



Solidaridad-Kenya

Bungoma, Kericho, Nandi and Transzoia 2023



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.

This Plan Vivo certified project run by Solidaridad in Bungoma, Kericho, Nandi and Transzoia has helped over 6400 smallholder coffee farmers to improve low productivity and crop loss from climate change by transitioning 3800 hectares of cultivated land to agroforestry. Farmers are rewarded for their sustainable change in farming practices with increased crop yield, food security, and income diversification. In addition to these livelihood benefits, the environment see its soils and biodiversity improved through the implementation of agroforestry systems.



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Project Summary

Local partner

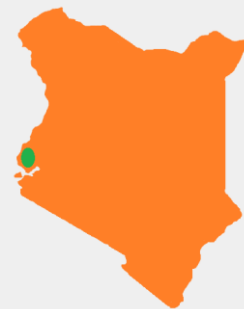
Solidaridad

Project location

Kenya.
Bungoma, Kericho, Nandi, Transzoia

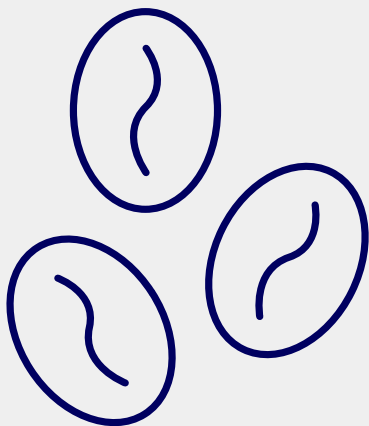
Ecoregion

East African montane forest ,Victoria basin forest
and Southern Acacia Commiphora Bushland



Main crops

Coffee



Number of existing participants



+6400

Potential number of additional participants

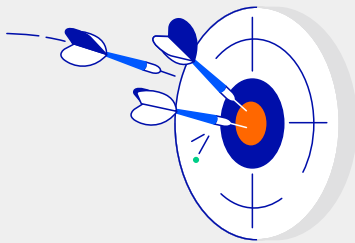


Estimated total size of project area



Project's aims and objectives

To improve the livelihood and income of smallholder coffee farmers, while supporting the adaptation of their current agricultural practices to the effects of climate change, by means of climate smart agricultural practices and capacity development of producer groups, While at the same time, reducing the carbon footprint of the coffee value chain in Kenya.



Impact to the farmer livelihood and environment

- Increased food security
- Increased farmer income
- Increased farmer access to resources and on ground capacity
- Increased biodiversity on farms
- Increased productivity
- Empowerment of vulnerable groups
- Increased resilience and adaptation of agricultural practices to new climate conditions



Additionality

Solidaridad began this project with a small amount of farmers who had pre existent agroforestry in their plots but lacked proper design and management practices. Ultimately, the aim of this project is to scale and reach up to 11000 farmers. In this regard, carbon revenue has the potential to make the project self-sustainable and allow it to operate with out the need of external funding through grants, as has been the case before implementation. The relevance of this Acorn project can be seen at both farmer and project level. For example, while carbon finance provides farmers with specific benefits and opportunities that allows them to transition to agroforestry, it is also instrumental to build and develop capacity at a community level to ensure long term benefits and set the basis for further scaling and spreading of agroforestry in the region. At a farmer level , the project allows to overcome specific economic and social bottlenecks faced by farmers keen on carrying out agroforestry. For example, without the project there would be no access to payments for ecosystem services in place to support further develop agroforestry systems. The income generated through carbon finance is instrumental allows farmers to face certain costs ,such as seedlings, inputs and training. At the same time, it also supports Solidaridad to subsidize the price of seedlings and germplasm to ensure affordability for farmers and further tree planting. Finally, it is also important to highlight the development of soft skills at community level for participants to improve their current practices. This will be done through trainings on agroforestry making use of dedicated farmer schools and rural resources centres per sub region. In short, the project is not solely focused on generating additional income but developing the basis for long term improvement of livelihoods in the region where the project is located.

