WETPA-Kenya

Busia, Bungoma, and Kakamega counties in Western Kenya

2022

Rabobank

Introduction

This report represents a summary of the project details. It has been created in close collaboration between WETPA 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 WETPA, with support from FFSPAK, Vi Agroforestry and Agriterra, in Kenya is helping approx. 4000 smallholder farmers that are well below the poverty line transition away from monocultures of maize and sugarcane and instead sustainably diversify and increase their income by planting a diverse range of tree species that sequester carbon, conserve soil and produce fruits, medicine and fodder. As part of the agroforestry design for this project, WETPA advises farmer not to plant eucalyptus trees due to the detrimental impacts this invasive species is having on biodiversity in the project area but instead plant indigenous species that offer optimum environmental enhancement. Therefore, this project not only improves the ecosystem, but also offers improved livelihoods and resilience to climate change for smallholder farmer families in western Kenya.

Table of Contents

Project Summary

Local partner

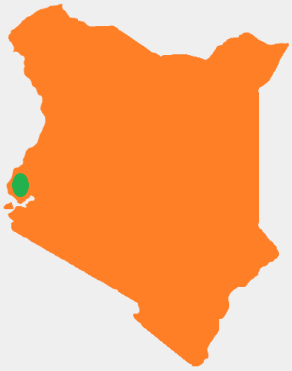
WEPA
Western Tree Planter Association

Project location

Western Kenya, Busia, Bungoma and Kakamega counties

Ecoregion

The Victoria Basin forest-savanna mosaic



Main crops

Maize and sugarcane

1,771+

Potential number of additional participants

10,000+

Estimated total size of project area currently

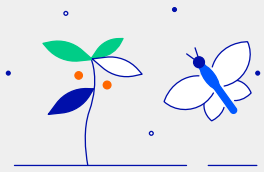
1,000 ha

Project's aims and objectives

This project aims to improve the livelihoods of women, men and young smallholder farmers through sustainable farming practices such as agroforestry that enhance ecosystems and offer income diversification. The goal of this project is to empower smallholder farmers and local communities to live in a sustainable manner and conserve their natural environment while building their resilience to climate change.

Impact to the farmer livelihood and environment

- Reduced poverty and land degradation
- Improved tree cover and diversity
- Restoration of degraded soil
- Increased and stable productivity
- Reduction in carbon emissions
- Safeguarding biodiversity
- Increased access to resources



Additionality

This agroforestry project led by WETPA was established in 2018. At this time, farmers were planting predominantly eucalyptus trees for commercial purposes, however WETPA wanted to move away from this invasive spread of eucalyptus to a more sustainable system including trees for fruit, fodder and medicine. When engaging with farmers about what they needed to transition away from eucalyptus, carbon finance became a favourable option. The idea for compensating farmers for their sustainable change in agricultural practices and planting of trees arose from a positive experience WETPA had in securing carbon credits for dairy farmers in another region of Western Kenya. Therefore, the promise of carbon credit enabled farmers to transition to a more sustainable long-term agroforestry system. The first trees were planted by in 2018 during the short rains (August-October). Depending on the availability of resources such as seedlings, rainfall patterns and land availability, farmers plant additional trees gradually over many years. This contributes to varying ages of trees on farms (young, middle, and mature). If farmers have optimal conditions and resources, they plant on average 50-100 seedlings each year for 5 years. 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

In the project area, the poverty rate is 32.4%. Farmers have very low income and struggle with access to finance leading to poor standards of living. There is currently a rapid trend of loss of favourable (fertile) land in the project area due to soil degradation from climate change and a limited land availability in general due to population increase. This lack of land results in farmers unable to expand their farms and generate more income. Without project intervention, farmers faced barriers to transitioning to a long-term and sustainable agroforestry systems, such as inadequate knowledge on the role of agroforestry in environmental protection, climate resilience, food production, soil conservation and in promotion of resilient livelihoods. Therefore, farmers would plant only eucalyptus trees on their farms for commercial purposes, however, without support there was a high occurrence trees failing to thrive and competition with crops. Farmers also struggle to afford planting materials and inputs and are facing a significant increase in inputs costs, with pesticides and synthetic fertiliser increasing by 6 times the original amount in the last year alone. Planting materials, such as seedlings, are also in limited supply in the project area with farmers depending on locally run farmer/family nurseries.

