



**CCBA Project Design Documentation  
for  
TIST Program in Kenya  
VCS-005**

**for validation under  
The Climate, Community and Biodiversity  
Standard  
Third Edition**

**10 October, 2017**



<b>Project Name</b>	TIST Program in Kenya, VCS-005 (KE-VCS-005)
<b>Location</b>	Kenya. Counties of: Meru, Tharaka, Embu, Machakos, Kirinyaga, Muranga, Nyeri, Laikipia, Nyandarua, Bomet, Nyamira, Trans Nzoia.
<b>Project Proponent</b>	Clean Air Action Corporation Charlie Williams P.O. Box 4607 Tulsa OK, USA 74159 Telephone 918-747-8749 <a href="mailto:CharlieWilliams@CleanAirAction.com">CharlieWilliams@CleanAirAction.com</a> <a href="http://Tist.org">Tist.org</a>
<b>Auditor</b>	EPIC Sustainability Services Private Limited (EPIC) Dr. G.Vishnu No. 41, Anugraha, Sundar Nagar, First Cross road, Near BEL Circle, Bengaluru – 560054 Karnataka State, India Telephone: +91-95909-29935 vishnu@epicsustainability.com, director@epicsustainability.com epicsustainability.com
<b>Project Life</b>	30 years starting 01-January-2004 and ending 31-December-2033
<b>PIR Period</b>	9-Jun-11 to 08-Nov-2016
<b>Type of Validation</b>	Full
<b>CCB Status</b>	<b>Validation as KE-CCB-002 (Second Edition):</b> 22-Dec-2011 <b>Verification as KE-CCB-002 (Second Edition):</b> 22-Dec-2011 <b>Expiration of Verification as KE-CCB-002:</b> 22-Dec-2016
<b>CCB Edition</b>	Third Edition
<b>Summary Benefits</b>	<p><b>Climate Benefits</b> 9.7 million tonnes CO<sub>2</sub>e of reductions through 2033.</p> <p><b>Community Benefits</b></p> <ul style="list-style-type: none"> <li>• TIST members covered by this PDD: 36,582 (project life estimate).</li> <li>• Kenyans employed or contract to supply services to TIST Kenya: 64 (project life estimate).</li> <li>• Advanced cash carbon payments to the members: \$1.2 million (project life estimate).</li> <li>• 70% carbon profit share with members: Unknown, highly dependent on market and market price of credits.</li> <li>• Improved crop yield from conservation farming: \$7 million (project life estimate).</li> <li>• Improved environment (shade, soil stability) from new trees from 3.4 million trees (project life estimate).</li> <li>• Marketable commodities such as fruits, nuts, and honey: \$20 million (project life estimate).</li> <li>• Capacity building: training in subjects such as conservation farming, nursery development reforestation, climate change, biodiversity, building and using more fuel-efficient stoves and running the program like a business: Average 2 health trainings per year per member.</li> </ul> <p><b>Biodiversity Benefits</b> 11,151 hectares (project life estimate) of improved biodiversity from the project by</p>

Gold Level	<p>providing improved connectivity with the protected forest, new cover and alternative fuels wood supplies. There are 410,389 new indigenous trees planted over an area of 1,858 hectares (project life estimates).</p> <p>HCV area conservation: TIST member are assisting LFS by removing invasive shrubs and reforesting the Lower Imenti Forest.</p> <p>Mitigation measures: NA. This program is specifically to address historic degradation in the Lower Imenti Forest.</p>
	<p><b>Exceptional Community Benefits</b></p> <p>Demonstrated to be pro-poor in a poor area and with net positive impacts on community. Survey results have shown that participants experience a range of economic benefits and positive social impacts, regardless of socioeconomic status, gender or part of more vulnerable groups. \$200 million total monetized benefits (project life estimate)</p>
	<p><b>Date of PD</b> 10-October-2017</p>
	<p><b>PIR Version</b> Version 02</p>
	<p><b>Verification</b> Pending. Concurrent with this validation.</p>

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**CCBA Project Description  
for  
TIST Program in Kenya  
VCS-005**

## **Project Overview**

The International Small Group and Tree Planting Program (TIST) empowers Small Groups of subsistence farmers in India, Kenya, Tanzania, and Uganda to combat the devastating effects of deforestation, poverty and drought. Combining sustainable development with carbon sequestration, TIST already supports the reforestation and biodiversity efforts of over 78,000 subsistence farmers. Carbon credit sales generate participant income and provide project funding to address agricultural, HIV/AIDS, nutritional and fuel challenges. As TIST expands to more groups and more areas, it ensures more trees, more biodiversity, more climate change benefit and more income for more people.

Since its inception in 1999, TIST participants organized into over 11,000 TIST Small Groups have planted over 16 million trees, on their own and community lands. GhG sequestration is creating a potential long-term income stream and developing sustainable environments and livelihoods. TIST in Kenya began in 2004 and has grown to nearly 65,000 TIST participants in over 9,000 Small Groups.

As a grassroots initiative, Small Groups are provided a structural network of training and communications that allows them to build on their own internal strengths and develop best practices. Small Groups benefit from a new income source; the sale of carbon credits that result from the sequestration of carbon from the atmosphere in the biomass of the trees and soil. These credits are expected to be approved under the Verified Carbon Standard and/or CDM and, because they are tied to tree growth, will be sustainable. The carbon credits create a new 'virtual' cash crop for the participants who gain all the direct benefits of growing trees and also receive quarterly cash stipends based on the GhG benefits created by their efforts. The maturing trees and Conservation Farming will provide additional sustainable benefits that far exceed the carbon payments. TIST utilizes a high-tech approach to quantify the benefits and report the results in a method transparent to the whole world, which includes palm computers, GPS, and a dynamic "real time" internet based database.

