LANDSCAPE MANAGEMENT IN THE CENTRAL RIFT VALLEY















CONTEXT: THE ETHIOPIAN CENTRAL RIFT VALLEY

The Ethiopian Central Rift Valley (CRV) is part of the Great African Rift Valley, located in the heart of Ethiopia. It comprises the catchment area of five lakes: Ziway (Hara Damballa), Langano, Abijata, Shalla and Hawassa. It is comprised of the largely flat Rift Valley plain, which runs north-south, and escarpments bounding the rift floor in the east and west, which rise to high mountains.

The CRV falls in two regional states: Oromia Regional State and Southern Nations. Nationalities, and Peoples' Region (SNNPR). The area is inhabited by approximately 1.9 million people, the majority of whom live in rural areas.

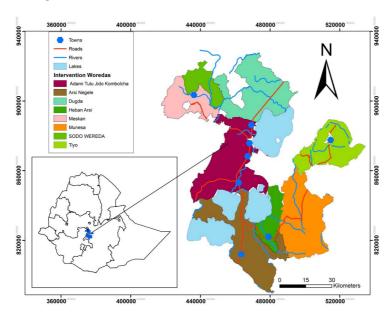
The CRV is a magnificent landscape known for its unique ecology and natural resources endowment. Principal natural resources of the landscape are water, forest/woodland, productive soil and diverse fauna. However, the CRV of Ethiopia is a prime example of uncoordinated and unregulated development, combined with persistent poverty that is driving unsustainable natural resource use and undermining the resilience of rural communities.

Land degradation and deforestation are high and widespread. Unsustainable and competing claims and uses of water resources are causing a considerable decline in the quality and quantity of the water resources in the area. Protected areas are facing high levels of encroachment, affecting not only the biodiversity resource but also tourism potential that could create employment opportunities.

Agricultural potential is being lost due to land and soil degradation as well as the effects of climate change. Degradation of forests and land in the escarpments is causing heavy siltation and sedimentation of the lakes, increased sediment loads in rivers, and eutrophication in water bodies.

Recent increases in smallholder irrigation and large agri-business along the lakes are causing unsustainable abstraction of water, hence the decline in the water resources of the sub-basin.

Project intervention areas





THE CENTRAL RIFT VALLEY LANDSCAPE MANAGEMENT **PROJECT**

This booklet features 12 stories from the Central Rift Valley Landscape Management project, which ran from 2019 to 2022. Funded by Sida, the project was delivered by a consortium of organisations including Farm Africa (lead), SOS Sahel Ethiopia, International Water Management Institute (IWMI), Population, Health, and Environment Ethiopia Consortium (PHE EC), and Sustainable Environment and Development Action (SEDA).

The project is a component of the Growth for the Future Programme II - Natural Resource Management for Resilience and Economic Development in Rural Ethiopia. The CRV project aimed to improve the sustainability and resilience of the landscape and economy in the Ethiopian Central Rift Valley by demonstrating best practices of integrated natural resource management and rural development. The project employed an Integrated Landscape Development (ILD) approach that helps to reconcile social, economic and environmental objectives in an integrated, holistic and participatory manner.

The project was designed to achieve five

1. Improved agricultural water quality and productivity

The project worked to reverse the rapid decline in agricultural water quantity, productivity and quality, a consequence of increased agroindustrial use, domestic use and smallholder irrigation, which had contributed to declining productivity and resilience of agricultural and other economic systems. The programme worked enterprises and irrigation water user to coordinate irrigation water management among water users, increase water productivity, manage pollution and restore degraded hotspots within the watershed.

2. Improved biodiversity conservation

The project introduced Participatory Forest Management (PFM) and Participatory Rangeland Management (PRM) to bring local communities together with local government to sustainably manage forests, rangelands and protected areas.

3. Increased productivity and profitability of

The project worked with farmers, enterprises, cooperatives, the private sector and local offices of Agriculture and Natural Resources to improve small-scale farmers' agricultural productivity using climate-smart agriculture techniques, improved inputs and improved agronomic practices, as well as improve their access to markets.

