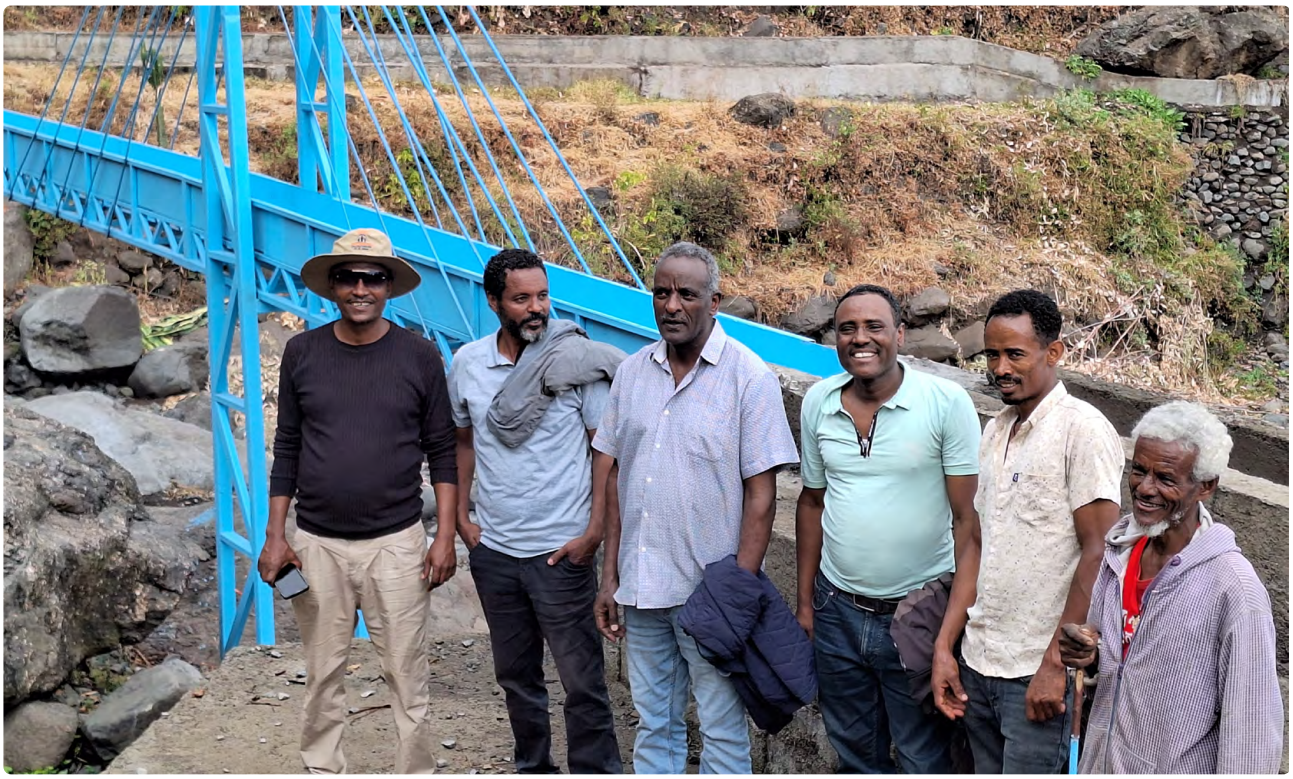


Figure 5: *River diversion for irrigation in Ethiopia. Picture by EECMY DASSC.*

3.1.5 Rehabilitation of degraded lands to conserve the soil

Ethiopia experiences high land degradation due to deforestation for wood fuel and the burning of grasses in rangelands (Solomon et al., 2024). These activities lead to soil degradation, siltation of water resources used to support agricultural productive purposes and reduced productive capacity of rangelands. Land devoid of grasses and trees is susceptible to severe degradation and high levels of acidity and erosion (Wassie, 2020). To arrest the land degradation, Felm partners in Ethiopia supported smallholder farmers the concept of agroecological farming. The key interventions that were utilised include composting, contour ploughing and reafforestation. Contour ploughing helped to reduce water runoff and soil erosion and facilitated vegetative growth. Composition involves the addition of organic matter to the soil. The organic matter helped to

improve the soil nutrients and structure. This was also complemented by afforestation using indigenous and exotic fruit trees. The Felm partner innovated by capitalising on celebrations such as World Environmental Day and fusing the work in Environmental Clubs at schools. Planting trees and grasses helps keep the soil intact and improves infiltration. This strategy can be integrated with beekeeping to generate financial resources.