This project description is for a subset of the TIST Kenya program and corresponds to TIST VCS project description **VCS-005**. It applies to **5,173 of the Small Groups, 36,582 members, 21,692 Project Areas and 11,151 ha.**

## General Section

### **G1. Project Goals, Design and Long-term Viability**

#### **G1.1 Project Proponent**

Organization name	Clean Air Action Corporation (CAAC)
Contact person	Charles E. Williams
Title	Vice President
Address	P.O. Box 4607 Tulsa OK, USA 74159 United States of America
Telephone	+1-918-747-8770
Email	CharlieWilliams@CleanAirAction.com

#### **G1.2. Summary of Climate, Community and Biodiversity Objectives**

The objectives of TIST are to:

- increase biomass and carbon sequestered in Project Areas,
- provide a sustainable fuel wood supply for the members,
- provide a new source of revenue to the members from the sale of carbon credits,
- provide training in important social and health related subjects, and
- improve the biodiversity of the area by adding canopy and indigenous trees.

#### **G1.3 Location, Basic Physical Parameters and Social Parameters**

##### **Location**

There are 21,692 Project Areas, covering 11,151 ha. They are located in central Kenya in the Central, Rift Valley and Eastern Provinces. Most of the project activity is centered around Meru and Nanyuki. They are in the following counties: Meru, Tharaka, Embu, Machakos, Kirinyaga, Muranga, Nyeri, Laikipia, Nyandarua, Bomet, Nyamira, Trans Nzoia. The individual Project Areas, their location and their boundaries are presented in Appendix 03, the KML files.<sup>1</sup>

##### **Basic Physical Parameters**

**Soils:** The Nanyuki area is characterized by tertiary volcanic rocks. The predominate soil types are black grumosolic soil (black clays) occurring on plains and associated with poor drainage; chestnut soils (brown calcareous loam) occurring on plains and derived from volcanic ash; and podsolic soils (yellow-red loamy sand) found on slopes and associated with volcanic ash. In Meru, the rocks are quaternary volcanics with pockets of basement rocks to the east and tertiary volcanics to the south. The soil types are latosolic soils (dark red friable clays with deep humic topsoil) derived from volcanic and basement complexes and found

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<sup>1</sup> See Appendix 03, TIST KE PD-VCS-005d App03a PA Plots 111102. kml, TIST KE PD-VCS-005d App03b PA Plots 161115.kml, TIST KE PD-VCS-005c App03d PA Plots 161115.kml and TIST KE PD-VCS-005d App03d PA Plots 161115.kml at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>



on ridges between parallel rivers; latoolic soil (dark red friable clay) associated with the latosolic soils and occurring on the more sloping land; and yellow red loamy sands are found to the north and south-east.

**Geology:** The geology of the area is dominated by Mt Kenya, a late tertiary stratovolcano associated with the East Africa Rift Valley. Meru is on the northeast flank of the mountain, Kirinyaga is on the east flank, Nanyuki is on the northwest flank and Nyeri is on the west. The lithologies are silica basic and intermediate rocks including phonolites, trachytes, basalts, kenytes and syenites. Pyroclastic rocks and volcanic ash originating from various secondary eruptions especially on the northern and northeast slopes characterize the landscape. These rocks have also been extensively eroded over time.

Laikipia lies between Mt Kenya and the western branch of the East African Rift. The rocks underlying the plains of Laikipia are Tertiary volcanics.

**Hydrology:** The area south of a line running northeast from Mt Kenya to beyond Meru is drained by the Tana River. Its tributaries include the Gathita, Thingithu, Kithinu, Nithi, Tungu, Ruguti, Thuci, Rupingazi, Nyamindi, Thiba, Rwamuthambim Ragati, Sagana, and Nairobi Rivers. The area north and west of Mt Kenya is drained by the Ewaso Nyiro. Its tributaries include the Naromoro, Burguret, Liki, Sirimon and Engare Ngare Rivers.

**Climate:** The general climate of central Kenya is dry tropical but influenced by the 5,200 meter Mount Kenya. The climate within the general Project Area is highly heterogeneous, with local conditions being heavily contingent upon elevation, location, and amount of rainfall. The average annual rainfall varies widely by locality, but is roughly around 630 mm per year for the entire country.<sup>2</sup> Within the general Project Area, rainfall can be as little as about 381 mm<sup>3</sup>, or as much as 2,500 mm per year. The lowest rainfall is in the plains west of Mt Kenya. The highest rainfall is on the southeastern slopes, which are exposed to the dominant wind blowing from the Indian Ocean. Most parts of the country experience two wet seasons each year, with long rains from March-June and short rains from October-November.<sup>4</sup> The dry season occurs around June-July and December-January.<sup>5</sup>

The average annual temperature is about 20.0°C, but ranges from 15.5°C to 30.0°C, depending on the region.<sup>6</sup> While night frost occurs above 3,000 meters, along the flanks of Mt Kenya, the project activities take place between 1,500 and 2,000 meters. The average temperatures around Nanyuki are highs between 20-25°C and lows of about 5°C. Highs in Meru are similar, but the lows are about 5-10°C.

### Basic Social Parameters

- **Main Settlements:** Meru, Nanyuki, Nyeri, Nyahururu, Bomet, Kitale
- **Main Land use:** Subsistence farming
- **Economic Activities:** Subsistence farming
- **Ethnic groups:** Kikuyu, Meru, Embu, Kalenjin

### G1.4. Project Boundaries and Project Zone

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<sup>2</sup> Irrigation in Africa in figures – AQUASTAT survey 2005: Kenya, AQUASTAT, at <http://www.fao.org/nr/water/aquastat/countries/kenya/index.stm>, accessed 7 July 2009. ("AQUASTAT")

<sup>3</sup> Barr.

<sup>4</sup> AQUASTAT.

