Solidaridad-Uganda

Mount Elgon in Uganda

2022

Rabobank

Introduction

This report represents a summary of the project details. It has been created in close collaboration between Solidaridad and Acorn. A more detailed Acorn Design Document (ADD) for the project will be made available on the Acorn platform and can be requested by validation and verification bodies and certifiers for third-party oversight or quality checks. The number of participants described in this document reflects only those in the first year of the project. For the real-time number of participants at scale please see the Acorn website.

This Plan Vivo certified project run by Solidaridad in Uganda is helping nearly 3000 smallholder farmers transition away from coffee monocultures to diverse agroforestry systems by planting a range of tree species that offer shade and produce fruits and medicine. The outcome of project intervention will enhance farmer an community livelihood by diversifying, stabilising, and increasing farmer income, while building resilience to climate change. Solidaridad are also training smallholder farmers to switch their mindset of valuing trees for timber to valuing their trees for the long-term ecosystem services they provide such as carbon sequestration, nutrient cycling, conservation of soil and water.

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Project Summary

Local partner

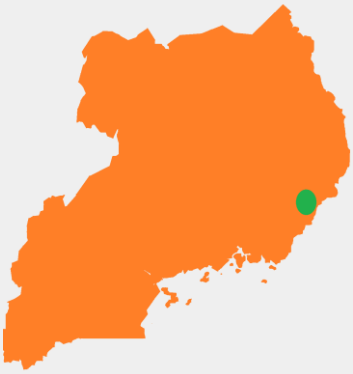
Solidaridad

Project location

Uganda, Mount Elgon

Ecoregion

The Victoria Basin forest-savanna mosaic, East African montane forests and East Sudanian savanna



Main crops

Coffee

Minimum number of existing participants

2,839+

Potential number of additional participants

30,000+

Estimated total size of project area currently

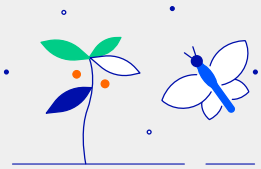
2,611 ha

Project's aims and objectives

Solidaridad enable farmers and workers to earn a living income, shape their own future, and produce in balance with nature. This project aims to increase the quality and productivity of farmer output, adapt the farmland to build resilience to climate change, avoid deforestation, and reduce and sequester carbon emissions.

Impact to the farmer livelihood and environment

- Increased food security
- Resilience to climate change
- Diversified and increased income
- Increased and stable productivity
- Access to farm inputs and infrastructure
- Increase tree biodiversity
- Empowerment on women



Additionality

This agroforestry project led by Solidaridad was established in 2017. The collaboration between Acorn and Solidaridad began in 2021. From the start of their project, until the time they connected with Acorn, Solidaridad have had the intention to scale their agroforestry project by offering farmers carbon finance for the trees they plant. Therefore, this agroforestry project was initiated and the first trees planted, in response to a promise of smallholder farmers receiving carbon credits. The first trees were planted by the initial lead farmers in late 2017. As part of Solidaridad's agroforestry design and due to their limited financial resources and funding, farmers plant trees in a slow and phased manner over multiple years depending on the finances and resources available. Solidaridad believe the phased approach is much more sustainable than planting all trees in one year as it allows for cross participatory learning among farmers and farmer groups. It also enables farmers to plan strategically in terms of labour costs and time required. The carbon credits farmers receive for the trees planted in the project are ex-post based and will only be derived from one year before CRU issuance.

Farmer Level

Ugandan smallholder farmer participants significantly lack the income, resources and capacity to develop agroforestry projects by themselves or as a community. Poverty levels among farmers ranges from 30 to 40%, with over 50% of family households having an income of <1 USD a day. Without project interventions, most farmers do not have sufficient finances to purchase tree seedlings themselves. A small minority of farmers in Uganda are able to afford these inputs. In addition to this financial barrier, participating farmers also technically challenged by a lack access to such planting materials and the necessary infrastructure for the implementation of the agroforestry practices and technology. Due to project intervention, farmers are supplied with the once inaccessible planting materials (tree seedlings/germplasm) in order to plant trees and continue their transition to an agroforestry system. The carbon credits that farmers receive will ensure they are able to afford the planting materials on their own and continue planting trees, throughout the first years of the Acorn project's implementation phase, while successfully maintaining the first trees planted.

