



Kaderes-Tanzania

Karagwe & Kyerwa

2022

Introduction

This report represents a summary of the project details. It has been created in close collaboration between Kaderes 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. For a more detailed insight into the project, Acorn Design Document information detailed in the project ADD (Acorn Design Document).

This Plan Vivo certified project run by Kaderes in Karagwe has helped over 5,000 smallholder coffee farmers in Karagwe and Kyerwa districts overcome low productivity and crop loss from climate change by transitioning 5000 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 also thrives under such an agroforestry system, resulting in healthier soils and enhanced biodiversity.



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Project Summary

Local partner



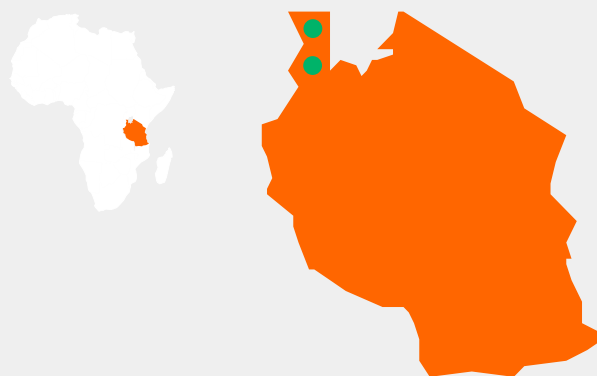
Project location

Tanzania, Karagwe, Kituntu/Igurwa, Bushangaro, Kiruruma & Ndama

Tanzania, Kyerwa, Kikamabu & Kairu

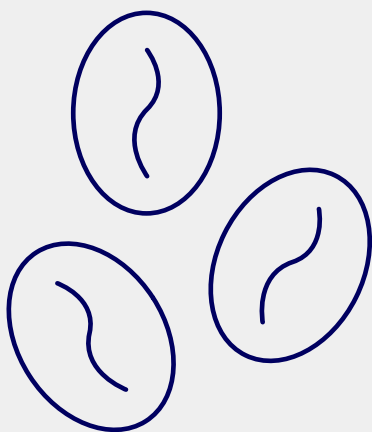
Ecoregion

Victoria Basin forest-savanna mosaic



Main crops

Coffee



Number of existing participants



5,000

Potential number of additional participants

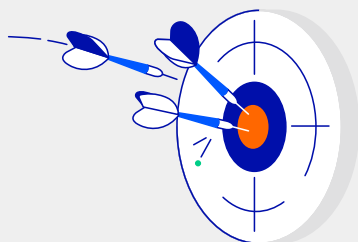


Estimated total size of project area



Project's aims and objectives

To mobilise support and transformation from peasant agriculture into agroforestry by providing training, access to planting materials and other extension services where possible. Kaderes is also facilitating the farmers to get fair prices for their agricultural products through Fairtrade, Organic, UTZ and RFA.



Impact to the farmer livelihood and environment

- Increased food security
- Increased farmer income
- Increased farmer access to resources
- Increased biodiversity on farms
- Increased productivity
- Empowerment of vulnerable groups



Additionality

The collaboration between Acorn and Kaderes began in early 2020. From the start of their project, until the time they connected with Acorn, Kaderes have had the intention to scale their agroforestry project by offering farmers carbon finance as a reward for transitioning away from peasant agriculture. The first trees were planted by the initial lead farmers in their pilot in late 2014. As part of Kaderes' agroforestry design and due to their limited financial resources and funding, farmers plant trees in a slow and phased manner in quarter 4 of each year, for a period of years depending on the finances and resources available. The carbon credits farmers receive for the trees planted in the project are ex-post based and have only been derived beginning from the period 2020-2021.

Farmer Level

The project area is located in a region with a recent UNDP Human Development Indicator of 0.529. Smallholder coffee farmers in the project area are living with less than \$1 a day and have no access to pre-financing, loan or saving mechanisms, risk management tools, or the carbon market. These farmers couldn't have accessed affordable financing to make a shift to agroforestry without the financial and technical support provided by Kaderes. Kaderes relied on start-up grant funding to help the first farmers begin the transition. However, Kaderes cannot sustainably continue to support these farmers, let alone all farmers in their expansive network who have the potential to transition to agroforestry with the expected scaling of their agroforestry project to 20,000 farmers. Given that agroforestry practises are classified as a relatively new technique, farmers require additional and ongoing costly training and technical assistance to build their confidence and skills. This knowledge is crucial to ensure farmers can successfully maintain their trees over the life of the project and avoid overshadowing of crops. The agroforestry training provided by Kaderes promotes genetic diversity enhancement and planting native or naturalized species based on the suitability of the farm land (i.e water availability, complementary/competing species and weather conditions). Kaderes also facilitates knowledge exchange sessions and supports farmers to share lessons learnt through train-the-train principle.