The project area is located in a region with a recent UNDP Human Development Indicator of 0.575 and Smallholder coffee farmers live in moderate poverty levels. In general, an average income does not guarantee access to all meals a day and only some are able to provide education for their family. On top of this, many of the farmers are remotely located and this translates into a lack of electricity and other services such as drink water. Participant farmers couldn't have access the required inputs to scale or transition their agroforestry systems. Furthermore, Solidaridad relied on grant funding to begin their support of farmers transition to agroforestry. Unfortunately, as previously explained, the organization does not count with resources to continue the support in the long term not scale to a bigger number of farmers. In this regard, additional carbon revenue is certainly an enabling resource for the scaling up of the agroforestry project. Given that many farmers have acquired knowledge through their relatives, they are need of specific training on agroforestry and climate smart agriculture. Due to current climate conditions, land erosion and proliferation of different pests lead to low yields. By means of tailored training, Solidaridad aims to promote practices to conserve soils and also address the pests in an integrated manner. Next to that, through adequate shading levels the coffee plots are able to face the recurrent higher temperatures. In practical terms, Solidaridad is able to scale their reach in terms of trainings through a system of "training of trainers" and the current governance structures of producer organizations. This way, lead farmers are in charge of spreading knowledge to other participant.

Solidaridad is keen on reaching the potential number of supported farmers for this project, more specifically 11000. To do this, an efficient approach is necessary to face the costs and

meet the goals of improved livelihoods for project participants. As previously mentioned, the training of farmers and capacity building is a key element. In view of this, Solidaridad will set up 2 Rural Resources Centres per sub region, which will act as local knowledge hubs to share and spread agroforestry dedicated knowledge. These local community hubs will be operated on a voluntary basis by lead farmers. It will be at these hubs where co-learning will be promoted by setting up demo plots. Next to the activities supported by the community, Solidaridad will bring in expertise knowledge through agroforestry extension experts with the help of the Carbon Farming Academy and other universities. With their help, Solidaridad will develop the teaching material and content to be used for the farmers and lead farmers trainings.

Project Baseline

Land use & habitat species

The 6400 farmers in the project have on average 0,59 hectares on which they carry out their agroforestry practices. In terms of crops, Robusta coffee is the main cash crop, followed by sugarcane in second place and finally bananas, maize and sweet potatoes. Interestingly, beekeeping is a frequent activity among farmers next to the cultivation of the mentioned crops. The current land use in the area is predominantly agricultural. Naturally, this poses a high pressure on forests and natural resources. Furthermore, this is enhanced by local population relying on wood products for own consumption. So far, productivity has faced some challenges due to climatic conditions and the use of pesticides has been indicated by surveyed farmers. Consequentially, this scenario would lead to a situation without the Acorn project in which deforestation rates surely do not diminish and is likely to increase. In view of this, the agroforestry design developed for this project aims to provide alternative sources of income to participating farmers. For example, as part of the agroforestry fruit bearing trees are also included to provide food and shade for lower crops. More specifically, farmers are encouraged to plant mango, macadamia and avocado trees. Next to these, other trees are also integrated to ensure sufficient shading and also provide food resources for animals and soil benefits such as nitrogen fixation. As a result of crop diversification and specific practices, the impact on biodiversity and soil health is expected to be positive and also reduce the use of fertilizer and pesticides by farmers.

The project takes place across three different ecoregions. These are the Victoria Basin Forest, East African Montane Forest and the Southern Acacia Commiphora Bushland. In general terms, the current habitat is a fragile tropical ecosystem endowed with fertile loam soils harbouring an array of species diversity from low growing plants to species reaching higher heights. The most common species include, *Maesopsis eminii*, *Cordia africana*, *Albizia spp*, *Ficus spp*, *Markhamia lutea*, *Melia spp*, etc. Given the current expansion of agricultural activities, it is expected for current rate of deforestation to remain unaltered without any project intervention. For example, outside the project area, many farmers rely on wood products for own consumption. However, through sensitization Solidaridad has decreased this trend among farmers. Therefore, very few cut trees on farm to provide timber and overall, tree felling among participants is not significant. Besides the sensitisation done by the local partner, farmers are motivated to retain shade trees in coffee systems due to the generated benefits. Furthermore, the local partner has indicated that no deforestation has taken place within the project area in the last 5 years.

In terms of fauna present in the project area, the presence of different species have been confirmed by surveyed participants. Some of these include large species like foxes, wild dogs, wild cats, hyenas and monkeys. Next to this, the presence of lizards, chameleons and snakes has also been confirmed by project participants. Additionally, the implementation of agroforestry and shade trees could represent an opportunity for animals and specifically bird species to find resources and shelter in the planted species. Therefore, the impact on biodiversity is expected to be positive.