<sup>5</sup> *Country Profiles: Kenya*, Food and Agriculture Organization of the United Nations, at <http://www.fao.org/countryprofiles/maps.asp?iso3=KEN&lang=en>, accessed 7 July 2009.FAO. ("FAO")

<sup>6</sup> FAO.

There are 21,692 Project Areas and 11,151 ha. The individual Project Areas, their location and their boundaries are presented in one of the four KML files, Appendix 03. The Project Zone is defined as "the area encompassing the Project Area in which project activities that directly affect land and associated resources, including activities such as those related to provision of alternative livelihoods and community development, are implemented." In the case of TIST, the Project Zone is the aggregate of 21,692 Project Areas. Furthermore, since this is a programmatic approach, the Project Zone also includes all potential Project Areas. There will be no more expansion of KE-VCS-005. All future expansion of TIST in Kenya is to be under a new PD.

## **G1.5 Stakeholder Identification and Analysis**

The stakeholders are primarily the 36,582 individual members that comprise the 5,173 Small Groups of this project. They are primarily subsistence farmers. They own, or have rights, to the lands where the project activities take place and own the trees and tree products that are the focus of the climate change portion of the project. The membership to TIST is voluntary. Members hear about the program and ask to join. TIST holds regular meetings and various levels (Small Groups, Cluster, National Seminars and Leadership Council) to maintain communications among the members.

Membership in TIST is completely voluntarily. The actions that members take are on their own land. They maintain ownership of the land, the trees planted for sequestration and all the products that the trees yield. TIST exists for the local farmers and only grows if the local farmers support it. The rapid growth of TIST is a reflection of the positive reaction that the farmers and other stakeholders have had about TIST.

When TIST begins in an area, they contact community leaders, village heads/village leaders, local NGOs and local government officials to determine if there is an interest in the program. If there is an interest, TIST holds a public seminar to present the program, answer questions, address concerns and receive comments. This is followed by regular and ongoing meetings where the public is invited to attend. TIST representatives have met with numerous State, District and Village officials seeking comment and showing them the project. Since TIST is organic in its growth, this process continues as it expands to new villages. In addition to the meetings, information about TIST is disseminated by word of mouth; using the "Mazingira Bora," a multi-lingual newsletter published by TIST Kenya; and direct contact with community leaders and government officials.

The original TIST program was started in Tanzania, in late 1999, to meet local needs in a sustainable way, while at the same time addressing climate change. In February 2004, TIST was invited to begin the project in Kenya. At that time, a trip was made around Mt Kenya where community leaders in Meru and Nyeri were briefed on TIST to gauge the level interest that local farmers might have. They asked to spread the word about the program and if there was grass roots interest, prospective members were invited to begin planting trees. Between February 2004 and February 2005, additional meetings were held with community leaders and government offices, such as the Forest Department.

The first TIST seminar of TIST Kenya was held in Nanyuki from February 21, 2005 to February 26, 2005. The seminar began with the process of customizing TIST to the desires and needs of farmers in the Meru and Nanyuki areas. Seventy-three people attended; 40 men and 33 women. A second training seminar was held April 11, 2005 to April 14, 2005 at the Gitoro Conference Centre in Meru. Seventy-five people attended; 39 men and 36 women.

In February 2005, the first "Mazingira Bora" was published and circulated within the communities to TIST members and those interested in the program. Since that time, TIST has published regular newsletters that document an ongoing dialogue and support with members of the community, both inside and outside the program. These documents are available to the public in a transparent form on the internet at [tist.org](http://www.tist.org).<sup>7</sup> TIST also has a collection of written stakeholder comments (see VCS PD).

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<sup>7</sup> <http://www.tist.org/moreinfo.php>

At the Small Group level, member farmers meet with TIST representatives regularly, where they have an opportunity to ask more questions and make more comments. Since one of TIST's main focuses is adopting best practices, these are forums to review what is working about the program and how it can be improved. Changes to the program are announced in the newsletter.

The result of this stakeholder process has led to numerous invitations for TIST to come to new villages and numerous positive comments about TIST.

Other stakeholders are NGOs and government entities we have identified from their activities in the Project Zone. TIST has been active in Kenya since 2004, has seven VCS PDs, four CCB PDs and had eight years of involvement with USAID. TIST had held numerous public meetings that we announced in several Kenya national newspapers.<sup>8</sup> We have collected the names of interested stakeholders.

## **G1.6. Communities, Community Groups and Other Stakeholders**

There are 5,173 TIST Small Groups. They are identified in Appendix 04.<sup>9</sup>

The following are stakeholders that TIST has had direct contact with:

- D.K. Mbugua, Chief Conservator of the Forest
- Dr. A. Muusya Mwinzi, Director General, National Environment Management Authority
- N.M. Ndwiga, for the District Forest Officer, Meru North District
- Shieni K. Kioyiet, NEMA, Bomet District, Chemaner Area
- Waweru Kimani, District Commissioner, Bomet District
- Friar Patrick Nkaai, Parish Priest of Ngong, Mulot Catholic Mission
- S.M. Gighohi, District Officer, Mulot Division
- Edward Wawire, District Environmental Officer, Narok South District
- Edward Aubey, Office of the President, Meru North District
- Joseph K. Thirtu, Office of the President, Meru North District
- John Kinyua, Chief, Meru District
- F.D. M. Mugwimi, District Forest Officer, Kirinyaga
- Rev. John Mararo Gachoki, Admin. Secretary, Diocese of Kirinyaga
- C.M. Wamola, District Forest Officer, Isiolo District
- Samuel K. Mukundi, District Forest Officer, Laikipia West District
- John Maine, African Inland Church, Nyahururu
- Pastor L.M. Miltiru, Truevine Apostolic Ministry, Nyahururu
- NJuli K. Jeremiah, Kenya Assembly of God, Nyahururu
- Rev. J. Mimittha, Jesus Victory Ministry, Mara Meru
- Fr. John Mbanbum, St. John the Baptist Church, Meru-Kenya
- L.R. Njagi, District Officer, Tigania West
- H. Kayes, District Officer, Buuri Division-Meru
- J.M. Kamau, District Environmental Officer, Igembe/Tigania District
- District Officer, Igembe/Nekunudeth Districts
- B.M. Muriuki, District Officer, Meru North
- Jacob J. Mugambi, Assistant Chief of A/NJoune sub-location.
- Adam Kubai M'umbeal, Chief, Kiengu location
- K.M. Ndwiga, District Forest Officer, Meru North District
- B.K. Nanyo, Forest Extension Officer, Igembe South/West Division