4. Improved women's economic empowerment and family planning

Demographic pressure on natural resources is the primary driver of environmental degradation. While the project focused primarily on economic solutions that alter patterns of resource use, the project also sought to contribute to population control in the region through family planning and reproductive health services. By advancing women's economic empowerment and challenging harmful social norms, beliefs and practices, the project has contributed to improving gender equality. The project has built women's capacity to access finance to run small and micro businesses through Village Savings and Loan Associations (VSLAs) and green job opportunities. Building on this, the project supported women to make informed decisions and choices about their reproductive health.

5. Improved policy framework and institutional capacity

The project has contributed much to building the capacity of formal and informal institutions such as PFM cooperatives, PRM cooperatives, associations to ensure the sustainability of the project's interventions and benefits.



SMALL-SCALE IRRIGATION INCREASES FOOD SECURITY

Rain-fed agricultural production is the main source of livelihood for the communities in Arba kebele of Adami Tulu Jido Kombolcha woreda. This lowland area is characterised by low and erratic rainfall distribution as a result of climate change. The rain starts late and ceases early. The rainy season is only two months long. Farmers grow long cycle crop varieties using rainwater. The use of small-scale irrigation is uncommon in the area.

Maize is the typical crop widely grown in this area. Because of the shortage of rainwater, the maize crop is unable to attain its physiological maturity. As a result, the yield is very low, with farmers only growing enough to feed their families for six months of the year. The productivity of maize grown through rain-fed farming practice is 16 quintals (1600kg) per hectares.

Taking into account the irrigation potential of the area, and the demand for maize from the community and local government, the Sidafunded CRV project in collaboration with the local agriculture and natural resources office supported 154 households to cultivate improved maize on 120 hectares of farmland using supplementary small-scale irrigation. As a result, the productivity of their maize rose to 60 quintals per hectare.

The beneficiaries of the small-scale irrigation are now able to produce enough to feed their family for a full 12 months. This practice has enabled the farmers to build their resilience to the adverse effects of climate change through increased crop productivity, production and incomes. The beneficiaries are happy with the support they have received from the project. In future, they plan to grow higher value crops that have the potential to significantly change their lives and livelihoods.



COMMERCIAL FARMING FOR IMPROVED LIVELIHOODS

Ato Gemedo Ogato is 55 years old. He lives in Sembero Rogicha kebele of Heben Arsi woreda and is one the small-scale irrigation development beneficiaries of the CRV landscape management project through the Lencha water users association.

He has two hectares of irrigable land, but didn't used to cultivate his land through irrigation. He used to grow maize using a rain-fed agricultural system as he had no skills in small-scale irrigation, despite there being a nearby river.

He said, "I depend only on rain-fed agriculture for maize production. Through the rain-fed farming system I produce five quintals (500kg) of maize from 0.125 hectares of land per year. In terms of income I earned 12,500 Ethiopian Birr (ETB) gross income per year."

However, Gemedo's prospects started to improve after taking part in the project. "After I became a beneficiary of the project, I received training on small-scale irrigation development, high value crop production and improved agronomic practices. I planted pepper on 0.125 hectares of land and earned a gross income of ETB 25,000. Out of this income, I bought one ox at a cost of ETB 18,000. Similarly, in 2020 I planted sugar on 0.125 hectare of land and earned a gross income of ETB 42,000 from the sale of sugar cane."

He continued: "I was amazed when buyers came and paid me 42,000 ETB to purchase sugar cane. I changed my poor grass thatch house into a new house with 37 pieces of corrugated iron sheet. When I see the visible benefits of sugar cane I regret spending time growing maize. I would like to extend my heartfelt thanks for the support of CRV project as this is the turning point in my life."

