Trees for Kenya-Kenya

Embu and Tharaka Nithi districts in Kenya

2023

Rabobank

Introduction

This report represents a summary of the project details. It has been created in close collaboration between Trees for Kenya 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 project's first year. Please see the Acorn website for the real-time number of participants at scale.

This Plan Vivo certified project run by Trees for Kenya, located in Embu and Tharaka Nithi, has helped more than 2,000 smallholder farmers adapt to climate change by transitioning their degraded crop landscapes to agroforestry with the planting of diverse shade, fruit bearing, and medicinal tree species. The species planted under this project's agroforestry design provide a marketable and nutritious source of food, combat soil erosion, enhance crop yield and increase overall farm productivity. Trees for Kenya aims to support an additional 2,000 farmers across both Embu and Tharaka Nithi with this transition to agroforestry to overcome the challenges they face in terms of poverty, low productivity, high farm input costs, and lack of access to food, education and heathcare.

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Project Summary

Local partner

TREES FOR KENYA

Project location

Embu and Tharaka Nithi Districts, Kenya

Ecoregion

The Northern Acacia-Commiphora Bushlands and Thickets, and the East African Montane Forests

Main crops

Coffee, Tea, Maize and Bananas.

Minimum number of existing participants

2,116+

Potential number of additional participants

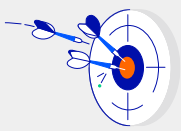
2,000+

Estimated total size of project area currently

1,100 ha

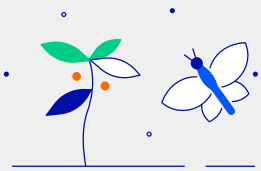
Project's aims and objectives

Trees for Kenya are implementing the Acorn project to overcome the challenges faced by the farmers in the project area, including changes in the climate and weather patterns, low productivity, limited access to resources, poor financial security, and a lack of market for produce. This project will equip farmers with the necessary knowledge and resources to transition to agroforestry, which will provide long-term benefits for both farmer livelihood and the environment.



Impact to the farmer livelihood and environment

- Resilience to climate change
- Diversified and increased income
- Increased productivity
- Improved soil structure and fertility
- Increased access to nutritious food, medicine and education



Additionality

This agroforestry project led by Trees for Kenya was established in 2019. Currently, 2000 farmers have begun the transition to agroforestry in the project area with the support of Trees for Kenya, 500 per year from 2019 to 2022. When engaging with farmers about what they wanted or needed to transition to an agroforestry system, in mobilizations and workshops with support of local government, farmers found carbon finance an ideal manner of compensation for their behaviour change and maintenance of their agroforestry system long-term. Although the promise of carbon credits is not what enabled the first farmers to plant their trees in the short and long rainy seasons of 2019, it ensures farmers can continue their efforts and continue planting, maintaining, and upgrading their agroforestry systems. It also ensures that Trees for Kenya can continue encouraging and supporting these sustainable changes in farming practices. Under the agroforestry design for this project, Trees for Kenya will support farmers to plant between 200-350 trees on their farm depending on the size of the farm and capacity of the farmer over a minimum period of 2-3 years.

Farmer Level

In the project area, farmers live below $2 with a poverty level of more than 75%. They rely purely on their cash crops for income and subsistence crops grown on their farms for food. Farmers face financial barriers due the low prices of their cash crops and the rising costs of inputs (especially due to COVID and the war in Ukraine). Farmers are unable to invest in such a change of practices due to their lack of access to and knowledge on how to obtain credit/loans or connect to the carbon market for compensation. This financial barrier goes hand in hand with the technical barrier farmers face, which is a lack of access to costly planting materials needed to establish and maintain an agroforestry system. In addition to the financial and technical barriers, farmers are experiencing a rapid and significant loss of top soil and fertile land, resulting in degraded and dry soil that increases the risk of bushfire. Due to farmer financial hardship, farmers are also unable to invest in training and measures to build resilience to the impacts of climate change that are destroying their land such as extreme temperatures, wind and rain.

This project and the carbon finance offer to both farmers and Trees for Kenya will help overcome all three barriers described. Acorn connect farmers to the carbon market and provide them with an additional income that can be used to continue to upgrade their agroforestry system, implement more farm protection measures (i.e. live fences), afford organic and high quality fertilisers, obtain labour to help with bushfire prevention, and adapting on farm infrastructure to be resilient against the impacts of climate change. The additional income stream from carbon finance will also aid in transforming the economic status of these families and their communities in such a poverty ridden area of Kenya. The reward of carbon finance provides a tangible and regular incentive for farmers to continue to maintain and upgrade their agroforestry system in the over the life of the project and longer.