The participants in this project have some existing trees on their land but are planning to grow more and higher quality trees on their farms. Until now, farmers haven't been able to plant enough to see substantial benefits as they are lacking the necessary financial resources to do so. An additional income stream in the form of carbon finance will allow and motivate these farmers to plant more trees on their plots. Furthermore, more advice will be given to farmers on successful agroforestry models as part of this project, which will lead to more sustainable long-term agroforestry systems. It is the intention with this project that the farmer mindset changes from a focus on eucalyptus to a more financially interesting option of carbon finance combined with tree-derived products such as fruit, fodder, medicine etc.

Farmers will also be educated on the long-term benefits of an agroforestry system in terms of conservation of natural resources, climate resilience, increased soil health, farmer livelihood etc. To be sure that this knowledge is strengthened further and farmers understand the importance of ecosystem service benefits, farmers will undertake exchange & benchmarking visits which allow farmer to farmer learning and exchange of knowledge among farmers and the community. However, knowledge alone is not enough, which is why WETPA will use their share of the carbon finance to create at least 3 new central nurseries within each sub county of the ACORN project areas and supporting the existing nurseries in different localities. This support will aid in seed collection and remove the constraints farmers face depending on limited farmer/community run local nurseries. WETPA will also ensure farmer receive high quality seedlings that are ideal for soil regeneration and protection, and provision of fodder, fruit, medicine etc. to continue planting year after year, and regular training on how to maintain their trees in the long term. The additional income stream from carbon finance will aid in transforming the economic status of these families, especially in the face of climate change and the impact of flooding and drought on productivity. Additionally, this stable income will keep farmers motivated to optimize and maintain their system within their existing land in the long term without the need for expansion of farmland.

Project level

WETPA does not work with a fixed number of smallholder farmers but with a constantly growing and expanding network of members with access to at least 10,000. WETPA's aim for this project is help farmers increase permanent tree cover in the area (thereby reducing carbon in the atmosphere) by transitioning to an agroforestry system where farmers benefit from carbon credits as transitional finance, the agro-ecological impact of the trees, and the tree-derived products. The first trees planted in the first years of this project are few compared with what will be planted over the following years with existing farmers committed to planting annually and the onboarding of new farmers from more villages and districts in Western Kenya at scale. 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. Only focusing on the initial farmers who planted some trees in 2018, takes away from the additionality of the full project. If farmers who transition to agroforestry are not rewarded with income from the carbon credits as agreed, they may be discouraged from maintaining and scaling up their agroforestry interventions, especially when comparing this with what they would receive with planting eucalyptus for commercial purposes. Carbon finance to compensate Kenyan farmers for their change in agricultural practices is the only practical way to achieve scale and long-term agroforestry systems that offer optimum benefits for farmer livelihood and the environment.

Project Baseline

Land use

The current land use activities by participants are the integration of agricultural crops, trees, animals and/or bees in an agrisilvipastoral agroforestry system. The main cash crops in the area are sugarcane and maize which represent only 10% of the land, the remainder is used for subsistence crops. Other cultivated species in the project area include beans, onions, kale, avocado and other indigenous vegetables. Common tree species present in the project area include grevillea, cypress, eucalyptus, calliandria etc. Agroforestry trees are to be planted on roughly ¾ of the farm as part of this project. Pests are controlled on the farm through the use of herbicides, insecticides, and fungicides. Farmers use organic fertilizers such as green, compost and farmyard manure, and inorganic fertiliser sprays that represent approx. 68% of fertiliser application. Without project intervention this high use of fertilizers and pesticides would continue and leach into the water bodies, damaging the ecosystem through proliferation of invasive algae and hyacinth. With increasing surface temperatures and flooding, crop production would decline without project intervention. In this case, the amount of land used for sugar cane would increase (which is against new agroforestry design). Instead of covering ¾ of the land in agroforestry trees, farmers would instead plant much less trees (due to costs of inputs and increase in sugar cane area).

Habitat species

This project is in the western region of Kenya with tropical climate because of the variation in altitude. All three counties experience heavy rainfall all year round. The rates of endemism of flora and fauna species are low. The main tree species found in this region include but are not limited to; Eucalyptus spp, Elgon teak, Casuarina equisetifolia, Cupressus spp, Acacia mearnsii, Grevillea robusta, Makhamia lutea, Persea americana, Calliandra callothyrsus, Croton spp, Sesbania sesban, Mangifera indica. The project area is known for being home to different animal species including Birds (especially sunbirds and vultures), monkeys, mongoose, and snakes. Species considered of a high conservation status in the project area include vulture species, falcons, African grey parrots and martial eagles.