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RESILIENT LIVELIHOODS THROUGH FISH FARMING

The Denbel Bedatu fishery enterprise was established in 2020 in Bekele Girisa Kebele of Dugda woreda, but had many problems. It had no slaughtering or shop, and lacked materials such as standard fishing nets, fridges, boats or other necessary materials. The lack of a slaughtering centre meant that the quality of the harvested fish was very poor as it was affected by dust and heat. The slaughtering of fish took place in open fields, causing poor environmental sanitation. The quantity of the fish harvest was also low: about one quintal (100kg) per day.

The income generated from the low quantity and quality of fish was meagre, which affected the livelihoods of the beneficiaries. As a substandard fishing net was used to catch fish, the fish stock in the lake dwindled.

The 23 members of the fishery cooperative lacked skills in proper fish catching, handling, processing, storage, transporting and marketing, meaning it was difficult to find buyers for their low quality fish. Taken together, the fishery enterprise was not functioning properly.

The CRV project has supported the cooperative by constructing a slaughtering centre and

shop, as well as providing a supply of standard fishing nets, fridges, a boat and other necessary materials that they were lacking. The project has provided the members with training on improved production, handling and marketing of fish products.

The chairperson of the cooperative said: "After the support of the project the enterprise shows remarkable change and results. The savings increased from 2,000 ETB to 20,700 ETB."

He continued: "The bargaining power for market prices increased because of the quality product and proper handling of the fish products as a result of improved slaughtering and storage services. The cooperative has supplied quality products to the market and gets better prices. The enterprise also generates 30,000 ETB from fish slaughterhouse service charges in a six month period. The cooperative has provided employment opportunities by recruiting two employees as a cashier and cleaner. Over one year's time, the total capital of the fishery cooperative has reached 850,000 ETB. The environmental sanitation has improved as slaughtering is undertaken in the slaughtering centre."

MULTIPLE BENEFITS OF BIOGAS TECHNOLOGY

Kebebush Tesema, 43, is a mother of four children and a resident of Chafe Misoma kebele of Tiyo woreda. She is one of the beneficiaries of biogas technology introduced by the CRV project. Biogas is an environmentally-friendly, renewable energy source produced through the anaerobic fermentation of fresh cow dung and human waste. Kebebush's family now produces biogas energy from their family latrine.

She said, "I didn't use biogas technology before now. I used firewood and dried cow dung for cooking and baking injera, bread and other things. My children and I spent time collecting the firewood from the nearby forest. The smoke from the firewood irritated my eyes. It was very tiresome and risky to travel far to collect firewood."

After getting involved in the biogas project, Kebebush quickly saw improvements. "I became a beneficiary of biogas technology in 2020. I obtained multiple benefits from this technology. I use the energy for cooking and lighting. The time my family and I used to spend collecting firewood has reduced."

Kebebush's family's consumption of firewood has reduced, and biogas does not irritate Kebebush's eyes.

"Our compound has good sanitation as the latrine is connected to the biogas plant and we use the bio-slurry as organic fertiliser to improve soil fertility for crop, fruit and vegetable production. We are happy with these benefits of the biogas service. I tell others to use this technology. We thank the CRV project for its support to improve our living standard."

On top of the direct benefits that the family is enjoying, using biogas contributes to climate change mitigation through reducing deforestation and greenhouse gas emissions.





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IMPROVED FORAGE DEVELOPMENT

Forage and feed stock systems development have improved the availability of livestock feed. particularly during times of feed shortages. The CRV project provided training to farmers on the development of forage and feedstock systems (such as silage preparation, straw treatment, and growing green forage). Additionally, farmers received training on feed stock and herd management, as well as receiving inputs (seeds of forage grasses and storage construction materials). This, coupled with regular monitoring and follow-up support, has improved availability of livestock feed both at household and community levels. Improved feed availability is helping to reduce the pressure that open grazing exerts on the environment, since beneficiaries have adopted zero grazing or used feed in their storage.

Ato Gebi Tibeso is 36 years old and lives in Koma Ocha kebele of Munesa woreda. Before the CRV project, he used maize stalks and open grazing for livestock fattening. With support from the CRV project, he started to grow other crops to use as animal fodder on part of his farmland.