The carbon finance received by Solidaridad will allow them to provide participants with ongoing capacity development and sensitization, support and enable them to support local institutional development and scaling of their agroforestry project. The provision of tree seedlings and capacity enhancement has encouraged the adoption of agroforestry by farmers. However, the long-term financial benefit expected from carbon finance was the enabled them to commit to the transition to this sustainable farming system as farmers seek a reward greater than shade and fruit for the change in their farming practises. If farmers were not to receive carbon finance, their adoption of agroforestry practices would also be further restricted by land type, social cultural dynamics, gender roles, availability of inputs, and knowledge gaps on the benefits of agroforestry.

Solidaridad relied on temporary grant funding for early implementation of this agroforestry project. This funding was used to finance farmer trainings and supported in tree seedling provision and distribution during project start-up. Currently, Solidaridad receive mainstream funding, however, only a minute amount of this is directed to this

agroforestry project in Uganda. Without the support of carbon finance, they cannot sustainably continue to help their farmers overcome their technical and financial barriers, let alone all farmers in their expansive network who have the potential to transition to agroforestry with the expected scaling of this project.

The additional income in the form of carbon credits also ensures Ugandan farmers have the physical resources necessary to maintain their trees over time and a financial buffer that prevents them from cutting them down in times of high volatility in commodity prices, low productivity and high risk of crop loss from extreme climatic events. Without a diversified income, farmers would rarely have the financial stability needed to overcome the socio-economic challenges associated with poverty and climate change. In times of crisis or devastation, farmers would have no other option than to sell the wood from the trees they have planted. Many of the first trees planted by these smallholder farmers do not provide immediate tangible benefits, such as shade trees compared to fruit trees, and if they lack cultural significance, may be the first cut down in an emergency to make quick money to feed their families. Unfortunately, deforestation is common in the region of the project due to land expansion for agriculture and for wood products (timber, poles, fuel wood, etc). Research suggests that smallholder farmer deforestation behaviours in developing countries could stop if provided with carbon credits based on current carbon prices. Carbon finance and the capacity development offered by Solidaridad on the benefits of agroforestry, incentivise farmers to keep their trees in the ground and scale up agroforestry practices, not regress to behaviours contributing to deforestation. The long-term sustainability of recently implemented agroforestry systems and the first additional trees planted are jeopardized if Ugandan farmers don't receive compensation for the carbon they sequestered.

Project level

Solidaridad do not work with a fixed number of smallholder farmers but a constantly growing and expanding network. Solidaridad's aim for this project is to increase the uptake of climate smart agriculture in the coffee supply chain through agroforestry, resulting in higher productivity and grain quality, lower carbon emissions and avoid deforestation.The first trees planted under the initial phase of this project are few compared with what will be planted over the following phases in Solidaridad's long-term agroforestry design. Only focusing on the initial farmers who plant the first trees takes away from the additionality of the full project. The farmers expected to transition to agroforestry with the scaling of the project must also be considered. The first farmers that are rewarded for their adoption of sustainable farming practices with carbon credits will be role models in the community and encourage further scaling of the project. If the first farmers who transitioned with Solidaridad are not rewarded with income from the carbon credits, both Solidaridad and the farmers may be discouraged from scaling up their agroforestry interventions using carbon credits after all their hard work and lack of significant benefits. This lack of reward will reflect poorly on agroforestry schemes for other farmers in the community and region that have the potential to transition, resulting in a barrier to scaling up. The success of the first farmers, who are compensated for the carbon they have sequestered, will work as an extra stimulus to increase the participation of the wide range of farmers that Solidaridad has access to, roughly 30,000. This systems approach involves looking at the financial barriers these 30,000 farmers face and ensuring the first farmers receive carbon payment. Providing carbon finance initially to compensate Ugandan farmers is the only practical way to achieve scale and proof of concept.