This carbon finance will ensure Trees for Kenya can provide detailed training for farmers ona quarterly basis focusing not only species selection, spacing, shading and after planting management, but also on value addition, marketing, storing products, waste reduction, advise on fertilizer, etc. Trees for Kenya will also dedicate a percentage of their CRU revenue to partner with more local and reliable nurseries. This increase in quality and frequency of training and access to planting materials will ensure the participants have the skills and

resources necessary to successfully transition to agroforestry and maintain their systems in the long-term.

Project Level

Trees for Kenya have the goal to ensure the success of this project at a large scale, expanding to include all the smallholder farmers in their network and more, with an additional 500 farmers being onboarded each year, using the success of those who began planting trees in the initial years as a positive example. Trees for Kenya's aim for this project is to improve the livelihoods of smallholder farmers and their communities through income diversification, enhancing soil health, increasing access to affordable inputs, reduce massive soil erosions on farms, and improving farmer nutritional intake and biodiversity. The first 350 farmers who began planting their first batch of trees in 2019 are few compared with the trees farmers are still eager to plant and all the new farmers to be onboarded with the scaling of the project. The Acorn project in the region will act as an eye opener to many farmers on how they can access the carbon market and carbon credits and understand the importance of ecosystem services offered by trees and how they can be integrated onto farms in a way that benefits farmer and community livelihood. Only focusing on the initial farmers who planted their first batch of trees in 2019 doesn't consider the additionality of the full project over its lifetime. If farmers who transitioned to this long-term agroforestry system are not are not rewarded with income from the carbon credits as promised to them for their efforts, they may be discouraged from maintaining and scaling up their agroforestry interventions after all their hard work and lack of additional financial benefits.

Project Baseline

Land use

The land in the project area prior to the Acoorn project intervention was mainly used for subsistence farming which includes cultivation of both cash and food crops. The project area is covered by cash crops (40%), food crops (40%), and homesteads (20%). Cultivated species in the project area include avocados, tamarillo fruits, mangos, bananas and guava, which are all both sold at markets and consumed by the farmer, with exception of the guava which is only for self-consumption. Prior to the project, farmers applied both organic and inorganic fertilisers including manure for organic options, and phosphorus and nitrogen for inorganic fertilizers. Farmers controlled pests through pesticide application.

Without project intervention, farmers would not have the financial resources to afford education and resources to transition to an agroforestry system and undertake sustainable agricultural practices such as tree planting, mulching, composting and crop rotation. Instead, farmers would continue practising subsistence farming with few trees on their farms that further degrades soil and limits adaptation to climate change. Throughout the Acorn project intervention, Trees for Kenya will provide trainings to teach and promote the use of more organic fertilizers and organic methods for pest control and support farmers to plant trees on their land as part of sustainable agricultural practices.

Habitat species

The project area neighbours Mount Kenya's forest, characterized by relatively flat agricultural terrain that receives heavy rainfall. The common tree species in the project area are *Grevillea robusta, Acrocarpus fraxinifolius, Vitex keniensis, Podocarpus falcatus, Syzgium guineenses* and *Cordia africana*. Animals present in the neighbouring areas includes elephants, buffalos, gazelles, monkeys and different bird species native to Mount Kenya.

Without project intervention, the degradation of soil and risk of bushfires would increase as the land faces a rapid and significant loss of top and fertile soil in addition to more predominant dry conditions as a result of climate change. This change will threaten both fauna and flora biodiversity, causing it to decrease in the project area. In addition to this, farmers would continue cutting down trees as a source of income from timber and fuelwood to cater to basic needs such as food and education, leading, therefore, to a higher biodiversity loss.

Socio-Economic Benefits

Area	Indicator	Result
Local livelihood	Nutritional variety	The average farmer consumes 2 out of 12 food groups daily
	Agricultural land use and productivity	The average farmer produces about 102,243 kg/ha/year of coffee, 34,150 kg/ha/year of tea, 11,820 kg/ha/year of maize and 9,450 kg/ha/year of bananas
Environmental improvement	Agricultural biodiversity	50% unsustainable (under the Gini-Simpson Index)

Nutritional variety

A typical farmer's diet in the project area is heavily based on cereals, mainly maize, and some vegetables. Few farmers also raise livestock and can integrate beef, chicken, eggs, and milk into their diets. Access to diverse foods is limited due to financial limitations, with farmers only able to buy a few products in the markets, while mainly relyting on food produced on their farm. It is common in the project area for farmers to have to skip meals and struggle with food insecurity. Therefore, the participant's nutritional variety is generally very poor in the project area, with farmers only consuming 2 out of 12 food groups a day.