He said, "After I received training on improved forage development and herd management I have practised improved oat forage production on 200 m² of land using 8 kg of improved oat seed provided by the CRV project. I fattened one bull in 2021 through the cut and carry system of the oat forage. After two months of fattening I sold my bull for 35,000 ETB and rented one hectare of farm land for 22,000 ETB for the coming production season. I thank the project for supporting me through skills training and forage seeds. I am sharing my experience for others. As a result, they are replicating my learning."



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LIVELIHOOD DIVERSIFICATION FOR ECONOMIC RESILIENCE

Gebre Beshno, 45, is a resident of Sembero Rogicha kebele of Heban Arsi woreda. He is one of the direct beneficiaries of the CRV project. To improve his family's livelihood he took part in the integrated livelihood activities. He participated in improved beekeeping, fruit production, forage and fodder production and biogas service activities. He has been supported with four improved beehives, pawpaw, avocado and banana seedlings, as well as receiving training on how to execute these various activities effectively.

Before the intervention of the CRV project, Gebre used traditional beekeeping techniques. The productivity of honey from his traditional beehive was just 6 kg per hive. But since he became a beneficiary of the CRV project he has been using improved beekeeping techniques: his yield of honey is now 36 kg per improved hive. As a result, Gebre harvested 144 kg of honey from his four improved beehives per season, valued at 43,200 ETB. This increased income contributed to the improvement of his family's livelihood.

Gebre is also engaged in fruit production, focusing on pawpaw, avocado and banana crops. These improved fruits are fast growing and high yielding. Gebre planted them in his backyard and is enjoying their benefits: as well as consuming them, he also earns income by selling what he grows to the Bishan Gari Lodge in the nearby

What's more, he and his wife are beneficiaries of the biogas service supported through the CRV project. He has constructed a 10 m³ biogas plant. They use the bio-slurry of the biogas to improve soil fertility, which in turn improves fruit production.

He said, "Thanks to the CRV project and those that support the project, we are happy because when we use biogas there is no smoke, eye disease and irritation." As a result, the number of trees cut down as well as the labour of collecting firewood that often fell to women and girls has reduced

Gebre's efforts have been recognised by Meda Walabu University, where he has been invited to exhibit his organic honey product. Several woredas and zones have invited Gebre to share his experiences. Gebre is a model farmer and an action researcher. Such integrated interventions have helped farmers like Gebre to address the multi-dimensional poverty of their households.



VERMICOMPOST BOOSTS WHEAT YIELDS AND GENERATES INCOME

Before taking part in Farm Africa's CRV project, Ato Neggeso from Damu Dimbiba kebele in Munesa woreda had never heard about vermiculture: the process of using vermi worms to produce a nutrient-rich organic fertiliser called vermicompost.

Neggeso, a 50-year-old farmer and father of eight had previously relied on chemical fertiliser to grow crops on his farm.

Through taking part in the project, Neggeso learnt that vermicompost increases soil aggregation, soil structure, water retention capacity of the soil, plant growth hormones and nutrients that are easily taken up by plants in a balanced way.

After taking part in vermicomposting training organised by the project in 2021, he produced 25 quintals (2500kg) of vermicompost to use in a trial to see the effects of its use on the growth of the Ogolcho improved variety of wheat.

He sowed equal amounts of wheat seed on two plots of land, each measuring 25×50 metres. He applied 10 quintals of vermicompost to one plot of land and 18.75 kg of chemical fertiliser to the other.

Neggeso was pleased to observe a 67% higher yield of wheat from the plot on which he used vermicompost.

He revealed: "I observed a visible difference in the vegetative growth, productivity and yield of the wheat crop. I harvested 10 quintals of wheat from the plot treated with vermicompost. This is equivalent to 80 quintals/hectare (ha). I harvested six quintals of wheat from the same size plot of land applied with chemical fertiliser (which is equivalent to 48 quintal/ha). This difference is due to the application of vermicompost."