Socio-Economic Benefits

Area	Indicator	Result
Local livelihood	Nutritional variety	The average farmers consumes 7 food groups out of 13.
	Agricultural land use productivity	Coffee = 370 kg/ha Average total farm yield of 9920 kg/ha per year , including crops such as banana, maize ,sugar cane and sweet potato.
Environmental improvement	Agricultural biodiversity	36% Gini Simpson Index Score

Nutritional variety

At the start of the project participants were not able to access a fully nutritious diet. In this regard, the baseline surveying showed that on average, participants consume half of all food groups (7 out of 13). This assessment was carried out using the HDDS index survey. Through the implementation of the project's agroforestry system, farmers will be able to diversify the crops they produce. For example, by growing different fruits species such as mango and crops like maize, besides coffee. Naturally, this will represent a more varied available diet but also an more resilient livelihood, as yields are also enhanced by the agroforestry system benefits. As a result, farmers are able to access those food groups at local markets which they are not currently producing within their plots.

Agricultural land use productivity

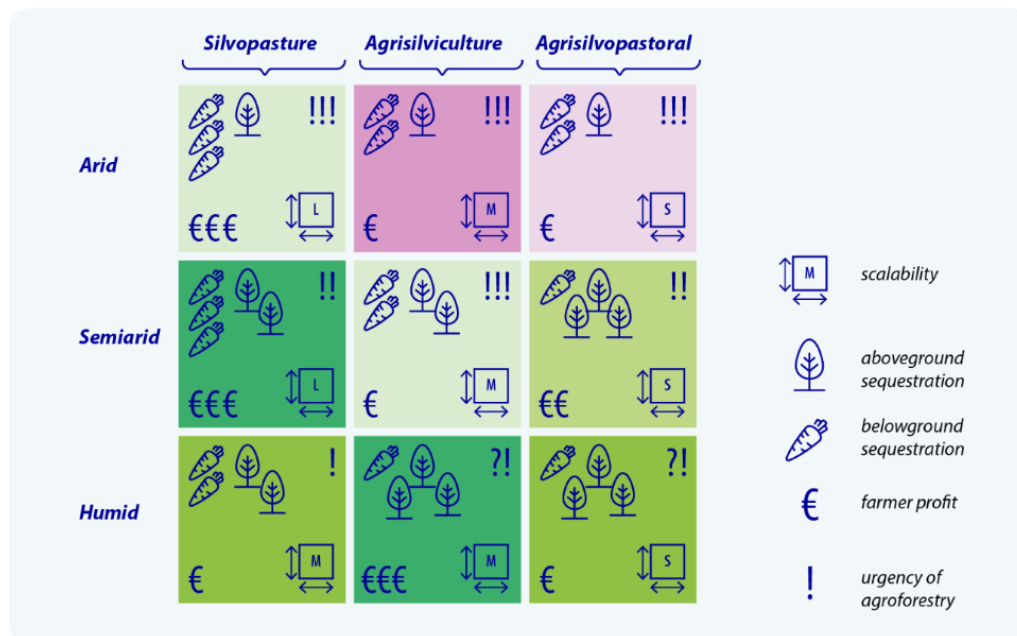
The main cash crop produced by smallholder farmers is coffee, which has a high market value but its price is also subject to fluctuations. Next to this, farmers are also producing banana, maize, sugar cane and sweet potato as secondary crops. On average, farmers are able to produce around 400 kg of coffee per hectare and the total farm productivity can reach up to 9900 kg per hectare if the aforementioned secondary crops are taken into consideration. Through the implementation of the agroforestry systems and a proper combination of plants species, Solidaridad expects the yield for the different crops to increase, specially for coffee. The reason for this is the implementation of proper shading and also nitrogen fixing species as part of the agroforestry design. In this regard, this benefits will address certain challenges faced by farmers as part of the new climatic conditions, which bring recurring higher temperatures and irregular rainfall patterns.

Agricultural biodiversity

The baseline value for the agricultural biodiversity (Gini- Simpson Index) indicates a current state which can be considered as unsustainable, with a value of 33%. However, the values leading to the overall result require a detailed look. The final value is composed of three different scores, which are the agricultural crop index (representing the different crops and their relative share over the total planted area) , livestock index at the farms and the scores for natural vegetation, pollinators and trees. Of these three, the diversification of crops ranks considerably lower than the rest. The reason for this is the high prevalence of coffee plantation among the secondary crops. Contrary to this, the prescence of livestock is more diverse and the amount of pollinators as well as farmers performing beekeeping is high. In views of this, the diversification of crops through the agroforestry system is expected to provide a tangible improvement in the crop index and overall agricultural biodiversity score. This is specially relevant considering that the crop index showed the lower score in terms of biodiversity. Finally, the presence of pollinators will be likely enhanced by the increased plant density within the agroforestry systems, as this represents sources of food and shelter for animal and insect species.

