Climate Resilient Agriculture
Kenya
Programme BRIEFING
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They taught us about the different seeds that can do well in this area such as cow peas. For example, the training taught me how to dig deeper so the tap root can go down, and the plant can get the nutrients that it needs to be healthy and strong. Farming is easier with the knowledge I'm getting from the training. With the money I made from the last harvest, I bought three goats, household items and three chicken. I feel like my life is getting better.”

Manuve, a farmer in Mwingi West, Kitui County

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Traidcraft Exchange

Traidcraft Exchange is an international development NGO that uses the power of trade to bring about lasting solutions to poverty. Working with partners, we implement development programmes in Africa and South Asia, work directly with businesses to improve their supply chains, and campaign in the UK for justice and fairness in international trade.

Traidcraft Exchange’s ‘Programme Briefings’ aim to document the approaches, impact and learning achieved by our work within a specific sector. The focus of this Programme Briefing is climate resilient smallholder agriculture in Kenya. We hope that documenting and publishing our work in this way will stimulate discussion with others in the sector, generating improvements to programming and new collaborations that extend and deepen impact.
Introduction to SMALLHOLDER AGRICULTURE AND CLIMATE CHANGE IN KENYA

Arid and semi-arid lands (ASAL) make up over 80% of Kenya’s landmass. They provide a home to 36% of Kenya’s population, 70% of its livestock and 90% of its wildlife (Govt of Kenya, 2020). For an economy centred around agriculture, and with a tourism industry orientated around wildlife tourism, the ASALs represent a critical but vulnerable resource for the country’s sustainable development.

Traidcraft Exchange’s climate resilient agriculture programme is focused in counties within the semi-arid category. Here annual rainfall levels range between 450 – 900mm, typically falling in two seasons: the ‘Long Rains’ between March and May, and the ‘Short Rains’ from October to December. However, Kenya is affected by El Niño and La Niña, making it prone to cyclical prolonged droughts and serious floods, especially in the ASALs; in addition, climate change is making the rainy seasons less predictable (Global Environment Facility 2017). The Kenyan government predicts droughts will become more extreme in coming decades. Kenya is already considered a water-scarce country, and water availability is predicted to decrease from 568m³ per capita to 386m³ by 2030 (ibid). This combined with generally shallow and low fertility soils will make life even more challenging for farmers in Kenya’s ASAL.

Communities in Kenya’s semi-arid lands are amongst the country’s poorest. In Eastern Province, home to the programme’s target counties, 42% of people experience multidimensional poverty, with a further 40% considered ‘vulnerable’ to multidimensional poverty. (OPHI 2019).

Agriculture remains the main livelihood activity, but smallholder farmers struggle to grow sufficient food to meet needs. Smallholders are struggling to adapt practices to the era of climate emergency, and have limited access to the services and resources that could help, including training, information and appropriate technology. As a result, productivity remains low and changing rainfall patterns are exacerbating the risk of crop failure.

Despite low yields, most farmers depend on some marketing of produce to support household incomes. However, smallholder capacity to negotiate for decent prices is limited by lack of farmer organisation, limited market knowledge, weak negotiation skills, low volumes and sometimes poor quality product. A desperate need for cash immediately after harvesting leads to distress sales. Low incomes contribute to a negative cycle of declining production, as smallholders struggle to invest in their farms.

Nonetheless, value chain analysis demonstrates that key crops have potential to improve smallholder livelihoods in Kenya’s semi-arid lands. Small grains such as millet and sorghum, as well as drought-resistant varieties of legumes such as green grams, cow peas, pigeon peas and black beans (dolichos lablab) are well-suited to semi-arid soils. Good market demand coupled with excellent nutritional value help make many of these viable crops. These opportunities combined with Traidcraft Exchange’s expertise in supporting the formation of producer organisations, developing business skills, and facilitating links with key value chain actors, led to the development of the climate resilient smallholder agriculture programme in Kenya.

Gender and agriculture

The majority of farming activities are undertaken by women. Women face the double-burden of income generation and domestic responsibilities. When households face food shortages, women are often the first to skip meals. Outward migration of male members as well as the impact of HIV/AIDS has contributed to high numbers of female-headed households, with associated vulnerability and economic poverty. Youth no longer see a future in agriculture, leading to migration to urban areas in search of work, and a risk of anti-social behaviour and/or crime.
WHERE we’ve worked

Phase 1 – 2011-16
‘Strengthening Agricultural Livelihoods Innovations’
EMBU COUNTY:
- Sub-counties: Mbeere South, Mbeere North
- Participants: 2100 farmers
- 1500 women
- 600 men

Phase 2 – 2014-17
‘Flourishing in Vulnerable Environments’
EMBU COUNTY:
- Sub-county: Mbeere South
- Participants: 2170 farmers
- 1545 women
- 530 men

Phase 3 – 2018-21
‘Sustainable Agriculture & Women’s Advancement’
MERU COUNTY:
- Sub-county: Buuri
- Participants: 2120 farmers
- 1590 women
- 530 men

All participants in the programme are smallholder farmers with farm plots of 0.5 to 5 hectares.