As well as benefitting from higher productivity on his farm, Neggeso was able to supplement his income through the sale of some of the worms he had reared.

He commented, "I generated income from selling of vermi worm. In 2021, I earned 6,000 ETB (400 ETB per kg) from the sale of 15 kg of vermiworm."

COMMUNITY ENGAGEMENT FOR SUSTAINABLE PARK MANAGEMENT

The management of the Senkelle Swayne's Hartebeests Sanctuary in the Central Rift Valley (CRV) is a centre of excellence that shares experience of how parks can be managed successfully through the involvement and commitment of local leaders and communities.

The Swayne's Hartebeest, an endangered breed of antelope native to Ethiopia, is much revered by Oromo communities. A local bylaw considers Swayne's Hartebeests to be equally valued to humans. Killing a Swayne's Hartebeest is seen as equivalent to killing a person. This system creates an enabling environment for the protection of the wildlife in the park, particularly Swayne's Hartebeests. Under the Aba Geda system, a customary egalitarian democratic system practised by Oromo people, the fine for killing a Swayne's Hartebeest is 100 cattle.

The Senkelle Swayne's Hartebeest Sanctuary is home to 847 Swayne's Hartebeests, one of the largest populations of this much valued animal.

Farm Africa's CRV project has worked in partnership with the local community to enhance the sustainable management of the 54 km² park, providing a good example of how effective park management contributes to improved biodiversity management. The project has developed a sense of ownership of and responsibility for the park amongst the population of 13,500 people living there

in 750 households, by enabling them to make a sustainable living from the sale of grass harvested from the park.

The CRV project has supported the park with the construction of roof water harvesting facilities to supply drinking water to park animals, construction of gates, awareness raising workshops and meetings, technical and materials support as well as the development of a park management plan.

The Geda system and Aba Gedas (the heads of local councils) play an enormous role in the protection and effective management of the park. Although the park has no physical fence, it is fenced through the agreed mindset of the people: according to the local geda system no one should enter and disturb the park.

As a result of this strong social value and customary law, Swayne's Hartebeests live safely and peacefully in the park. Meanwhile, community members are now earning a total of about eight million ETB a year from the sale of the grass, with individuals each taking responsibility for a plot measuring 5000 m² (50 x100m).



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SUSTAINABLE RANGELAND MANAGEMENT AND LIVELIHOOD DEVELOPMENT

Located in the lowland area of the Oromia region, Abjata Shala Lakes National Park covers an area of 887 km² (505 km² water and 382 km² terrestrial ecosystem). It is characterised by a semi-arid climate with an average annual rainfall of 500mm and an average temperature of 21 degrees Celsius. This park is well known for its native and migratory birds, boasting a total of 453 bird species (52.5% of which are native varieties).

While the park exists to protect wildlife, its natural resources are degrading due to the impact of climate change and pressure from human settlers and livestock. The park is occupied by 43,475 settlers and 202,644 livestock. Land ownership is a major cause of conflict between the surrounding community and the park due to local people's lack of participation in park management and revenue sharing. The conflict is not only between the park and the local community, but also with migrants coming from the Arsi and Gurage Highlands to Desita Abjata kebele in search of pasture.

Huge numbers of livestock graze together in the park, and theft of livestock is also a major problem and source of conflict. The area experiences frequent droughts, which negatively impact the livestock productivity and cause livestock mortality. This year, more than 500 cattle were lost due to drought.

To reverse these problems, the CRV project piloted Participatory Rangeland Management (PRM) as an adaptation strategy to resolve conflicts, improve the livelihoods of the community and ensure sustainable management of the park's resources. PRM closes the gap between the community and the park by engaging both parties in co-management of resources. The project established a PRM community-based organisation (CBO), who were given support to work with park management to restore degraded grazing lands as well as adapt to the impacts of climate change by developing alternative livelihoods.