Although carbon finance may not be the main reason all farmers initially transitioned to agroforestry, compared with the expected long term increases in productivity, it diversifies their income and farm output. This additional income ensures Tanzanian 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. Without the incentive of carbon finance, and in times of crisis or devastation, farmers may have no other option than to sell the wood from the trees they have planted. Unfortunately, the high rate of deforestation in the region surrounding the project area shows that farmers are more likely to make money on the side by cutting down trees when they do not have a sustainable income that carbon finance would help provide. Research suggests that smallholder farmer deforestation behaviours in developing countries could stop if provided with carbon credits based on current carbon prices¹. Therefore, carbon finance is essential to incentivise farmers linked to Kaderes to keep their trees in the ground and to scale up agroforestry practices, not regress to behaviours contributing to deforestation. The long-term sustainability of this agroforestry system and the first additional trees planted are jeopardized if Tanzanian farmers don't receive compensation for the carbon they sequestered.



Project level

Kaderes do not work with a fixed number of smallholder farmers but a constantly growing and expanding network. Kaderes has a mission to empower members and communities to contribute to sustainable land use management and environmental conservation by focusing on the scaling of their agroforestry project. The carbon credits received by the first farmers will encourage sustainable behaviours and create better practises at scale. If the first farmers who transitioned with Kaderes are not rewarded with income from the carbon credits, both Kaderes and the farmers may be discouraged from scaling up their agroforestry interventions after all their hard work and lack of additional 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 Tanzanian 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 Kaderes has access to, roughly 20,000. Ex-post credits require products to be already financed before the first trees can be planted. The grant funding Kaderes has received supported the initial transition to agroforestry, however, this funding is temporary and dependent on proof of concept and sustainable returns from these farmers, which carbon income provides. Therefore, the carbon finance ensures continued investment in the project and further scaling up. Providing carbon finance to compensate Ivory Coast farmers is the only practical way to achieve scale and proof of concept.



Project Baseline

Land use

The 5000 farmers in the project manage on average 1 hectare each of farm land used for cultivation of predominantly Robusta coffee as cash crop (50%) and bananas as staple food (20%) and mango/avocados (30%) in an intercropping approach. The land is also used to grow maize and bean crops in addition to seasonal crops including cereals (sorghum, millet), roots and tubers (cassava, round potato, yams), fruits (pineapple, watermelon), and spices (vanilla, ginger, cinnamon, cardamom, lemon grass). All farmers in the project practice organic farming where no pesticides are allowed to be used on the farm for any purpose. Farmers in the project area use organic fertilizer such as compost manure and green manure. Farmers also use crop residues as much as possible on their farms. The land on project area is fertile hence the low amount of manure to be used on farms (one 20kg tin per plant of manure used for the period of 2-3 years). Without project interventions, the land would continue to be used for such an organic farming approach as farmers believe these practices make them independent, contribute to food security, diversify income and build their resilience to climate change

Habitat species

The project is located in the hilly regions of northwest Tanzania among wetlands, sparse forest area and some patches of dense forest vegetation. Bimodal rainfall in the region ranges from 800 to 2000mm and temperature differs from 22 to 28 Celsius. The farms are located between 1350m – 1800m above sea level. The number of crops at the beginning of the Acorn project included 400 coffee trees per farmer, 70 banana trees per farmer, 10 avocado trees per farmer, 5 mango trees per farmer. The *Maesopsis eminii* and *Markhamia lutea* trees are the most prevalent native trees species within the project area. Fauna species in the project area include various pollinator and threatened species (e.g. giraffe, cheetah, elephant). Wild fauna species, especially birds, would be expected to continue to decrease in number without project interventions. Therefore, the biodiversity on the farms would be expected to slowly decline without project intervention.