Without project intervention, biodiversity would decrease because farmers would plant only eucalyptus trees, as has been demonstrated in the past (something WETPA are changing with this project), that are invasive and compete against and kill important native flora species that provide food and shelter for native wildlife. Without diverse agroforestry trees and crop diversification (project goals), there would be a lack of complete ecosystem functions, hence a lack of abundance and diversity of flora and fauna species. In addition, farmers would continue to use pesticides and fertilizers unsustainably resulting in damage to biodiversity in lake ecosystems.

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Socio-Economic Benefits

Area	Indicator	Result
Local livelihood	Nutritional variety	The average farmers consumes 6-7 out of 12 food groups daily
	Agricultural land use productivity	Average annual production of the two main cash crops is as follows: Sugarcane is 25333kg/ha (cultivated by 30% of farmers) and maize is 800kg/ha (cultivated by 95% of farmers)
Environmental improvement	Agricultural biodiversity	54% acceptable (under Gini-Simpson Index)

Nutritional variety

By 2030, Kenya's population is forecasted to grow to 60.4 million people, leading to increasing food demand and limited land availability. Before project intervention, farmers would grow main food crops like beans, indigenous vegetables and maize crops on their farm with hardly any growing fruit trees. Farmers rely on the crops they produce on their farm for consumption, however the quantities are insufficient to feed the family until the next harvest during the two/one season(s) in a year. Out of the 46 interviewed participants, only 26 reported having enough food supply each day (2 meals a day). Of these 26 that have sufficient supply of food normally, they still have trouble feeding their family during May and June every year when they are out of stock/harvested farm produce. Farmer diets consist essentially of vegetables and cereals and lack variety. Less than 30% of farmers consume meats, fish, seafood, eggs, and sweets. In the case of fruits, consumption is expected to increase due to the proposed agroforestry trees, where farmers are advised to plant mainly fruit and nuts trees including avocado and mango. The higher production of fruit will increase variety in farmer diets and increase access to nutritious foods. In addition, project intervention is expected to improve farmers' financial status and diet through additional revenue from carbon finance and marketable products from trees.

Agricultural land use productivity

In addition to the primary cash crops maize and sugarcane, secondary crops contributing to productivity in the project area include bananas, beans, groundnuts and cassava. Roughly 11% of total productivity is attributed to subsistence crops such as tomatoes, potatoes, millet and sorghum. Productivity has been low in the project area before project intervention with unstable and low yields impacted from soil which had been degraded from intensive farming practices. Since the first trees have been planted in 2018, the farmers have experienced a small increase in farm productivity. Project intervention will involve further planting of trees and teaching sustainable land use management/methods including nutrient management technologies (composting, mulching), agroforestry and agronomic practices, and water control and management. The impact of this will be a more optimal agroforestry system which provides more marketable fruit (after 5-7 years) and enhances soil further resulting in higher and stable crop yields.

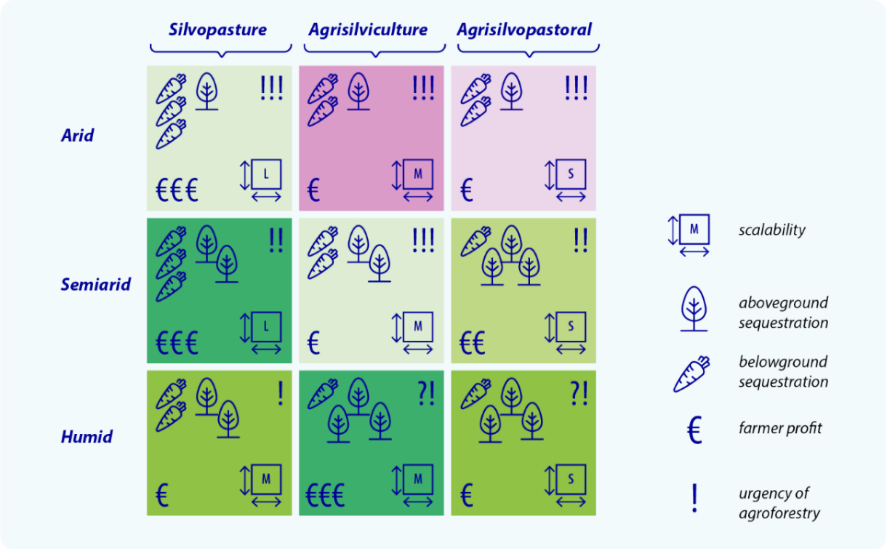
Agricultural biodiversity

According to the Gini-Simpson index score of 54% the biodiversity is considered acceptable in the project area. However, there is currently a trend of loss of fertile land in the project area (soil degradation) due to climate change resulting in a reduction in biodiversity, especially in soil and flora species. Currently, the farmers farms grow food crops, cash crops,