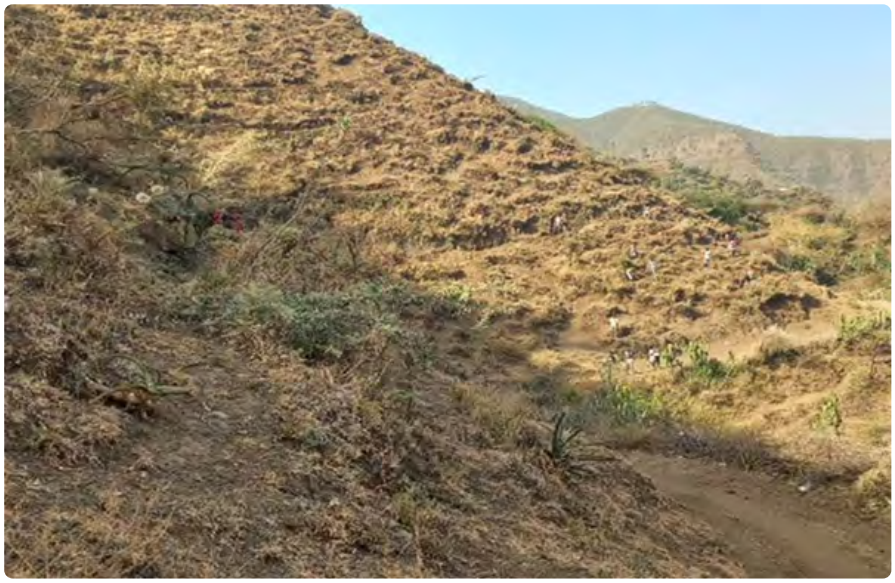


Figure 6: *Soil conservation on degraded land. Picture by EEC-MY DASSC.*

3.2 Climate-resilient crops

Climate change causes extreme stress in agricultural production and results in reduced productivity especially for resource constrained smallholder farmers. With financial support from Felm, farmers in Tanganyika are using climate-resilient crops/stress-tolerant seed varieties and livestock. These crops include adapted crop cultivars for sorghum, cassava, sunflower and sweet potatoes. The major strength of these crops is that they are suitable for local climatic conditions and still produce better yields than other varieties, even under stressful climatic conditions. Their ability to thrive in stressed climatic conditions ensures farmers stay food secure under changing climatic conditions. The downside of even the most resilient small livestock or crops is that with extreme weather events, even the resilient crops will fail. That situation is called climate change-induced loss and damage.

Figure 7: *Holo Mayunga from Kishapu district, Tanzania, with drought resilient crops called Sorghum. Picture by TCRS.*

3.3 Internal Savings and Lending Schemes

Internal Savings and Lending Schemes (ISALs) are one of the climate-resilient best practices used by households in Zimbabwe. The Zimbabwe Council of Churches, in collaboration with officers from the Ministry of Women Affairs, Community, Small and Medium Enterprises Development, facilitated the establishment of ISALs. An ISAL is formed by a small group of people who agree to contribute a certain amount of money regularly (weekly, monthly) into a group fund (Kabonga et al., 2021). The primary purpose of establishing an ISAL is for members to grow their financial resources for income generation (Chikuvadze, 2018). The operations of an ISAL are guided by a constitution developed and signed by the members. When the group members contribute money, it is lent to the members as a loan at an agreed interest rate. For in-stance, in Zvishavane, ZCC and the MWASMECD trained ten members led by a lead farmer. The group started by contributing USD$5 per month. The money was loaned out at 20% per month. If there are no loan takers for the ISAL group's funds, the group members equally distribute the money at the agreed interest rate. Money that any of the group members borrows is usually invested in Income income-generating activities (IGA).