Socio-Economic Benefits

Area	Indicator	Result
Local livelihood	Nutritional variety	The average farmers consumes 6 food groups out of 13.
	Agricultural land use productivity	<ul style="list-style-type: none"> Coffee = 2,500-5,000kg/ha Bananas = 45,000 – 75,000kg/ha Beans = 480-720kg/ha
Environmental improvement	Agricultural biodiversity	58.44 Gini Simpson Index Score

Nutritional variety

Currently, the farmers in this project cannot afford to eat a plentiful and nutritious diet, only consuming 6 food groups per day on average out of 13 (using the HDDS Index survey). Due to the fruit trees planted as part of this agroforestry project, farmers will be able to access a more reliable source of nutritious food. With the agroforestry project taking place in Karagwe and Kyerwa, the availability of nutritious fruits in these districts has increased by up to 70%, as farmers can access them at low cost and sometimes even get them free. Project intervention will result in further increases in food security due to the expected increases in productivity of crops and trees planted as they mature. Farmers will experience income diversification from carbon finance that will help farmers to afford a variety of nutritious food other than fruits and self-grown vegetable crops, such as protein sources. As part of the agroforestry project, Kaderes also train farmers on the importance of consuming a nutritious diet for them and their family to contribute toward sustainable development.

Agricultural land use productivity

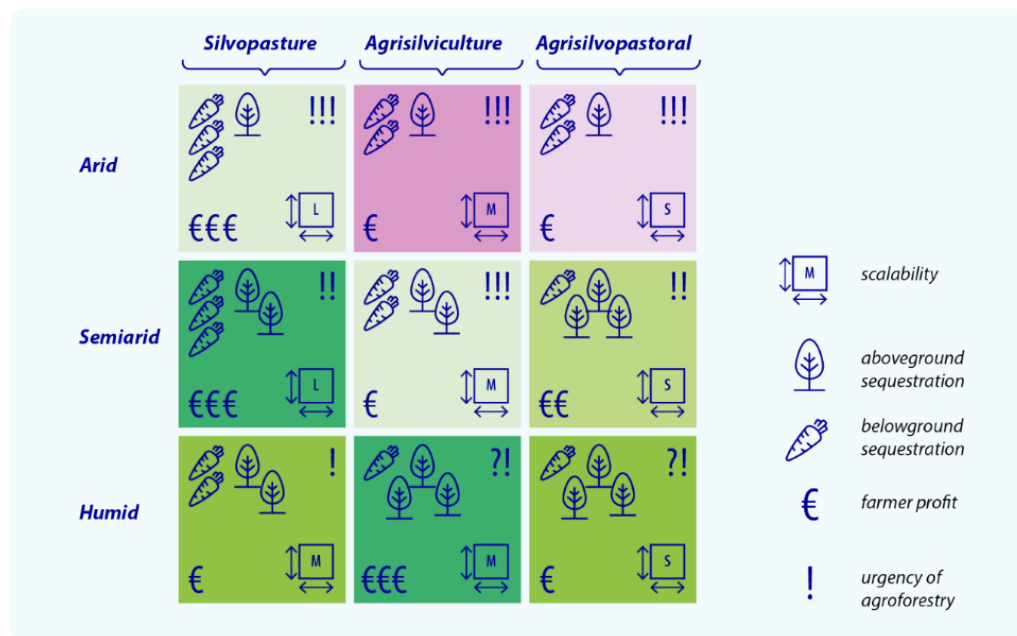
The most important crop produced in term of productivity level is coffee which has high market value followed by bananas and beans. In the project area, the total area to grow all of the 3 main products in terms of volume and amount of plants on the farm that contribute to productivity level, proportionally differ as follows: Coffee 40%, Bananas 45%, Beans 10%. Coffee yields range from 2,500-5000kg per hectare, banana yields from 45,000-75,000kg per hectare, and bean yields form 480-720kg per hectare. Productivity levels vary according to the climate each year and the rainfall. Productivity levels and farmer income is extremely low in the project area. Kaderes expects an increase in farmer productivity based on income generated per hectare due to crop diversification. Kaderes also expects an increase in productivity from the project cash crop, coffee, due to the benefits of shade in such a harsh climate.