few agroforestry trees and keep livestock. Farmers report seeing birds regularly on their farm and rarely other animals including monkeys, snakes and mongoose. Species that are considered important for conservation in the project area include vultures species, falcons, African grey parrots and martial eagles. Almost all farmers witness a regular presence of pollinators, such as bees, with 19% undertaking bee keeping activities. As part of project intervention, the diversity of tree species and number of trees will increase, agricultural crops promoted for intercropping will increase, beekeeping activities will increase and livestock farming will remain the same under the project intervention. The agroforestry species which will be planted by farmers will provide environmental benefits such as shade, nitrogen fixation, erosion, weed and moisture control, and natural pest control. This creates favourable conditions for biodiversity to increase by providing a habitat for wildlife and increasing health of soil and native flora, while safeguarding it from the impacts of climate change.

Project Activities

The agroforestry system that the project will implement with WETPA is agrisilvicultural located in the hot and humid climate of Western Kenya. Farmers do have livestock but this area of the farm will be separate to the agroforestry plot. The system is also inclusive of apiculture.



There are 5 native or naturalised tree species promoted under the agroforestry design that offer shade, fruit and medicine. These species are chosen after testing soil, looking at climatic variables, and using traditional knowledge of the community and farmers.

- *Mangifera indica*
- *Markhamia lutea*
- *Persea americana*
- *Calliandra callothyrsus*
- *Grevillea robusta*

The 5 trees promoted in the agroforestry design are either native or naturalised and have been selected based on their existence with each other in the landscape. The combination of these trees has been witnessed in other successful agroforestry farms in western Kenya. To ensure trees can grow harmoniously with crops, farmers will follow the spacing practices when planting (to avoid competition for resources such a nutrients and light) and undertake pruning (to avoid overshading) as tree fodder is part of the agroforestry design this gives farmers extra motivation to keep their trees well pruned so they benefit from this tree product. To combat the risk of water scarcity with the planting of the avocado tree, WETPA is promoting water harvesting technology and structures like digging wells, boreholes, water ditches which has increased land productivity and income at household level.

Farmers in this project are following sustainable agricultural land management practices (SALM). WETPA promote 3 main/key SALM practices, agroforestry, nutrient management and soil and water conservation. Farmers must be able to understand what causes the deterioration of their livelihoods, in this case climate change, and how they can adapt to and mitigate it based on agroforestry. Farmers plant trees among crops such as beans, maize and vegetables or on boundary lines over a multiple years to achieve a total of 122 per hectare. Seedlings are sources from 4 central tree nurseries alongside 171 small tree nurseries that are often run by farmers and their families. However, WETPA intends to support the establishment of at least 3 new central nurseries within each sub county of the

ACORN project areas. WETPA has been supporting their tree nursery farmers to obtain starter tree seeds from certified suppliers that promote diversity of parent trees. WETPA also trains farmers on seed collection/harvesting and processing. Some WETPA farmers can now also harvest tree seeds from their own farm trees. Seed sourcing begins each year in March as trees are seasonal and varied. With the establishment of new nurseries/seedbanks/orchards, WETPA will promote farmers to continue planting to achieve an optimal density of 300 trees per hectare. Farmers can therefore use their carbon income to increase the number of trees planted on their land for maximum benefit of the agroforestry system.

Organisational Capacity

Western Tree Planters Association (WETPA) is a member-based organization registered with the registrar of societies of the republic of Kenya in 2006. The association has its headquarters located at Webuye town in Bungoma County and operates in four counties in western region of Kenya namely Bungoma, Busia, Trans Nzoia and Kakamega with specific areas of concentration within these counties. WETPA was formed as an association in 2006.