At the time of repayment, the borrower is expected to repay the principal amount and the interest. For security reasons, ISALs do not keep liquid cash as they distribute it on the same day it is repaid. Most people who start ISALs can usually not approach banks or Microfinance institutions to borrow money because of a lack of collateral security or a borrowing record. ISALs allow members to access financial resources that can be used to pay for climate adaptation transaction costs. Because of the interest component, ISALs discourage borrowers from engaging in consumptive borrowing. At the end of each financial year, the group shared its financial resources and restarted the contributions. Most members purchased household equipment and big pots they rented out to others. This approach enables the participants to implement a circular business model.

Village Community Banks / Community Microfinance Management System

In Ethiopia and Tanzania, beneficiaries implemented Village Community Banks (VICOBAs). These institutions are an informal microfinance comprising self-help groups of low-income communities (Mponzi et al., 2023). VICOBAs were designed to help poor communities who do not have collateral security access loans from formal lenders and build savings. Usually, VICOBAs are formed by men and women from who are all known to each other and are from the same village. Thes people must be driven by a common interest to form a VICOBA. The purpose of a VICOBA is for the members to assist each other in mobilising financial resources and building savings over a certain period (Lotto, 2018). To form a VICOBA, the initial number of members ranges between 10 and 30. A VICOBA must be registered with the local authority to function (Mponzi et al., 2023). This is not the case with ISALs which can still operate without being formalised. The affairs of a VICOBA are run by a chairperson, treasurer, and secretary and are guided by a group constitution. It is a requirement that each VICOBA member signs the constitution for accountability purposes. The frequency of meetings can be weekly, biweekly and monthly. A borrower is supposed to submit their name and the amount to be borrowed to the Secretary before the meeting. The loan has to be guaranteed by two members of the group. This means that if a member fails to repay the loan and interest, the group can deduct the loan from the savings, and if there is a balance, the guarantors are expected to pay it off. At each meetings members are required to bring an agreed saving, and borrowers are expected to bring their repayments. In a VICOBA, failure to meet a repayment for a loan attracts a penalty. This penalty is stated in the constitution. We observe that the issue of bringing savings and the need for guaranteeing by two members distinguishes VICOBAs from ISALs. At the end of each financial year, members of VICOBA meet to share their profits (from interest repayments). All members without loans are given back their savings and share of the profit. For those with loans, the amount owed is first deducted from their savings and the balance from their share of profits. An outstanding balance is recovered from the guarantors. On that same day, the members will contribute to a new cycle.

Figure 8: *VICOBA members in Tanzania. Picture by TCRS.*

3.4 Community Asset Creation through Food for Assets

The Food for Assets (FFA) approach is a community development strategy involving food aid, labour-based methods, and participatory decision-making approaches to develop productive assets (Patton, 2014). The assets created through FFA are owned, managed and maintained by households or the community. This improves resilience to climate change by mobilising communities to build or rehabilitate assets by addressing their immediate food needs through cash, vouchers or food transfers (Ndlovu & Nyamukure, 2023). For instance, using a garden enhances one's food supply through producing and selling the product. The Zimbabwe Council of Churches facilitated the communities in Ward 16 in the Zvishavane district to create community assets that helped to enhance their resilience to climate change. In this case, the organisation facilitated the establishment of a community garden using the Food for Assets (FFA) approach. In collaboration with AGRITEX, ZCC facilitates the establishment of a community garden to diversify livelihoods. The purpose of the garden was to showcase to the farmers that it is possible to establish a garden using a metal wire fence in dry areas like Zvishavane. The garden measures 50m by 30m and has tall and low crops on the same beds.