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 fruit and shade trees is prioritised in this system.



There are 9 native and naturalised tree species promoted under the agroforestry design. These trees offer benefits to farmers in the form of provision of fruit, shade, and medicine. Each farmer is advised to plant the following:

- Cordia Africana
- Mangifera indica (mango)
- Grevillea robusta
- Ficus spp
- Albizia coriaria
- 50 x Persea Americana (avocado)
- Macadamia integrifolia
- Spathodea campanulate
- Paveta apiculata

To bring the system to fruition, 4 seedlings of each tree will be planted per hectare during the first 3 years. In this regard, it is important to note that a survival rate of 80% is expected for the trees. Therefore, the final number of trees per hectare per species will be 3. An important aspect of setting up the agroforestry system is the provision of seedlings for farmers. For the planting phase, a spacing distance of 10 meters is used as well as a staggered pattern. Maintenance tasks for shrubs begin when shade trees are 5 years old. At this stage, an annual pruning is done with the objectives of managing shading levels on the coffee. As a by-product, farmers are able to obtain firewood from the pruned sections. In this regard, it is important to remark that complete tree harvesting is discouraged. For the *Spathodea campanulata* species not to become invasive, it needs to be properly maintained and managed in terms of pruning. However, when this is done, it leads to nitrogen fixation.

Organisational Capacity

Solidaridad has been established globally, adding up to over 50 years of experience. When it comes to this project, Solidaridad has been present in Central Africa since 2008. More specifically, it has been working in Kenya with farmers for 14 years building their capacity to produce sustainably in respect of nature.

Working directly with small and medium-scale farmers in collaboration with the local county governments, private sector players and other CSO/NGO's in the same space. This experience translates into the ability to link farmers with service providers and novel markets. Along with this, Solidaridad has also been involved in the development of farmer groups capacity on ground. To do this, it always begins with an assessment of farmers needs in terms of technical knowledge (such as agroforestry practices) and coordination within the farmer groups.

The years of expertise and presence in the project area allows Solidaridad to be knowledgeable of the relevant stakeholders as well as the context in which farmers operate. However, the organization is always busy gathering input to enhance its understanding of local context. It does this through the use of farm visits , interviews and interactions during training sessions. Ultimately, this input leads to the creation of tailored programs to address the lacking knowledge or capacity of the different farmer groups.

Farmer Payment and Benefit Sharing

From the total amount received from the CRUs sales from Rabobank, 10% will be deducted for Solidaridad and 90% will be given to farmers. Participants will receive the carbon revenue fully in monetary benefits. Meaning that, no in kind contribution will be involved in the payment of the smallholder farmers. Please see the table below for a description of potential in-kind benefits:

In-kind benefit	Description
Inputs	<ul style="list-style-type: none">• Purchase of agroforestry seedling costs• Purchase of manure costs• Transport of trees seedlings costs• Digging holes for planting trees costs• Purchase of beehives costs

Education	<ul style="list-style-type: none"> • Training costs (e.g. nursery bed establishment, tree planting, climate change and mitigation) • Customization and production of training materials
Operation	<ul style="list-style-type: none"> • Mobile communication costs • Fencing
Livelihood	<ul style="list-style-type: none"> • Land tenure consultation costs

Feedback on the payment method will be encouraged during regular project council meetings where farmers are involved in the decision making process throughout project implementation.

Technical Specifications

Carbon Removal Units

The number of CRUs that have been sold and retired to date are found in the table below:

Amount of CRUs retired	Crediting Period
0	June 2023 – October 2023

Leakage

No leakage is expected as there is no reduction in productivity and consequently, no displacement of farmer activities expected in the project area due to project intervention. At the same time, the area surrounding the project is mostly composed by crop land and shrubland, with only 3,10% of the surrounding area showing a tree cover above 60%. As a result, the expected leakage is 0. Generally speaking, the area where the project is located has witnessed recurring logging activity. In view of this, Solidaridad will carry out regular sensitisation programs with project participants and will be monitored closely by the project and also governmental bodies. Furthermore, the project will promote the use of efficient cookstoves to reduce the reliance on timber as source of firewood.

[Interested?](#)

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