WETPA has been implementing community agroforestry projects (not related to this project or carbon financing) since 2012 when it entered into partnership agreement with Vi Agroforestry. Therefore, WETPA has been active in the country for 10 years and their relationship with farmers and community is strong. This relationship has been fostered through several initiatives including trainings on agroforestry, provision of beehives and marketing of honey. In addition to the strong engagement with community leaders and groups, WETPA have an online platform for communication with their members. They are also communicating with their farmers members through phone calls and social media such as WhatsApp group pages.

WETPA have been helping small scale farmers in the project area transition to agroforestry for the last 5 years with the support of FFSPAK, Vi Agroforestry and Agriterra. This includes providing trainings on sustainable agricultural land management (agroforestry best practices) and creating an agroforestry design that is expert based and involved input from community during farmer group discussions.

For this project, an MOU has been signed between FFSPAK (an apex organisation with 13 community-based organisations) and WETPA. FFSPAK will provide back end support to WETPA with capacity building regarding:

- Tree Nursery establishment and nursery
- Species selection and site matching
- Agro-forestry Model design
- ACORN Platform support
- Development of the business case
- Enumerator Training
- Trainers of Trainee
- Peer-2-peer learning

When carrying out trainings, WETPA ensure they first train trainers of trainees and or group leaders with a mission to further train other farmers. For every farmer group (approx. 35 farmers) they train at least 2 to be a trainer of trainees. The Community resource persons, trainers of trainees and farmer group leaders are chosen by farmers within the community. During the trainings, they focus on adequate timing, use of the local language and verbal communication (so to not discriminate against illiterate) to ensure farmers actively engage with and understand the content. The project will promote use of farmer field schools/learning sites where farmer to farmer learning will be enhanced. Farmer group to other farmer group learning is also promoted during Focused Group Discussion (FGD) meetings and also through community level/project council meetings.

WETPA also engages farmers/members through community structures including Churches, Schools, Chiefs barazas where they gather during important briefings, discussions, trainings, and events such as Focused Group Discussions. A main reason for FGDs with farmers and community during group meetings is to identify issues and challenges they may face onboarding to the project and as a result of project intervention. In these meetings together

a solution is created to address the challenges such as providing gender equity and equality programs and household decision making as women are hesitant to join when the male of the household will want to receive the money. During these FGDs, they also carry out farmer needs assessments or Question and Answer (Q&A) sessions, where the attendees can be separated into smaller groups for youth, women, community non-participants etc. The findings from the needs assessment are integrated into the agroforestry design or farmer trainings.

Farmer Payment and Benefit Sharing

ACORN will pay CRU income directly to WETPA who will in turn pay the farmers through electronic bank transfer payments to reduce risk around security and safety, or through Mpesa (mobile phone-based money transfer service) if in any case there are justifiable failures with E-payments. The payment method has been agreed upon by elected project council members who represent all participants and will provide a transparent means of tracking the payment that farmers receive from the CRUs generated. No in-kind benefits will be provided as farmers will receive their carbon payment in one easy to measure manner that allows them to choose for themselves how they would best like to spend their money.

Technical Specifications

Leakage

Project intervention will lead to a short term increase in productivity/crop yield at the beginning of the project until the time when the canopy formed by the agroforestry trees provides full shade to the crops. At this point there will be a slight decrease in crop yield, however this should be countered by crop diversification and the marketable products received from the mature agroforestry trees. WETPA, do not expect any form of displacement of farmer (s) associated with the Acorn project interventions as the project's objective is very clear: farmers will plant agroforestry fruit/tree species which are friendly to their crops and do not cause competition. The technical staff will provide agronomical support on how the farmers will implement/adopt a good agroforestry design on their farms without any displacement. In addition, there are plans on the number of agroforestry trees to be planted every year during the project duration to ensure no overshading takes places.

WETPA has been tracking % increase on agricultural productivity based on the increase on the area farmed using sustainable methods through the progressive surveys carried at the end of every project year since 2018. WETPA strongly believe in the expectation that the productivity will increase by at least 11% over the life of the project due to the own farm combination of agroforestry trees and fruit trees with marketable products that provide full benefits from 5-7 years. WETPA don't pre-empt the long-term loss in cash/food crop productivity due to shade effect since this effect has always been catered for under tree management (pruning of course and recommended tree spacings) at WETPA. WETPA recorded an average increase of 11% and 1% in 2018-2020 and 2021 respectively. Therefore, WETPA has had an average increase of 12% of agricultural productivity based on agricultural area of land farmed using sustainable methods.

Interested?

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