Jackline Mwanza’s home & farm
Credit: TX.
Poverty and environmental degradation are closely interlinked. Livelihoods are highly dependent on the quality and availability of natural resources, but these are being degraded and climate change is accentuating risks: the poorest and most vulnerable members of society are paying the highest price.

The overall approach of the Traidcraft Exchange ‘climate resilient agriculture programme’ is described below and captured in the following diagram.

**PROGRAMME APPROACH**

The focus of Traidcraft Exchange’s work is the economic empowerment of small-scale farmers, producers and workers through trade. Working through diverse partnerships with civil society, government and the private sector, we want to see smallholder farmers, in particular women and the most vulnerable, earn higher incomes, and a fairer share of the value of the products they supply. Poverty and environmental degradation are closely linked to...

**Key elements of the Programme Approach**

- **DEVELOPING PRODUCER ORGANISATIONS**
  - Collective working through the formation and strengthening of producer organisations provides the foundation of the programme approach. Collective working enables smallholder farmers to access training and support, develop social capital, strengthen voice, achieve economies of scale, and improve negotiating power.
  - At the village-level farmers organise into groups, which, once running well, are federated under associations. Through training and mentoring, Traidcraft Exchange supports these institutions to be well-run, democratically governed, financially sustainable and business orientated.

- **BUILDING BETTER BUSINESSES**
  - Once working collectively, smallholder farmers are supported to see themselves as business people and their producer organisations as business entities. Training and mentoring enables producers to develop a fuller understanding of the value chains in which they are actors; utilise financial management tools and processes; explore alternative routes to market; develop business negotiation skills; and diversify income-generating activities where appropriate.

**Achievements**

- **In phase 1**, 2,100 farmers (including 1,500 women) organised into 20 producer groups, federated under 3 ‘producer associations’.
  - After 3 years of Phase 2, 14 producer associations were trained on record keeping, including on volumes produced, production costs, sales and acreage under production.

- **In phase 2**, 6,018 farmers (including 4,473 women) organised into 86 producer groups, federated under 14 ‘producer associations’.
  - After 3 years of Phase 2, 100% of participating farmers reported that their needs had been met by the group.
  - After 3 years of Phase 2, 14 producer associations and 82 groups were legally registered, have democratically elected leaders and hold meetings at least once a month. Associations are registered as ‘community-based organisations’, with their governance and operations guided by a written constitution and executive committee.

- **In phase 3**, 841 farmers (including 703 women) were trained on record keeping, including on volumes produced, production costs, sales and acreage under production.
  - After 5 years, 63% were continuing to keep their records up to date.

“What I saw unique and good about the training is that we were trained on the farm. They used to tell us when they were coming, we’d call farmers and we met on the farm. We used to plant all the crops together, they taught us how to do pure stands, how to trap and harvest water.”

Nicholas, a ‘Community Based Service Provider’ and farmer, Mwingi West, Kitui County.
Early planting helps your crop get all the moisture in areas like this where rains are not good, while early harvesting is so you don’t lose your harvest to birds because they over-mature on the farm. Then, storage, for example using the pics sacks, then putting a raised support base/platform underneath the sacks, and making sure the store has no moisture and is well ventilated,”

Samuel, a farmer in Mbeere South, Embu County

I also like the joint marketing introduced by the project because I don’t go to look for a market on my own. The cluster bulks our produces, the buyer comes, we negotiate the prices and they pay. And such buyers pay better prices than brokers.”

Julia, a farmer in Mwingi central, Kitui County

**Key elements of the Programme Approach** cont.

**CLIMATE RESILIENT AGRICULTURE**

Alongside support on business skills, farmers and their organisations are supported to take-up climate resilient agriculture practices. These aim to increase productivity, reduce costs, and improve product quality – whilst at the same time improving soil health and water retention. Specific practices include: early planting, early weeding, early land preparation, manure application, balanced fertilizer-use, crop rotation, balanced pesticide-use, and water conservation practices. Specific climate resilient crops are also promoted, including drought resistant seed varieties.