Without the project intervention it is likely that farmers will continue to struggle with food insecurity and as the price of food rises may only be able to consume the food crops they produce on their farm, which would remain limited. Under the Acorn project, Trees for Kenya will support farmers to integrate an agroforestry system within the current subsistence farming system to increase food and cash crop production, increasing income and improving nutrition (e.g. from fruit trees planted). In addition, the extra revenue from the sale of CRUs will also allow farmers to increase the amount of food they can purchase at the market.

Agricultural land use and productivity

Most farmers in the project area believe their productivity levels are average but unstable due to drought, high input and planting costs, and diseases. This unstable productivity is concerning as farmers rely heavily on cash and food crops grown from their farms. These circumstances reported by participants align with the main barriers identified for farmers, including climate change, low productivity, access to costly resources, poor financial security and volatility in commodity prices. Without the project intervention, farmers would continue to experience unstable productivity, leading to times of extreme financial hardship.

The impact of project intervention is expected to be positive due to the promotion of sustainable land use through a well-designed and equipped agroforestry system and the provision of necessary planting materials and training. These services offered by Trees for Kenya under the Acorn project, combined with their partnerships with more local and reliable nurseries, will in turn will promote healthy soil and increased yield of crops. In addition, the products derived from the trees planted will contribute to the overall farm productivity.

Agricultural biodiversity

The project area is characterized by subsistence crop farming, as farmers rely purely on cash and food crops grown from their farms. This practice alone places a lot of pressure on the land's soil, which already faces continuous erosion the consequences of climate change that bring about extreme dry conditions. These conditions increase the risk of bushfires and land degradation, both resulting in an unsuitable habitat for native flora and fauna species. Participants grow between 3 to 5 different crops minimum, have low natural vegetation on

their farm, and sometimes report sighting of wild animals. The biodiversity of this project's area is rated "acceptable", as the score of the Gini-Simpson Index is 52%. This result is positive due to the the farm area involving cultivation of a wide range of food crops alongside the main cash crops such as maize, beans and coffee. In addition, most farmers also raise livestock.

Without the Acorn project intervention, farmers would continue to practice unsustainable farming practices that place pressure on their agricultural ecosystem and result in further land degradation, leading to expansion of agriculktural land and reduction of suitable habitat and biodiversity. The Acorn project is expected to positively impact the state of the project area's biodiversity, as a mix of fruit bearing, pollinator attracting, and nitrogen fixing trees will be planted. These tree species will promote soil health for higher crop yield and less costly inputs needed, as well as a reduce soil erosion. The increased shade from these trees will be favourable to local animals seeking refuge against heat and sun exposure.

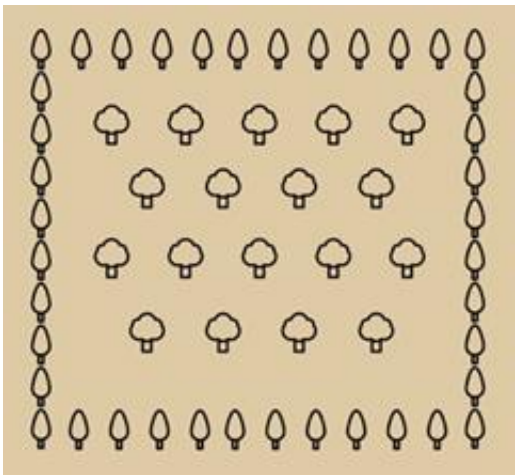
Project Activities

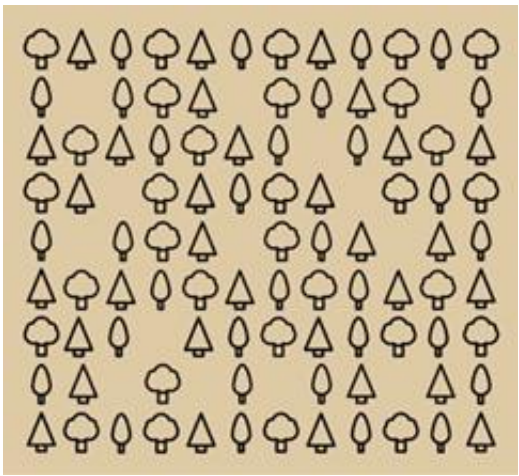
The project area covers three agroecological zones determined by the altitude: from low, to mild, to high, which corresponds to arid, semi-arid and humid regions, respectively. Tharaka Nihiti county is mostly low altitude, whereas Embu county includes mild to high altitudes, close to Mount Kenya National Park. Farmers will be implementing agrisilvicultural systems in arid, semi-arid and humid areas of the Embu and Tharaka Nithi counties. The agroforestry system will contain a mix of shade, fruit bearing, leguminous medicinal, live fences and inter-cropping trees

There are 6 native or naturalized tree species promoted under the agroforestry design that offer livelihood benefits such as shade, fruit, and medicine, and ecosystem benefits such as soil carbon storage and nitrogen-fixing.