As a result, the conflict between the park and the community was resolved, grazing lands were regenerated and communities are now earning income from activities such as livestock fattening. The CBO's future plans to improve livelihoods include engaging in eco-tourism, fishing and beekeeping. A variety of activities are planned to further women's economic empowerment.



Participatory Rangeland
Management closes the gap
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PARTICIPATORY RANGELAND MANAGEMENT

The once barren rangeland in Keraru kebele of Negelle Arsi woreda is once again bursting with life. Verdant green grass is flourishing, springs have resurfaced, and wild animals including hippos, kerkeros (wild boars) and birds have returned to the area.

The changes were made possible by the 530 members of the Menda Yoka Lalisa rangeland management cooperative, which was established in 2019 with support from the CRV project with the aim of protecting and reviving the rangeland. Years of free grazing of large numbers of livestock had meant the rangeland had degenerated to the point the ground was bare.

The 470 men and 60 women who are members of the cooperative now work in shifts to manage the 97-hectare rangeland, which is divided into blocks with members each assigned responsibility for particular blocks. The cooperative members received training on how to manage the rangeland properly. They have closed 65 hectares to livestock and plan to close the remaining area in future. Livestock are now being fed through a controlled/zero grazing system. Seed banks are being established and regenerated. The protected rangeland has become a buffer zone to reduce the problems of siltation and sedimentation in Lake Langano.

The reduction in pressure on the rangeland has led to the rehabilitation of the grass and the re-emergence of springs that had been dry for several years, as well as improvements in the diversity of both flora and fauna and the microclimate.

The rangeland management cooperative has a legal certificate from the local government. Its activities are coordinated by 13 committee members. Committee members Feyisa Berisa and Kero Keweti commented that they have observed visible changes and improvements to the rangeland since it has been protected and managed by the rangeland management cooperative.

To ensure the sustainability of the rangeland management, income-generating activities for about 30 unemployed youths have been integrated with the rangeland management practice. Livestock fattening, soap manufacturing and marketing, small-scale irrigation and poultry production are the main livelihood activities that have been introduced.

In the first round of fattening, five oxen were fattened for three months and sold for 50,000 ETB. In the second round, four oxen are being fattened and will be sold after three months. The youths expect to earn good profit from them. They have also been engaged in the rangeland management steering committee.

The cooperative has received support from the local government, which has helped them to develop a sense of ownership to protect and manage the rangeland properly. The committee members attribute the success to the collaborative efforts of the local government, the CRV project and community members. This intervention is a good example of how multiple benefits, such as environmental, economic and social resilience can be realised.



RESTORATION OF DEGRADED HOTSPOTS MAKES LAND PRODUCTIVE

For many years, the livelihoods of the farming community of Dobina Gola kebele in East Meskan woreda, have mainly depended on crop production. The farmland suffers from the heavy runoff of water coming from higher land. Their agricultural activities and settlement were repeatedly affected by the runoff, which damaged their farm lands, eroding the soil fertility and moisture levels of soil and created gullies.

One of the priorities of the CRV project was to restore hotspot degraded lands through conservation measures. In Dobina Gola kebele, the project implemented both physical and biological soil and water conservation measures on farmland belonging to Mohammed Jemal to restore the degraded land.

Physical measures included the construction of a gabion check dam to protect the degraded land by reducing the heavy runoff coming from the upper water catchment area. Biological conservation measures included the planting of pigeon peas and elephant grass. This gully rehabilitation has reduced damage to the farmland found below the area where the gabion check dam has been constructed. As a result, the surface water level is now higher.

These measures have made a great contribution to turning the degraded and abandoned land into productive land. These measures have motivated the farmers to practise climate-smart agriculture with particular emphasis on multiple cropping, intercropping, organic farming, agroforestry and improved agronomic activities so as to increase their agricultural productivity.

To ensure the sustainability of the initiative, community members and local government technical staff were given training on how to maintain the gabion check dam.