Project Baseline

Land use

The land in the project area is used for existing agrisilvicultural agroforestry, involving the intercropping of coffee with bananas and growing maize as a secondary cash crop. Shade, fruit and medicinal agroforestry trees are planted among the coffee crops through scattered planting. The Upland zone of the landscape is characterized by intensive coffee and maize cultivation and livestock farming. Additional crops grown in the project area include sorghum, maize, beans and cowpeas. Of these additional crops, maize and beans are sold at markets and sorghum and cowpeas are seen as staple food for farmers. Coffee is grown on approximately 65% of the total productive land in the project area. Chemical pesticides are used in times of pest infestation. Most farmers use organic fertilizers (i.e. manure). Without project interventions farmers would have not adopted agroforestry to a larger extent, although they would have used their past experiences from their ancestors to integrate few native trees on their farm, they would lack inputs and skills to plant an optimal amount and maintain them long-term. Without project interventions, the limited farmer knowledge on benefits and management of trees on their farm would have a negative impact on tree cover change. Without project interventions, there would be a reduction in diversity since ignorance of the species would result in less/no adoption of new species.

Habitat species

The habitat within in the project region surrounding Mount Elgon is a fragile tropical ecosystem endowed with fertile loam soils harboring an array of species diversity from lower to high plant resources. The project area has a range of native, naturalised and exotic woodland and fruit trees including *Cordia Africana*, *Markhamia lutea*, *Eucalyptus grandis*, *Ricinus communis*, *Ficus natalensis*, *Persea americana*, *Mangifera indica*, *Maesopsis eminii*, and *Albizia coriaria*. Subsistence farming on small holder holdings is common while coffee stands as the most grown crop in the region integrated with beans, maize and bananas. Highland areas also grown Irish potatoes, onions and carrots. Wild animals are rarely spotted in the project area and when they are this consists of monkeys, squirrels, snakes and foxes.

Socio-Economic Benefits

Area	Indicator	Result
Local livelihood	Nutritional variety	The average farmers consumes 4 out of 12 food groups daily
	Women's empowerment	10% of farmers are women, 50% of the local partner employees are women, 38% of women are members of the project council.
Environmental improvement	Agricultural biodiversity	54% acceptable (under Gini-Simpson Index)

Nutritional variety

Common food crops grown by farmers in the Mt Elgon region are cassava, bananas, potatoes, beans, and maize. These are grown seasonally and in most cases bananas are integrated with coffee. Farmers also sometimes use secondary tree branches for firewood to cook the available food. They grow crops on a subsistence basis and in most cases consume all farm produce at household level and thus less income is generated from sale of food crops harvested. Of the 100 farmers surveyed, more than 50% of farmers believe they do not have enough food, lack variety and have to skip meals, and 35% feel they have enough food but lack variety as most only eat what they grow. A farmer consumes approximately 4 food groups each day with a diet often consisting of porridge, greens, cooking oil and milk. Less than a third of the farmers surveyed consume fruit and if they did it usually is only one type. The fruit trees planted in this project will offer farmers an additional source of food they are significantly lacking to increase the nutritional value and variety in their diet. The extra streams of revenue from generated CRUs and increased income from changes in farm productivity, will help farmers and their families in the Mount Elgon region afford to purchase a wider variety of food that is not grown on their farm, such as sources of protein and spices etc.