Figure 9: *Community garden in Zvishavane region. Picture by Eira Rosberg, Felm.*

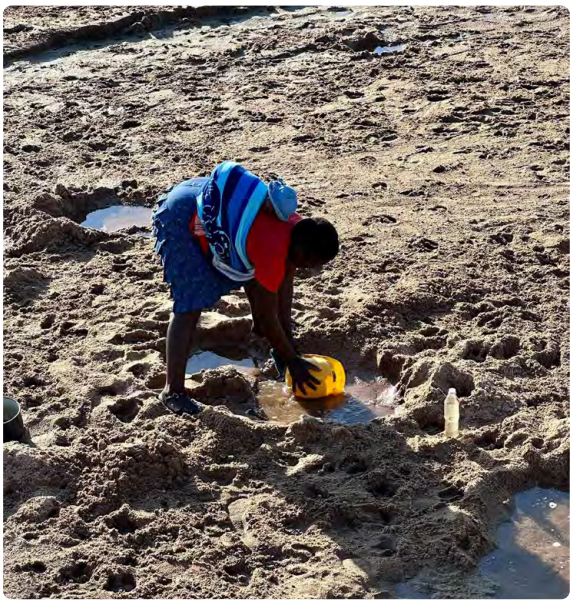


Figure 10: *The dried River Gwemombe next to the garden. Picture by Anna Suoheimo, Felm.*

Communities usually establish gardens by cutting down trees for poles and using the branches as fences. This exacerbates climate change by reducing transpiration, decimating the sink for greenhouse gases and leaving the ground prone to erosion. For the new garden, ZCC organised food for work, where communities provided labour to erect the garden in exchange for food staff. The farmers produce vegetables and sell them to the private sector. Through the income, the farmers can better manage the impacts of climate change. The major challenge with this approach is that the farmers expect the donor to sink a borehole to provide water to the garden. The drought amplified by climate change revealed vulnerability, as the garden's water source River Gwemombe dried.

3.5 Livelihood diversification

Livelihood diversification is a key best practice for enhancing climate resilience. A diversified group engages in multiple livelihood activities or cash sources (Zamasiya et al., forthcoming). Livelihood diversification effectively buffs against unpredictable climate shocks (Bene et al., 2015). With funding from Felm, project beneficiaries across the three countries have increased income generation opportunities. The additional income sources help the groups to self-finance their operations without exerting pressure on project funds. In the case of Zimbabwe, Gwai Grandmothers have ventured into detergent production. The group is producing foam baths and dishwashers. The group also produces traditional medicine to treat common ailments (flu, headache, stomachache) and add value to conventional vegetables. The medicines are sold to the local community members. The major challenge with some livelihood diversification strategies is that if climate change intensifies, households may prioritise food items, negatively affecting detergent income generation.

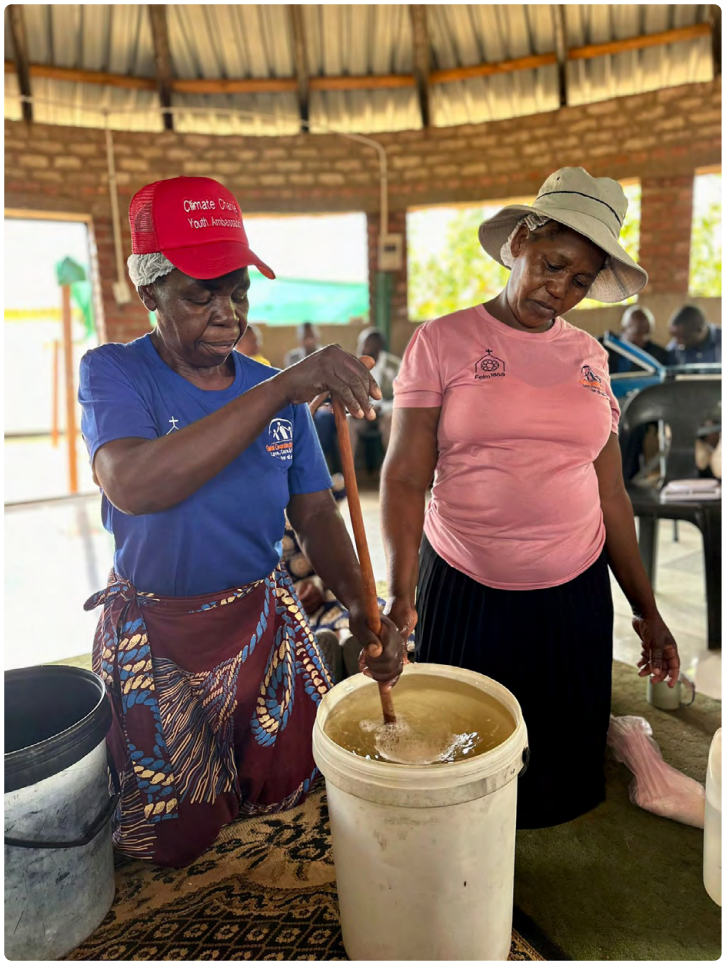


Figure 11: *Gladys Maposa (on left) and Forfature Shoko in soap preparation in Gwai village, Zimbabwe. Picture Anna Suoheimo, Felm.*