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<sup>8</sup> Example: TIST KE PD-CCB-Spt 14b Public Comments PD-002.doc at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

<sup>9</sup> Appendix 04: TIST KE PD-VCS-005e App04a Data 161130.xlsx is Appendix 04a and TIST KE PD-VCS-005e App04b Data 161130.xlsx is Appendix 04b. See <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

- C.W. Mwangi, District Environment Officer, Kirinyaga
- C. Wafula, District Officer, Muthambi Division
- Brother Timothy Mathenge, Presbyterian Church of E. Africa, Gituamba Parish
- Rev. Sammy Kithinil Majuri, Presbyterian Church of E. Africa, Chogorja South
- B.M. Birichi, District Environment Officer, Tharaka District
- J.M. Kamau, District Environment Officer, Igembe/Tigania Districts
- K.M. Ndwiga, District Forest Officer, Meru North District
- Rev. Michael Simba, Methodist Church in Kenya, Marimanti, Tharaka, Kenya
- Dominic Kirimi, Assistant Chief, Kuja sub-location
- Chief Phillip Koboi, Ntunene Location
- Rev. Justus Mwenda, Superintendent Minister, Laare Circuit
- Chief D. Mutino, Nguyuyu Location
- Julius Kiruneya, Chairman, St. Julius Catholic Church, Khurene
- B.M. Kinyili, for District Forest Officer, Nyeri
- The Chiefs Office, Kabuthee Location
- Rev. Solomon Mukindia and Meru North Tree Farmers, Mbaranga/Karama location
- Pastor Muangi Charles, Full Gospel Church of Kenya
- Africa Wildlife Foundation, Kenya
- Agriculture Office, Maara District. Agnes Mwenda
- Agriculture Office Meru Central District, Laban Muringi
- Berkeley Reafforestation Trust, Rodney Portman
- Care International, Communications Officer
- Catholic Relief Services, Shaun Ferris
- Catholic Relief Services, Mwende Kusewa
- Catholic Relief Services, Charles Njue
- CCB, Gareth Wishart [gwishart@climate-standards.org](mailto:gwishart@climate-standards.org)
- Desert Edge, Susan Wren
- EcoAgriculture Partners, Seth Shames
- Environmental Services Inc., Shawn McMahon
- Environmental Services Inc., Janice McMahon
- Environmental Services Inc., Richard Scharf
- Fintrac, Timothy Mwangi
- Government of Kenya, Chief Erustus Munene Kiramiti
- Greenbelt Movement, Njogu Kahare
- Kenya Forestry Research Institute. Directors Office
- Kenya Forestry Service, Directors Office
- Kenya Forestry Service, Evans Maneno, Zonal Manager, Meru
- Kenya Forestry Service, Daniel Mbithi, Asst. Director
- Kenya Forestry Society
- Kenya Wildlife Service
- Laikipia Wildlife Forum, Anthony King
- Laikipia Wildlife Forum, Dr Mordecai Ogada
- National Environmental Management Authority (Meru), Damaris Maina
- National Environmental Management Authority
- National Environmental Management Authority (Laikipia), Simon Weru
- Methodist Church, Dr. Rev. Lawi Imathiu
- Northern Rangelands, Tom Lalampaa
- Northern Rangelands, Ryan Luster
- Northern Rangelands, Julie King
- Pact (worldwide), Steven Sharp
- Pact Kenya, Anthony Kariuki
- Pact Kenya, Leslie Mitchell

- Paradigm Project, Neil Bellefeuille
- Pyrethrum Growers Association, Justus Mochache Monda
- Resource Projects Kenya, Kennedy Njenga
- Rural Development Institute, Deborah Espinosa
- US Agency for International Development (USAID), Enoch Kanyanya
- US Agency for International Development, Wamalwa, Beatrice
- World Agroforestry Center, Michael Misiko
- World Agroforestry Center
- World Wildlife Fund, Doris Ombara
- World Wildlife Fund, Mohamed Awer