Women's empowerment

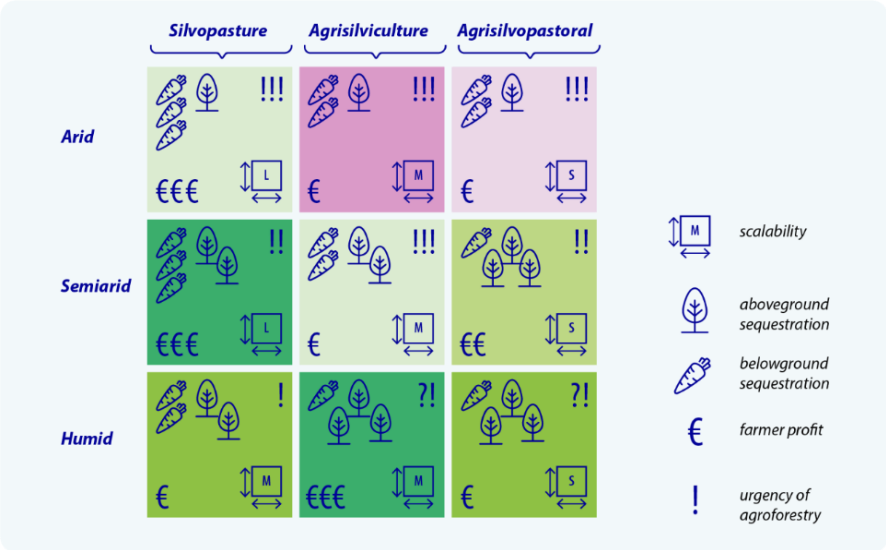
In the project area, it is not culturally accepted that women are in the lead of their household. The male is always in charge of the household, even though the women will do most of the work in terms of the maintenance on the farm. The men will control all decisions made in the end (i.e. where the money that they receive from carbon finance will go). These barriers that women face were identified during the needs assessment that Solidaridad performed. In this project, Solidaridad focus 30-40% of the target group on women to be a part of the agroforestry and climate smart trainings and receipts of tree seedlings so they have the capacity and a key role in the transition to agroforestry and are not left in the background. Solidaridad also promote women involvement in the planting of trees on farm, and management of these agroforestry systems through sensitization and awareness training for the men of the household. Solidaridad are interested in collaborating with Acorn to determine a manner in which women have an active say in the decision of which trees are planted on the farm and where the CRUs are spent etc. To start this process, Solidaridad have ensured at least one third of the project council members (who make decisions on behalf of all participants) are women.

Agricultural biodiversity

The majority of farmers in the project describe the biodiversity on their farmers are moderate to low. Based on the Gini-Simpson Index below, the state of biodiversity in the project area is classified as 54% (acceptable). This Gini-Simpson result is a result of farmers not growing only one species as a monoculture but instead intercropping coffee with bananas and growing maize as a secondary cash crop. The moderate spread of natural vegetation in the productive area of the majority of farms and the prevalence of some apiculture practices also contributes to a higher score. The impact of project intervention will be positive for biodiversity due to the increase of tree species (shade and fruit) and the positive impacts that has on habitat suitability for native flora, fauna and pollinator species. The only potential negative side effect may be the increase of shade resulting from trees planted, leading to increases in pest outbreaks. To mitigate this Solidaridad have integrated pest and management practices in farmer training that consider methods for prevention, identification and organic treatment. There have been no sightings of animals with a high local environmental and social conservation value in the project area by both farmers and Solidaridad. However, for free range cattle rearing, Solidaridad will work with Local government structures to improve land governance such as formulating Bye laws that control crop and tree destruction from livestock. All wild animal species and flora with high conservation/cultural value will continue to be monitored.

Project Activities

The agroforestry system is classified as existing agrisilvicultural agroforestry in a semi-arid environment on which coffee is the main cash crop. The planting of shade, fruit and medicinal trees is prioritised in this system.



There are 6 native or naturalised tree species promoted under the agroforestry design that offer livelihood benefits such as shade, fruit, medicine, fodder, firewood, and ecosystem benefits such as nitrogen fixing, erosion control, and increased cross pollination. These species are chosen after testing soil, looking at climatic variables, and using traditional knowledge of the community and farmers.

- *Mangifera indica*
- *Persea americana*
- *Cordia africana*
- *Albizia coriaria*
- *Calliandra calothyrsus*
- *Ficus natalensis*

Farmers will plant a mix of these 6 agroforestry tree species over a period of at least 3 years to reach a minimum density of 126 trees per hectare. Trees are planted in a scattered style among crops. Agronomist advice is included in the agroforestry training farmers receive. This training educates farmers on the interactions between crops and tree species (i.e. shading, water requirements and nitrogen fixation). Species are selected based on these training concepts. Trainings on on-farm tree management are conducted with farmers to ensure survival and performance of trees. Frequent monitoring is done to capture mortality rates and reasons for mortality using our digital monitoring systems. Coffee is pruned during off season between February and May. Fruit trees like mangoes and Avocado are harvested between May-August. The impact from project interventions will be overwhelmingly positive for biodiversity due to the increase of tree species (especially those that flower and produce fruits) and the positive impacts that has on habitat suitability for native flora, fauna and pollinator species. The only potential negative side effect may be the overcrowding of shade trees, leading to increases in pest outbreaks. To mitigate this Solidaridad have integrated mandatory pest and management in farmer training.