In Tanzania, the Tanzania Christian Refugee Services (TCRS) uses market gardening and small and medium-sized livestock to diversify livelihoods for the beneficiaries. Market gardening helps the beneficiaries to realise financial resources that they can use to buffer food shocks. Promoting small and medium-sized livestock is also an essential strategy for livelihood diversification. This is because small and medium-sized livestock helps to diversify the farming system and make households more resilient to climate change (Zamasiya et al., 2020). The organisation uses improved breeds for chickens and goats. The improved breeds are more suited to the climate and are easy to dispose of, as women can sell them without seeking

approval from their husbands. A similar strategy is also being used in Ethiopia, where the farmers are engaged in rearing layers of chickens. They then dispose of the eggs and raise critical financial resources for managing the impacts of climate change.

Figure 12: *Small livestock rearing. Picture by TCRS.*

3.6 Sustainable energy practices

3.6.1 Biogas digesters integration with vegetable garden

Irrigation farmers in Ethiopia are integrating biogas digesters with vegetable production to address their household's energy needs. The irrigation farmers produce much green waste, which they have decided to use in biogas digesters. They use vegetable slurry as inputs for the biogas. When the materials have rotted, they take the slurry from the bigas and utilise it as manure in gardens. Farmers indicated that the slurry is very effective in improving crop yield. One of the key issues learned from this technology is that biogas helps reduce reliance on wood fuel for fire. However, there are social barriers that prevent using human waste as part of the digestion mass.

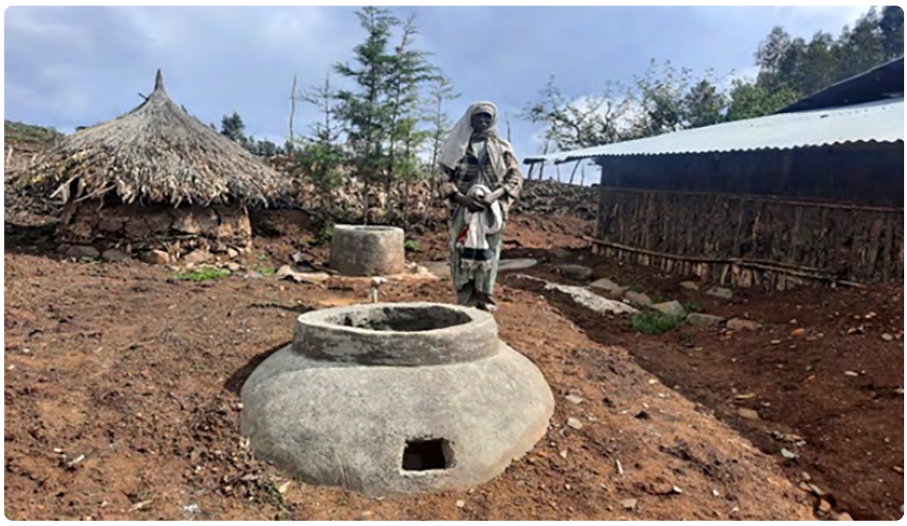


Figure 13: *Mekoya Kassaw and her biogas digester. In addition to cooking, biogas leftover is used in their farm to improve the fertility of the soil and hence crop yield. Picture by Wandem Feleke EECMY DASSC.*

3.6.2 Wood savings stoves

Farmers from Tanzania, Ethiopia and Zimbabwe use wood-saving stoves as a climate-resilient strategy. The wood-saving stoves are designed so that a few pieces of wood or smaller pieces like branches are needed. The heat from the wood-saving stove is so concentrated that cooking can be done in a shorter period than with an open fire. The wood-saving stove's major strength is that it saves communities from cutting down wet trees for firewood. The number of trees cut is also limited because the practice is fuel-efficient. Wood-saving stoves can also utilise cow dung. These stoves save time for women as they take much less time than conventional cooking stoves. They can also be used to cook many foods simultaneously, which is more efficient.