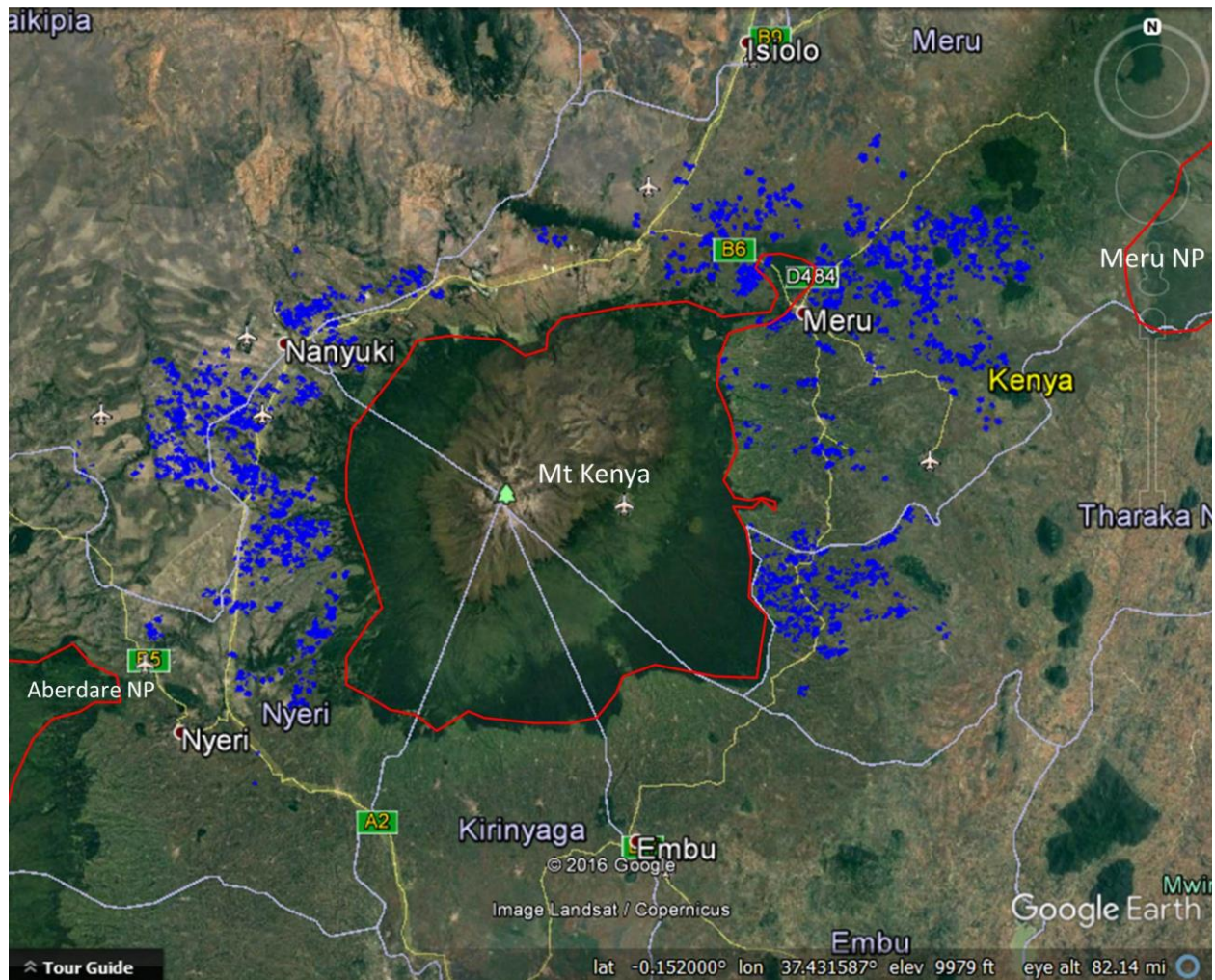
#### **G1.7. Map of Communities and Project Areas**

The location of the 21,692 Project Areas are shown by the blue dots on the following maps. Their boundaries are shown in the four KML files of Appendix 03. Each Project Area boundary was obtained using a GPS as part of the VCS baseline activity. The High Conservation Value areas are outlined in red.

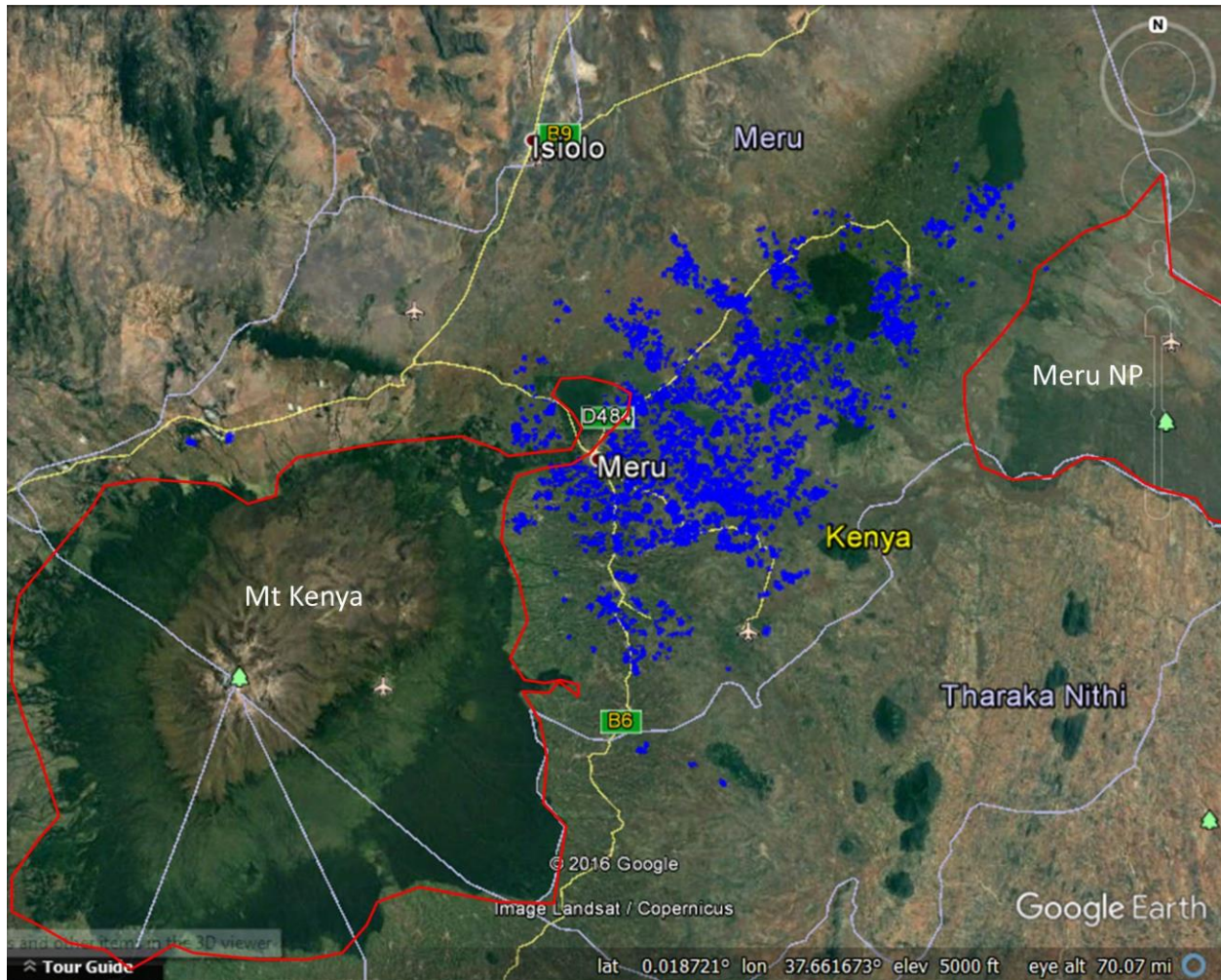
The maps show the major town and County boundaries. The smaller communities can be seen on Google Earth when the KML files are loaded. In addition, the villages associated with each Small Group can be found in the "Grove Summary" worksheet of Appendix 04.