Agricultural biodiversity

Based on the Gini-Simpson Index score of 58.44,, the state of biodiversity in the project is classified as average. This result reflects the moderate presence of pollinators, some beekeeping and the presence of many culturally or environmentally significant species (e.g. cheetah, elephant, giraffe). However, more monitoring is needed to provide a clearer insight on the presence of species that are not culturally or environmentally significant but are found in the project area (e.g. monkeys). The agroforestry interventions under this project will improve soil fertility and biodiversity due to the variation in crops and trees that provide a habitat for local wildlife species. However, project interventions may possibly bring more pests due to an increase of shade and the organic farming practises implemented (use of cultural and physical measures instead of pesticides to mitigate pest increases). Mitigation measures have been identified to avoid this, such as regular pruning to reduce branches that harbour pests, training farmers to collect and kill insects physically, and measures to increase general farm sanitation (reducing the impact of pests invasion).

Project Activities

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



There are 5 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 farmers is advised to plant the following:

- 25 x *Maesopsis eminii*
- 35 x *Mangifera indica* (mango)
- 20 x *Markhamia lutea*
- 25 x *Musa* spp (banana)
- 50 x *Persea Americana* (avocado)

Trees are planted among 200 coffee trees and other subsistence crops by farmers in October to December and March to May every year and fruit is harvested twice a year in mid-June and late December. Pruning and thinning of trees is undertaken once a year in August and September to maintain plant health (removing dead branches), avoid competition between trees, increase the growth of the tree, reduce pests, and avoiding overshadowing crops. The species of tree are selected based on value to farmer and using agronomist advice based on the natural environment of each farm (water availability, weather, current species present, and possible competing or complementary species). The long-term agroforestry design encourages farmers incorporate beekeeping into their system and plant a high diversity of fruit and spice trees (more than just the top 5 promoted)

Organisational Capacity

Kaderes is a NGO located in the north-west of Tanzania, with the aim to support rural development and improve living income conditions of the villagers. KADERES Peasants Development Public Limited Company (KPD PLC) is the coffee export company of KADERES. Kaderes has extensive experience (over 20 years) with setting up projects for the benefit of their farmer and a strong local presence in the project area. Kaderes have a clear organizational structure for the Acorn project, including 14 Field assistants, 1 Monitoring and Evaluation Officer, 1 Head of extension (Agronomist) and 1 Documentation Officer. Kaderes also works with research institutes, local agricultural departments, and government structures including the Tanzania Forest Services Agency and the Natural Resource Management department from Karagwe and Kyerwa district council.

Kaderes has extensive experience with setting up projects for the benefit of their farmers and work through a tested approach of awareness creation and ongoing stakeholder meetings to initiate, implement and monitor projects together with the farmers involved. The needs of farmers and the potential impacts they may face from this project are determined by examining their family business plans and crop calendars and consulting with the local community groups. Kaderes also holds regular focus groups to listen to the concerns of participants and stakeholders. These groups involve lead farmers, village-based agricultural advisors, influential and culturally accepted community members, and various stakeholders

Kaderes has also developed a well-structured and clear theory of change for the project. This theory of change focuses on increasing the power of accessing and utilizing resources by women, widows, youth, orphans, unemployed and physically challenged, and other vulnerable groups. They plan to achieve this through full and active engagement with these groups to determine their barriers.

Farmer Payment and Benefit Sharing

From the total amount received from the CRUs sales from Rabobank, 10% will be deducted for Kaderes and 90% will be given to farmers. Participants will receive 50% in cash and 40% in-kind as per agreement contract in place that farmers have signed. Please see the table below for a description of in-kind benefits:

In-kind benefit	Description
Inputs	30% of CRU proceeds will contribute to: <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	10% of CRU proceeds will contribute to: <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

Participants have been actively engaged when determining an appropriate payment method to ensure farmers, their families and the community benefit from the carbon finance offered in a way that meets their needs in the local context. 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
5877	Dec 2021 – Dec 2022

Leakage

There is no reduction in productivity or a displacement of farmer activities expected in the project area due to project intervention. Much of the land in the region, outside of the project area, has a high occurrence of logging and is yet to convert to agroforestry. Therefore, logging may possibly increase due to the large amount of area in the region (project area) that is now dedicated to agroforestry. However, this will not be at the hands of farmer participants as they will have increased productivity, reduce input costs, and income diversification, preventing the need to seek income through illegal logging. Farmers have also been trained in the importance of conserving trees to build resilience in the community to climate change. There will be a reduction in fertiliser use as this agroforestry project has standards in line with organics certification. This project restricts use of fertilisers other than organic types (e.g. manure) due to certification requirements. It is expected that this fertiliser use is expected to drop under business as usual levels. There is an insignificant level of gasoline usage in the project area as farmers do not operate heavy machinery and this is expected to remain the same.

Interested?

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