Figure 14: *Wood saving stove. Picture by Ruusa Gawaza, Felm.*

3.6.3 Biochar briquettes

LWF in Ethiopia Gambella is using briquettes as a climate-resilient strategy. The briquettes are made from biomass and cow dung and act as a substitute for wood fuel. Using briquettes for cooking reduces the need for wood fuel and don't need so much fire maintenance but burn longer. This technology saves forests as the farmers use crop residues and cow dung. However, the only unfortunate part is that the farmers need a generator run on fuel to produce the biochar briquettes. If a clean energy source could be used, then the briquettes could be very helpful in managing the impacts of climate change.

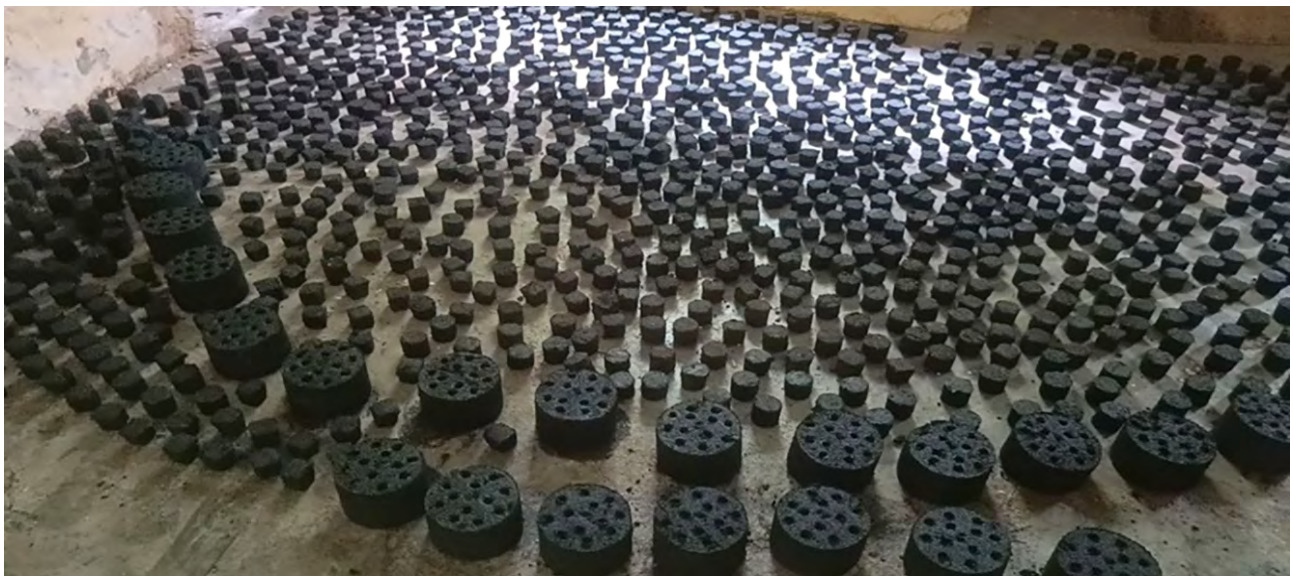


Figure 15: *Biochar briquettes. Picture by LWF Ethiopia.*

4. Lessons Learned from Local Communities in Zimbabwe, Tanzania and Ethiopia

- Build **interventions riding on existing structures.**
  Development partners must ride on existing structures to strengthen communities' resilience to climate change. Existing structures provide a springboard for the project interventions and give post-project continuity implementation. For instance, the Gwai Grandmothers Group had a functional group. The project used these as a springboard for its interventions.