The VCS PD associated with this CCB PD identified the entire country of Kenya as the Project Zone to allow expansion anywhere in the country as new instances.



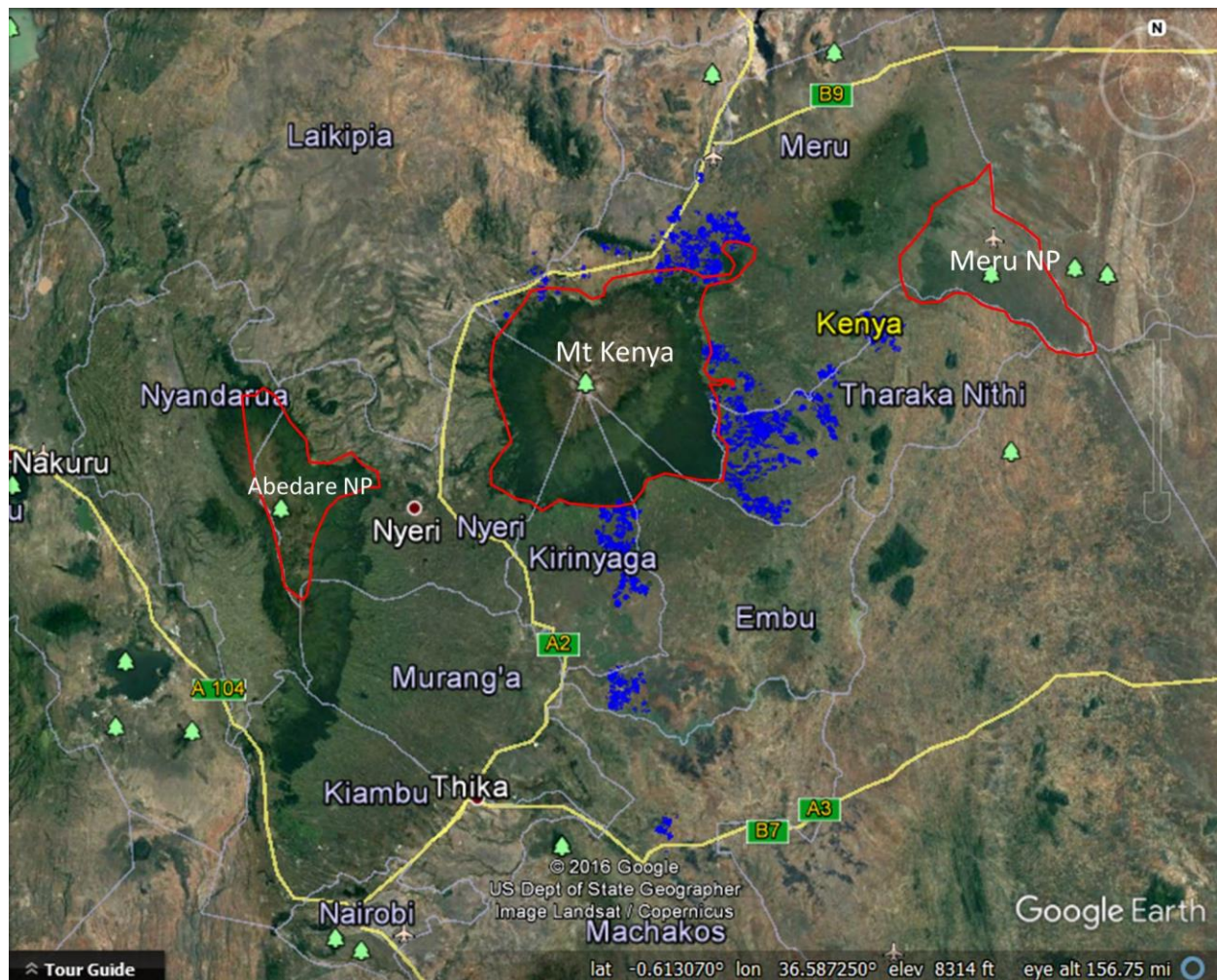


TIST KE PD-VCS-005d App03a PA Plots 111102.kml



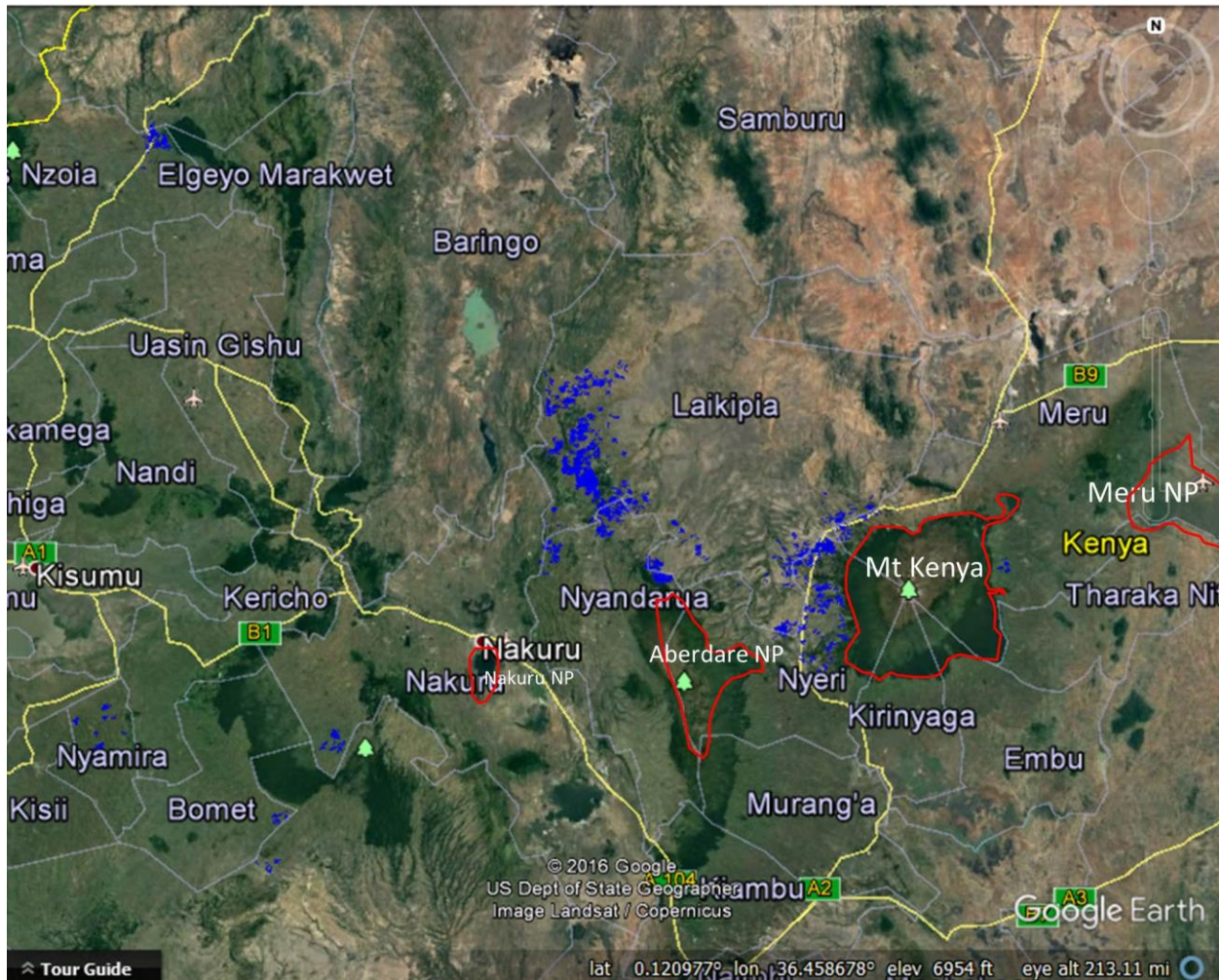
TIST KE PD-VCS-005d App03b PA Plots 161115.kml





TIST KE PD-VCS-005d App03c PA Plots 161115.kml





## G1.8. Brief Description of Project Activities, Outputs, Outcomes and Impacts

The project activities are for the members to plant trees and improve their lives through sustainable development training.

**Climate:** Planting trees will increase biomass and sequester carbon. Reducing carbon in the atmosphere is acknowledged as a major method of addressing climate change. The members have already planted 3.4 million trees. The ex-ante estimates in the VCS PD indicate that project could sequester almost 10,000,000 tonnes of CO<sub>2</sub>e over 30 years. The VCS Monitoring Report associated with this CCD PD demonstrates that 534,020 tonnes of CO<sub>2</sub> have already been removed.

**Community:** The Small Group members receive cash payments for every live tree they plant and maintain for the project. In addition, they will receive 70% of the profits from the sale of carbon credits. Members receive training in building nurseries, tree planting, species selection, sustainable woodlots, Conservation Farming, building fuel-efficient stoves and malaria and HIV/AIDS prevention. The tree planting, cash revenue and training, when adopted, have obvious benefits to the members. As demonstrated in the Gold section of this PD, the average TIST member has received 146,224 KES in monetized benefits. Considering that 85% of the members make less than 60,000 KES per year, this is a significant benefit.

**Biodiversity:** Serious biodiversity threats have been identified in the Project Zone. Ecosystems are suffering from biodiversity loss due to deforestation inside and outside gazetted forests. One of the reasons is that 68% of Kenya's energy needs are met with biomass, most of which is unsustainable. TIST is addressing this by increasing vegetation and forest cover, both on farm and outside farmlands. This PD includes 11,151 new hectares, under natural resource management and over 3.4 million new trees. There are over 410,000 new indigenous trees covering 1,858 hectares. There are over 259,000 new fruit and nut trees, covering 1,177 hectares that are food sources for wildlife. There are 21,692 distinct Project Areas that address the fragmented habitat of the Project Zone, by creating corridors, stepping-stones and buffers for wildlife. The new trees also provide fuelwood that reduces pressure on the natural forest. Training in improved stoves reduces that amount of firewood needed by the members. Adoption of Conservation Farming increases crop yields and reduces the need to clear more land. Fruit and nut trees address food security.