**Achievements**

*After 5 years of phase 1, 72% of participating farmers were found to be using climate resilient agriculture practices. These contributed to increases in yield. After 5 years, average yields had increased by 35% for sorghum, 31% for green grams, and 10% for millet. In some seasons, good rains also contributed to these changes. At the programme outset, farmers were growing targeted climate resilient crops on 1.2 acres per household, on average. After 5 years of phase 1, this had increased to 2 acres per household. After 3 years of phase 2, 100% of participating farmers had adopted at least 2 recommended climate resilient agriculture practices. And 46% had increased yields of cow pea by 45% or more, 29% had increased sorghum yields by 45%+, 22% had increased green gram yields by 45%+, and 14% had increased pigeon pea yields by 45%+.*

**PROMOTING APPROPRIATE TECHNOLOGIES**

The programme promotes and supports the uptake and ongoing use of appropriate technologies that help build resilience to the changing climate. These include improved localised weather forecasting information, water harvesting technologies that enable farmers to make the most of the rains when they come, and improved post-harvest handling technologies that improve product quality and longevity.

**Achievements**

*In phase 1 an SMS localised weather forecasting service was piloted. The SMS service was complemented by seasonal forums where information was shared in-person with farmers prior to the start of the new season. This included: expected rainfall levels and distribution, appropriate crop varieties to plant, soil and water conservation practices, and livestock management advice. After 3 years of phase 2, 88% of the farmers who felt a need for weather forecasting information had accessed it through their producer groups, mainly via flyers and forums. Farmers were trained on water harvesting and conservation, including the construction of water pans and use of dam liners. ‘Hermetic bags’ for post-harvest storage were promoted. These improve quality and longevity of stored grains without the application of chemical pesticides.*

**IMPROVING ACCESS TO SERVICES**

Smallholder farmers often struggle to access the services they need from both the private and public sectors. The programme works to address this by strengthening links between existing service providers and organised producers, and developing the skills of lead farmers to provide services to their fellow smallholders as a form of last-mile service delivery.

**Achievements**

*During the 5 years of phase 1, organised farmers were linked to the ‘sub-county agricultural offices’ enabling them to avail the services of the Ministry of Agriculture. Strong relationships developed between the producer associations and these offices, enabling these government offices to understand farmer needs and meet their own targets. During phase 2, 53 lead farmers were recruited, trained and supported to work as ‘Community Based Service Providers’ to provide crucial last-mile services on key topics such as terracing. Training and advice is provided in local dialects, and supported by pictorial training materials, ensuring accessibility. After 3 years, 84% of farmers who felt a need for training and advisory services had accessed these via their producer groups.*
When you have your own harvest, you can save the money you used to spend to buy food and even sell some of your harvest for cash. A woman and a man in a home is about helping one another.”

Christine, a farmer in Mwingi West, Kitui County

Key elements of the Programme Approach cont.

STRENGTHENING LINKS TO MARKETS
The programme works to improve market linkages for smallholder farmers, including by improving the flow of market information and supporting producers to understand and meet market needs. Producer organisations support the process of improved market access by bringing economies of scale in bulk handling, transportation and quality assurance. At times, producer organisations enable farmers to link more directly with formal markets.

ACCESS TO APPROPRIATE FINANCE
Smallholder farmers struggle to access financial services on terms that are appropriate, affordable and fair. The programme supports producer organisations to run ‘Village Savings and Loan Schemes’. As financial literacy and confidence grows, producers are linked to formal financial services.

Achievements

In phase 1, producer associations organised regular ‘market information forums’ to share prices of key crops with member producer groups. Producer associations facilitated the bulking and collective marketing of farmers’ produce. In 2015-16 for example, associations bulked and sold 17 tonnes of green grams and 31 tonnes of sorghum. Working collectively in this way enabled the negotiation of better prices for farmers.

After 3 years of phase 2, 65% of participating farmers reported improvements in the choice and reliability of buyers.

Of the 34 traders who consistently traded with participating farmers during phase 2, all reported improvements in the quality of produce purchased, including in relation to: cleanliness, variety, moisture content, grain size, and absence of pests and mould.

During 2016-17, 4 producer associations bulked and sold £100,665 worth of farmers’ produce, including 172 tonnes of green grams, 31 tonne of cow peas and 5 tonnes of sorghum.

Achievements

After 3 years of phase 2, 71 groups had established savings and loans schemes for members, with a total revolving fund of £37,381 for the purpose of internal lending to members. 3,500 farmers (including 2,380 women) were benefitting from these schemes.

Access to low-interest loans has helped improve farmer’s resilience to climate change. Farmers are able to borrow money to buy inputs for production even after an extended dry season when incomes are very low.