- **Linking capital** is key for the sustainability of interventions.
  Communities with strong linkages to government stakeholders can better manage the challenges they face in their projects. Gwai Grandmothers Group, as it has substantial social capital linked to the District Development Coordinator's Office, Ministry of Women Affairs, Ministry of Lands Agriculture, Water Fisheries, and Rural Development. Linking social capital is associated with vertical relationships between people and institutionalised authority (Szreter & Woolcock, 2004).

- Layer **Food for Asset Interventions with Training** for Transformation
  Interventions such as Food for Assets must be layered with Training for Transformation to inspire beneficiaries to innovatively address challenges or other needs without relying on the donor for further financing. This is key given the increased number of communities in need at a time when donor funding is reducing.

- Integrate interventions with **income-generating activities for sustainability.**
  Climate resilience project interventions need to be integrated with income-generating activities. This helps the groups and communities generate additional income resources to finance their interventions. Gwai's Grandmothers Group, which ventured into detergent production, exemplified this. Selling foam baths and dishwashers helps the group generate additional financial resources to bankroll its child protection interventions. The group also produced uniforms and paid school fees for the children it cared for.

- **Pooled labour** improves the adoption of labour-intensive climate change resilience practices.
  Smaller farmers in the Zvishavane district practice conservation agriculture using a group approach. Most farmers need help purchasing mechanical implements for sinking conservation basins. By working in groups, they can dig the planting basins on time in preparation for the season. Pooling labour addresses the labour challenge, which usually discourages the adoption of conservation basins.

- **ISALs and VICOBAs generate critical financial resources** for building the resilience of households during climate shocks.
  In most cases, smallholder farmers need more collateral security to access financial resources from commercial banks and Micro Finance Institutions (MFI). In the case of Ethiopia, Tanzania and Zimbabwe, most smallholder farmers are unbanked (not linked to formal financial institutions) as they reside in remote areas with no brick-and-mortar banks. The smallholder farmers have no collateral security to access capital from formal financial institutions. Because of their inability to access credit from formal financial institutions, smallholder farmers establish ISALs (Zimbabwe) and VICOBAs (Tanzania and Ethiopia). The purpose of ISALs is to grow their financial resources and be able to finance income-generating activities. ISALs, therefore, provide meaningful access to economic resources that smallholder farmers can use for resilience building.

- **Market linkages to private sector** players enhance income generation for households.
  Across the three countries, market linkages for agricultural produce enhance income generation for the project beneficiaries. Market linkages help the farmers not to be stranded with their produce. For instance, the garden group in ward 16 in Zvishavane sells its vegetables to a private player in Zvishavane. The private player pays the suppliers in foreign currency, making it lucrative for the farmers. It is also vital for the farmers' groups to formalise, to enable them to access high-value markets and chains. This can be done by registering with appropriate government institutions. In the case of Zimbabwe, the Ministry of Women Affairs Community, Smal and Medium Enterprises Development could facilitate the process. In Tanzania, the local authority is responsible for that role. Registration will allow the farmers to open and operate bank accounts and to also enter contracts. This may be difficult if the group is not formalised.

- **Livelihood diversification** is key for smoothening consumption during climate shocks
  Livelihood diversification is essential for smoothening household food security through risk management. Beneficiaries with diversified livelihoods are more likely to withstand the impacts of climate change better. This is because some enterprises are more sensitive to the effects of climate change than others.

- **Integration of biogas digesters** and vegetable production helps to manage green waste (garden waste and slurry).
  Using vegetable waste to produce biogas is an efficient strategy for managing garden waste and producing clean energy. After biogas production the mass can be further composted or used as soil improvement.

- **Biochar briquettes and wood-saving stoves** help preserve forests and mitigate climate change
  Using cow dung/crop waste briquettes and wood-saving stoves are a key strategies for protecting forests from destruction for wood fuel. These two strategies can help improve transpiration if adopted at a large scale.

- **Combining soil conservation with Environmental Day celebration and school clubs helps to raise awareness among school children and community members.**
  Using celebrations and fusing Natural Resources Management in school clubs is a good way to raise awareness of soil conservation through tree planting.

- **Indigenous and exotic fruit trees enhance income for farmers**
  Use of indigenous and exotic trees enhances farmers' participation in soil conservation through the lure of income from the fruit trees.