- *Prunus africana*
- *Persea americana*
- *Moringa oleifera*
- *Acrocarpus fraxinifolius*
- *Calliandra calothyrsus*
- *Grevillea robusta*

The agroforestry design will include boundary planting and intercropping between cash crops, food crops, and trees.





Planting is generally done twice a year; once during the heaviest rains (Masika season) season, usually between mid-March to May, and once during the shorter period of rain (Vuli season), during November and December. The maximum number of trees planted by a farmer is 350 trees per hectare. The trees are planted as seedlings, sourced from local community tree nurseries.

The implementation of an agroforestry system will positively impact the degraded lands, having a revitalizing effect through decreasing massive soil erosion (e.g. fallen leaves from Grevillea robusta), reducing the acidity of the soil (e.g. Calliandra calothyrsus through its nitrogen-fixating capacity), protecting crops from strong winds (e.g. Acrocarpus fraxinifolius) and increasing in the presence of pollinators (e.g. moringa olifera). To reduce competition between trees and crops, sufficient spacing will be ensured in the training.

Organizational Capacity

Trees for Kenya is a non-governmental organization (NGO) registered in Kenya since 2012. Trees for Kenya has been working in Kenya for 9 years implementing different environmental projects aimed at conserving the environment through restoration of degraded forests lands, agroforestry and greening schools programmes. Trees for Kenya has been contributing to social and economic developments of their participants and communities since 2012 by promoting agroforestry, with sensitizations and trainings of how to incorporate trees onto farmers project on their farms for improved soil health and productivity. So far, Trees for Kenya has reached over 15,000 farmers across the country.

Trees for Kenya has put in place a mechanism to make sure each and every farmer is eligible to participate in the project regardless of their social status, income, ethnicity and religion. Farmers that belong to vulnerable groups that have been identified in the during a stakeholder analysis and will be nominated as leaders of farmer groups and elected by the farmers themselves. This ensures farmers can air their views and barriers faced in regards to participation over the life of the project. The project council will also ensure equal representation of all local stakeholder groups and will create a space for farmers, community members and Trees for Kenya to discuss project implementation and ensure every aspect of the project will go smoothly.

Trees for Kenya strictly follow the Anti-Corruption And Economic Crimes Act (2003), and the Constitution of Kenya (2010) in terms of child labor and violence, equal treatment of men and women, and non-discrimination of any person. Trees for Kenya offers employment to women, youths and disadvantaged groups. Examples of this is Trees for Kenya having hired women for the positions of field technicians and lead farmers. Women are also involved in the project by establishing nurseries to supply quality seedlings and training farmers.

Farmer Payment and Benefit Sharing

From the 80% of the carbon revenue for farmers, 60% will be paid entirely through mobile money transfer called Mpesa, and the remaining 40% will be in-kind in the form of planting materials. Information with the farmers names, amount paid and mobile phone numbers will be kept on in an excel sheet. With this information, and through internet banking, the payments will be sent to each mobile phone indicated in the excel sheet. The payment record is kept to show who received the funds and ensure that the local partner did not take more than 10% of CRUs for operational costs. Farmers with no mobile phones will receive the payment though cash payrolls where they are to physically sign for the payment received.

Technical Specifications

Leakage

The land in the project area is classified as cropland and the surrounding area is mainly shrubland, crop land and land with minimal tree cover. The main cash crops for farmers in the project area are coffee, tea, and banana, which cover approximately 40% of land in the project area. No loss in productivity or any displacement of farmers' activities from project intervention is expected to occur. Instead, Trees for Kenya expect an increase in farm productivity of up to 20% over the coming 10 years as a result of project intervention. The possibility of deforestation inside or outside the project area is low as Trees for Kenya is supporting farmers to plant more trees on their farm, and the extra income from carbon finance will act as an incentive to maintain the trees on the ground long-term. Furthermore, Trees for Kenya are also supporting farmers by supplying them with energy conservation stoves (smokeless and fuelwood efficient), along with fruit trees which will provide extra income and increase nutritional intake of the farmers, which together, will diminish the leakage risk (no incentive to cut down trees for fuelwood).

Interested?

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