Phase 3: Supporting women’s empowerment through climate resilient agriculture
The majority of farmers participating in the programme are women. This in part reflects the dominant role played by women in smallholder agriculture and in small grains and legume value chains specifically. Whilst gender sensitisation was a key activity of the work, the first two phases lacked a coherent women’s empowerment strategy. Phase 3 of the programme has been designed to address this gap. Targeting 2,120 smallholder farmers in Meru county, including 1,590 women, it aims to:

• Increase the visibility, voice, choice and control of vulnerable women.
• Organise and build farmers’, especially women’s, capacity to enable efficient market access, improved production and better terms of trade.

Implementation of Phase 3 began in September 2018. After one year of implementation, achievements include:

• 1,189 farmers have been trained on climate resilient agriculture, including 877 women.
• 1091 women farmers now have access to financial services, an increase of a 50% since inception.
• 1,189 farmers have been trained on climate resilient agriculture, including 877 women.
• 18% of participating farmers have achieved a 50%+ increase in income, including 284 women.

Traidcraft Exchange’s organisational strategy for ‘women’s empowerment in trade and supply chains’ is available online here.
LEARNING & questions that remain

Environmental factors: the need for diverse strategies & phasing

Depressed rainfall and drought have been the most significant challenges faced by the programme to date. Whilst the programme has been successful in introducing strategies that mitigate climate-related risks and bolster smallholder resilience (both specific agricultural practices, as well as broader strategies such as producer organisation and links to services), these changes cannot fully mitigate the impact of lack of water. In February 2017, the Kenyan government declared a drought affecting 23 ASAL counties to be a national disaster. Crop yields reduced by more than 50% for many farmers participating in the programme – some even experienced 100% crop failure. Water harvesting and conservation practices introduced by the programme helped others. However, other complementary strategies are required, e.g. crop insurance, further income diversification, and social safety nets. Diverse partnerships are needed for this. For value chain focused activities a phased approach may be appropriate: first focusing on bolstering production levels to meet household consumption needs, and then introducing skills and structures to support marketing of surplus.

Diversification

The programme has supported farmers to diversify their basket of staple crops by introducing climate resilient options such as millet, sorghum and key legumes. These are well adapted to dry conditions, and a wider variety of crops can help spread risk. In the programme’s 3rd phase, vulnerable women farmers in particular are being supported to diversify through engagement in higher value vegetable value chains, such as onion, carrots, potato, tomato and traditional African vegetables. These however do require irrigation and so effective water conservation and harvesting practices are critical. Elsewhere in Traidcraft Exchange’s work in Kenya’s ASAL, our Honey Programme has worked with agro-pastoralists to diversify into apiculture to increase and diversify incomes, thereby reducing reliance on livestock and at the same time promoting environmental conservation practices that support eco-system protection and regeneration. More information can be found in our East Africa Honey Programme Briefing: www.traidcraftexchange.org/honey-briefing.

Market Access

The programme has supported smallholders to transition away from supplying small-scale informal traders operating within long and fragmented chains, towards formal markets which offer better terms to suppliers who meet their requirements for scale. Results are mixed, but useful lessons are being learnt. For example, in Phase 1’s ‘buyer-seller meets’, the newly formed producer associations were introduced to a major sorghum buyer. The buyer provided clean planting seeds, monitored production, then purchased 22 tonnes of sorghum on agreed terms. This contract farming was conducted under a verbal agreement only, no documents were signed. This is an important example because it contrasts with the view that written contracts are required for the success of contract farming. Further exploration is needed to understand whether this was:

“The good thing I’ve seen with this project is that they teach you a practice when it’s time to do that practice in the farm. The training comes at the time meant for it. I learned about land preparation, water harvesting, early planting, and planting pure stands of drought tolerant crops from the Project. Before, I used to mix seeds together when planting. I also learned about the value of early harvesting. Before, I used to wait until the crop was fully mature, until it had dried on the farm. I used to lose a lot of crop.”

Julia, a farmer in Mwingi Central, Kitui County

Joseph Kaviti inspects a mango sapling. Credit: TX
That collective marketing helped farmers so much. There’s no house you can go to of a farmer who sold through that collective and not see something bought by that green gram money: some bought solar panels, others cows, some had no goats at all but now they have bought two or three that they can rush to the market and sell anytime they are broke.”

Christine, a farmer in Mwingi West, Kitui County

an one-off, or whether deeper lessons on developing credible verbal arrangements can be drawn-out. However, at the same time, producer associations have struggled to meet the requirements of other large formal buyers for product to be delivered to their facilities. Our experience in other programmes across East Africa is that logistics from farm-gate to factory are extremely challenging given the condition of rural infrastructure, the conditions of many haulage vehicles, the upfront costs of vehicle hire, as well as costs incurred on route. Associations require further institutional development to acquire the skills and knowledge to navigate these risks and challenges successfully.