Organisational Capacity

Solidaridad is an international civil society organization (NGO) with over 50 years of experience in developing solutions to make communities more resilient. Solidaridad have been promoting agroforestry practices in Uganda for 10 years. Solidaridad have a strong presence in the project area as evidenced by their 9 years of experience actively engaging with the local communities. Under their sustainability strategy, Solidaridad aim to develop local social capital, strengthen local institutional structures such as farmer groups, Village Savings and Loan associations, and commercial community tree nurseries, and undertake lobbying and business development. Solidaridad uses a lead/promoter farmer approach where lead farmers provide information to farmer groups, host agroforestry demos and offer sensitisations during training preparations. These promoter farmers and demo farms act as a central pivot to information delivery. Solidaridad train these promoter farmers (trainer of trainees) that later disseminate the information to other farmers in groups.
Solidaridad has been centred towards improving coffee yield for smallholder farmers in Uganda, and linking farmers to premium prices which in turn improves incomes for farmers and their families. Solidaridad also use the Village saving and Loans approach where farmers are encouraged to save money in pools encouraging community cohesiveness and building social capital.

Solidaridad has conducted a needs assessment with participants to determine what is most important for them and their families regarding training and implementation. To identify what the farmers needed to successfully implement agroforestry practices and mitigate any potential negative impacts they may face, Solidaridad used:

- Key informant interviews
- Training session interactions
- On-farm visits
- Focus Group Discussions
- Local government interactions

Solidaridad used the findings from these communications to inform the agroforestry design and to develop a tailor made training program for farmers. Solidaridad employ their community based approaches in providing tree seedling germplasm and agroforestry extension services to farmers. In order to ensure survival and performance of trees on farm, they use our tree preference assessment, tree seedling distribution tool and tree seedling performance assessment tool in which our field assistants and lead farmers are trained to use these tools.

Farmer Payment and Benefit Sharing

To ensure the CRU payments (10% for Solidaridad and 80% for farmers) received by Solidaridad are transparent, Solidaridad will keep the two payments in separate accounts. This ensures that Solidaridad do not draw more than 10% of sales for ongoing coordination, administration and monitoring costs. Besides having specific accounts in place to receive the income from CRUS, payment to farmers will be done through mobile payments or platforms such as Yo-payments and M-pesa, . This payment method allows farmers to choose what they spend their carbon income on and ensures traceability. Contrary to this, for those farmers who do not have a phone, Solidaridad will pay in the form of direct cash which will be tracked with payment forms in Solidaridad's financial monitoring system. No in-kind costs will be provided to farmers unless this is decided in future project councils by participants and community members.

Technical Specifications

Leakage

Productivity is not expected to significantly increase in the first few years until trees are productive 5-7 years. However, it is expected that productivity will stabilise and not reduce under pressures from climate change in those years. Productivity could be expected to drop if the incorrect agroforestry techniques were used regarding shading of crops. Solidaridad mitigates this risk with the extensive farmer training offered. Normally, coffee yields tend to increase under shaded systems whereas beans yields are better with minimal shaded fields. As coffee is the main cash crop, covering roughly 65% of the productive area, the agroforestry design promotes the increase of shade in this area and therefore an increase in coffee productivity of 15% over the life of the project. In addition to this increase in coffee productivity, it is expected project intervention will result in a 10% reduction in input costs for the farmer. If bean crops are in the same shaded area as coffee and are experiencing a reduced yield, they may have to be relocated to a partially shaded area on the farm or be replaced with another shade-loving crop. Farmer productivity will be monitored regularly to identify negative impacts on crops from the trees planted.

Interested?

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