5. Conclusion

This handbook has demonstrated that beneficiaries are using different strategies for climate resilience to address climate challenges. These cases include best practices in soil and water conservation, climate-resilient crops, Internal Savings and Lending Schemes, community asset creation through Food for Assets, livelihood diversification and sustainable energy practices. The best practices are beneficial for the whole community and have simultaneously other positive environmental impacts, so they are multi-beneficial. Whereas these case strategies have been used and proven effective in practice, and they are tackling the climate change's impacts, their efficacy depends on the context and severity of the climate shock.

6. Recommendations

- **Prioritise market linkages**
  Market-driven production helps to stabilise groups in terms of income generation and sustainability. To enhance the resilience of groups to climate change, groups must be linked to lucrative markets that can sustain production. This will help the farmers avoid being stranded with their produce or the groups not being stranded with other non-farm produce such as detergents.

- **Training for Transformation**
  To enhance sustainability and to raise consciousness among project beneficiaries on the need to contribute their resources towards a project, it is crucial to layer project interventions with Training for Transformation (T4T). This approach will help instil in the beneficiaries that despite donor funds, they also need to make innovative contributions to complement project-funded interventions.

- **Integrate ISALs in climate-resilient interventions.**
  Climate-resilient interventions must be integrated with ISALs to enable the groups to generate financial resources for livelihood diversification or income generation. Circular economy business models are one option as income generating activity. The ISALs help to mobilise financial resources from the project beneficiaries. The resources can then be used to finance other needy project interventions.

- **Promote Agroecology to address moisture stress and soil fertility decline.**
  Climate change causes soil fertility decline and exacerbates moisture stress, adversely affecting productivity and resilience to climate change. Unfortunately, climate change intensifies when farmers are battling other challenges, including rising input costs, crop disease outbreak and lack of appropriate seeds. Therefore, farming practices such as agroecology should be promoted as they address soil fertility decline, arrest high cost of inputs and moisture stress.

6.1 Further recommendations

Promote community seed banks for climate-resilient crops
It is also important to create or strengthen community seed banks in climate-resilient interventions. These banks can help communities store seeds from climate-resilient crops adapted to local climatic conditions. In most cases, climate-resilient crop varieties are tolerant to local diseases and temperatures, more drought-resistant, and have high yields in challenging climate conditions. Community seed banks can help facilitate access to and exchange among community members and promote appropriate responses to climate shocks. The crop germplasm may not be readily available from companies involved in industrial seed production.

Deliberately empower women in climate-resilient interventions.
Women are the hardest hit by climate change, and they also have limited coping opportunities because of their gender, unpaid care work and other household responsibilities. They play a crucial role in agriculture, often engaging in crop production, but have limited control over market access, the use of income, and key decisions within households and communities. These inequalities undermine their ability to adapt to and mitigate the impacts of climate change. To enhance their resilience to climate change, there is a need for climate resilience interventions that are gender sensitive and target women deliberately. The interventions should consider that they do not exacerbate existing gender inequalities, such as women's time poverty, labour, control and access to assets and income, and decision-making power.

Appendices

Glossary of Terms

Circular economy – model of production and consumption which slows down the use of natural resources, reduces landscape and habitat disruption, helps to limit biodiversity loss and reduces total greenhouse gas emissions. Circular economy business models aim to maintain the value of the material, resource or product, for example, by reusing, lending, repairing or recycling and by using digital platforms to achieve new groups of people or other businesses.

Conservation Agriculture – as a farming practice that promotes minimum soil disturbance, crop rotations, maintenance of permanent soil cover, and diversification of plant species.

Half-moon bund - A half-moon is a basin 2 m in diameter and is usually dug manually with a hoe.

Internal Savings and Loan Schemes – An ISAL is formed by a small group of people who come together and agree to contribute a certain amount of money regularly (weekly, monthly) into a group fund for financial resources.

Livelihood diversification – diversification of income-generating opportunities.

Food for Assets -this approach is used to improve resilience to climate change by mobilising communities to build or rehabilitate assets by addressing their immediate food needs through cash, vouchers or food transfers.

VICOBA - an informal microfinance institution based on small self-helping groups of low-income communities.

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