Price changes & attribution
Despite the challenges described above, collective working by producer associations has enabled farmers to negotiate higher prices. With larger product volumes, improved product quality and improved business acumen, associations enjoy increased bargaining power. For example, at Phase 1’s outset farmers were paid around Kshs.60/kg for green grams. After five years this had risen to Ksh. 75/kg, whilst production costs, due in part to the take-up of improved agricultural practices had remained stable at Ksh.23/kg. Farmer’s profit margin had therefore grown from Ksh.37/kg to 52/kg, a 40% increase. The organisation of 2100 farmers into producer associations also enabled Ksh.37/kg to 52/kg, a 40% increase. The organisation of 2100 farmers into producer associations also enabled

Storage facilities are critical infrastructure for value chain development: they facilitate bulking, quality assurance and storage. This enables farmers to benefit from better prices negotiated with the strengthened bargaining power that comes when producer organisations store product until the immediate post-harvest glut has passed and prices have risen. Storage facilities need to be strategically located near to farmers to reduce transportation costs. However, they may not be required all year round, in which case producer organisations may lease these on a short-term basis, or cover costs by hosting or running other relevant business enterprises within the facilities, e.g agri-input retailing. Producer organisations need sufficient knowledge and skills to manage these well, as well as access to finance to meet upfront costs.

Critical infrastructure – storage

Success with weather forecasting service
To build resilience to the changing climate, the programme introduced a localised weather forecasting service for farmers. Information was provided by SMS text messaging (including to ‘non-smart’ mobiles), printed flyers and through in-person ‘forums’ organized at village level. Forums were interactive and clarifications were provided instantly to farmers. The service enabled farmers to make informed farming decisions, including in relation to: land preparation (clearing, harrowing, terracing), crop selection, procurement of seeds and inputs, timing of planting and harvesting, and de-stocking of livestock. The service was developed and provided in collaboration with Kenya Meteorological Department and the Ministry of Agriculture: these partnerships contributed greatly to its success.

Trust
It takes deliberate effort over the long-term to arrive at a situation where trust and transparency is sufficiently developed to enable smallholders to share key information with one another, especially in relation to anticipated and actual harvests. Farmers feel very vulnerable to theft, and this inhibits their willingness to share information. This has implications for producer organisations seeking to facilitate market access, because understanding projected harvests is critical to linking with potential buyers. Over the course of the programme this trust has been built, but it takes time and deliberate attention, it cannot be assumed to develop organically.

Weights and measures
Transparency and fairness in weight and measures used by traders is a key issue for farmers. Training and support to farmers on business skills has enabled farmers to insist that their produce is weighed, not measured in ‘tins’ or ‘cans’ by traders—a method which is notorious for the use of exploitative non-standard containers that cheat producers out of up to a third of their product. However, the standardised calibration of weighing scales, whilst stipulated in national and county agriculture policies, is not fully implemented. Unscrupulous traders cheat farmers through the intentional miscalibration of scales. Sensitisation of producer organisations on policy and negotiation skills has enabled them to raise the issue with county agricultural offices on numerous occasions, but to date it remains unresolved.

Women’s economic empowerment
In the target counties, small grains and pulses are commonly perceived as women’s domain, and women participate in all agricultural activities. However, women’s economic empowerment is limited by wider socio-economic norms which restrict women’s access to assets (including land), services (particularly credit), and more lucrative markets. Whilst gender sensitisation training is important, it is far from sufficient. A coherent approach to supporting women to develop ‘power within, power with and power to’ (to borrow from Rowland’s excellent typology) is critical. This includes supporting women to take-up leadership positions in producer groups, associations and enterprises, as well as enhancing women’s skills as both farmers and business-people to enable them to demand better access to services, credit and markets. As women earn more income they gain in confidence, and as they gain in confidence they are able to better challenge the status quo. At the same time, it is important to create space for men to discuss and engage with the benefits that accrue from shared decision making within families.

Critical infrastructure – storage

Success with weather forecasting service

Trust

Weights and measures

Women’s economic empowerment
This ‘programme briefing’ documents the approach, achievements and learning of the Traidcraft Exchange climate resilient smallholder agriculture programme in Kenya. We hope the briefing will catalyse discussion and debate with other like-minded organisations and individuals.

The programme has been implemented in partnership with SITE Enterprise Promotion, Christian Aid, the Anglican Church of Kenya Diocese of Mbeere, and Farm Concern International. We thank our partners for their ongoing hard-work and commitment.

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