WOMEN'S ECONOMIC EMPOWERMENT THROUGH VSLAS

Megerisa Village Savings and Loan Association (VSLA) in Chafe Misoma kebele of Tiyo woreda is one of 14 VSLAs supported by the CRV project. Established in February 2019, it has 18 members, all of whom are women.

One of the VSLA members commented: "The microfinance institutions each had their own sophisticated long application process and the amount of loan we gained was small and fixed. But after we organised into a VSLA, we

The VSLA members meet every fortnight to make their contributions to the group's savings. Every member contributes 50 ETB to the savings fund and 10 ETB to the social fund at every meeting. Over the first year, the group saved a total of 77,725 ETB, and issued a total of 30 loans to the 18 members. The group earned 9,910 ETB in service charges applied to the loans given to the members. In October 2020, the group shared out the accumulated funds of 87,635 ETB, and began a second round of saving. Since then, the group has saved 29,500 ETB and issued loans totalling 25,600 ETB to 12 group members.

The group members reported that they previously had problems in accessing the credit needed to run small businesses. They used to travel long distances in search of microfinance institutions they could apply for loans from. Now, the women have easy access to affordable finance, enabling them to invest in small businesses to increase their incomes.

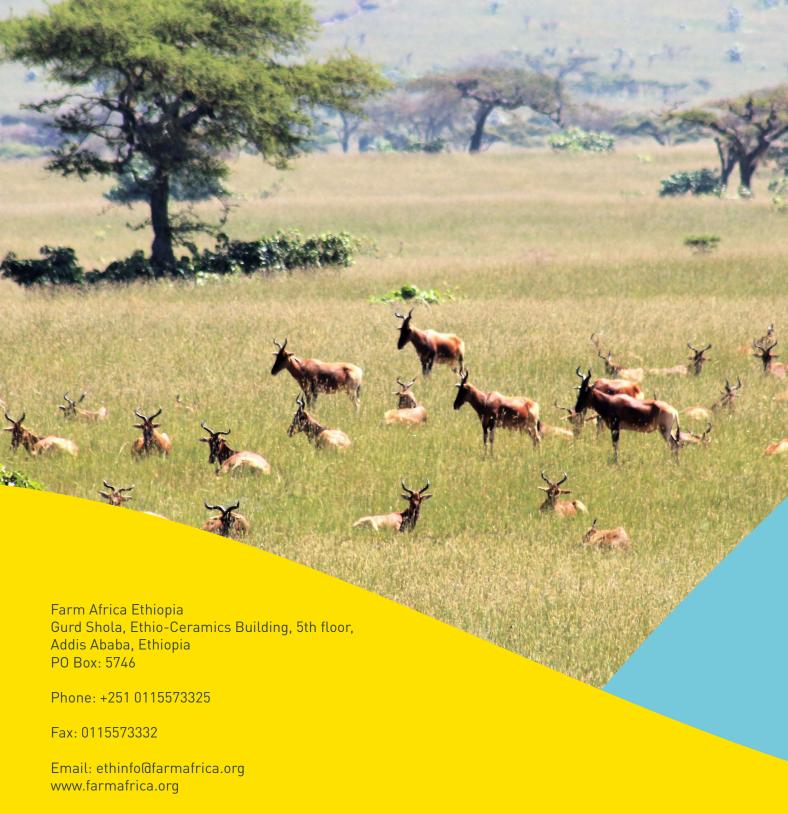
One of the VSLA members commented: "The microfinance institutions each had their own sophisticated long application process and the amount of loan we gained was small and fixed. But after we organised into a VSLA, we gained access to loans in our village without long processes and according to our saving amount. This has created favourable conditions to run small businesses such as sheep and goat fattening, poultry production, vegetable trading and alcohol trading. We have taken loans of up to 9,000 ETB, based on the amount we have saved."

VSLA member Jemanesh Merga, a 28-year-old mother of two boys and one girl took out a 4,800 ETB loan from the group, which she used to buy seven goats. After fattening the goats for four months, she was able to earn 8,000 ETB from the resale of the goats: enough to repay her loan and make a good profit.



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