## G1.9. Project Start Date and Lifetime, and GHG Accounting Period

The project start date is January 1, 2004. The CCB project life is 60 years. The GhG crediting period is 30 years, with the expectation that it will be renewed.

### Implementation Schedule:

2004 Initial field visit, consultation with local stakeholders, hold initial seminars, registration of initial Small Group members, planting of first trees, deploy monitoring system, hire local staff, hire and train Quantifiers, begin training trainers.

2005-2010 Project expansion focused on adding new groups, members and trees. Continue with regular monitoring and training. Hold regular seminars. Ongoing and regular consultation with stakeholders.

2011 VCS and CCB validation and first verification.

2012-2063 Periodic verifications to be held in accordance with the minimums required by the CCB and VCS standards. Project expansion focused on adding new groups, members and trees. Continue with regular monitoring and training. Hold regular seminars. Ongoing and regular consultation with stakeholders.

The following Gantt charts show the timing of annual events for the project. The numbers along the top of each chart are years. Where "project" is indicated in the title, it is for the 30-year project life. Where

"Project Area" is indicated, it is for events that might take place within a Project Area and the year one may be an event, rather than the beginning project date. With all the different Project Areas, species, farmers and planting schedules, these charts are very general and subject to change.

**Main planting schedule (project).** Main planting has taken place, but additional planting may take place in individual Project Areas, over the next few years, where the original planting density is low.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

**Replacement planting schedule (project).** As trees die, farmers are to replant for 20 years. Replanting can start as soon as the second year. Replanting is shown for 25 years because of the staggered start of individual Project Areas.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

**Monitoring (project).** Monitoring is ongoing. The internal goal is to quantify each grove annually. Whether that is achieved or not, the Quantifiers are out in the field, all the time, visiting the multitude of Project Areas.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

**Validation and verification (project).** Validation takes place around year six, when Project Areas have been established and trees are already in the ground and growing. It is expected that the initial verification will take place at the same time. While it is a cost trade off, because the monitoring is ongoing, it is possible that verification could take place as much as annually.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

**Thinning (Project Area).** Thinning is allowed, because it improves tree growth. Because of the different species and their different growth rates, the different planting schedules, the different original spacing and different farmers, thinning can begin in as early as four years, where an early harvest for poles or firewood is made.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

**Fruit and nut harvest (Project Area).** Most of the trees won't bear any fruits, nuts or other products for five or six years. After that, harvest will be annual.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

**Deadwood harvest (Project Areas).** Farmers may harvest deadwood any time it exists. For those that lose trees in the first year, it will come in year one. However, it is expected that most deadwood harvest will take place in later years as larger trees are lost, or branches die.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

### **G1.10. Natural and human-induced risks**

The risks to the expected climate, community and biodiversity benefits are basically dependent on the continued participation in the program. If the program ends, the farmers will no longer receive the benefits that provide the incentive to be a member. Since they receive cash from the GhG program and because CAAC uses its share of the revenues from the sale of GhG credits to operate the program, the greatest risk is the lack of a carbon market.

The long-term sustainability of TIST is dependent upon a carbon market for afforestation/reforestation credits. As of the date of this PD, the market for CDM-based AR credits is essentially nonexistent. AR credits have been locked out of the largest trading system (i.e. the EUETS) and buyers have no practical use for the currency (i.e. tCERs). The market for VCS credits exists but, by definition, is dependent upon the entities buying credits to voluntarily offset their carbon emissions. An expected US market may, or may not, materialize and, if it does, may or may not allow AR credits.

TIST is different than most AR projects in that it was created for small-scale subsistence farmers. Because of the rules of CDM, many of the farmers in this PD have Project Areas too small to meet the Host Country definition of a forest. Should VCS, or a possible US program, put the same limitation on size, many of the farmers in TIST will no longer be eligible to participate in the carbon market and will lose the financial incentive to participate in the program. TIST has mitigated this risk by achieving what it has at the lowest costs possible. Rather than using expensive Western experts, it has deployed a sophisticated, yet easy to use, monitoring system and relies on capacity building with the Small Group members and their desire to improve their lives.

Another risk is that farmers will drop out of the program. This is mitigated by the fact that there are thousands of individuals involved already and TIST continues to grow. Having a few farmers quit will not have a significant effect on the project.

When a member or Small Group quits or harvests their trees, or if a PA is found to be ineligible, they are no longer active in the PD. The name of the grove is kept with the monitoring data for historical purposes, the reason for the removal is provided, and the carbon sequestered from the PA is zeroed out. By zeroing the carbon, all of the carbon credits previously issued from the PA are replaced. See the VCS Monitoring Report for more detail.

Natural risks include drought, pestilence and fire. These, however, are mitigated by the fact there are thousands of individual Project Areas spread over thousands of square kilometers.

As part of the VCS requirements, a risk analysis was conducted. Based on their tool, this project has a risk of 2.5, which is exceptionally low.

### **G1.11 Measures to maintain benefits beyond the project lifetime.**

TIST is a comprehensive program that includes training in climate change and biodiversity. The following describes some of the trainings and their benefits.

- Training in the benefits of specific tree species will result in more trees selected that have a value other than as harvested wood, or for carbon revenue. Examples include: macadamia trees for their nuts, citrus trees for their fruits and *Croton megalocarpus* as a source for biofuels.
- Training in the maintenance of a sustainable woodlot. Wood and charcoal are some of the greatest expenses for subsistence farmers. Learning the value and convenience of a sustainable woodlot will ensure that it is maintained beyond the life of the project.
- Training in the benefits of biodiversity will help the farmers make the choice to keep trees, rather than cut them down. The benefits include more productive soil, return of edible indigenous plants, enhanced area ecotourism, and return of native wildlife that is useful to them personally (e.g. bees).

## **G1.12. Financial Plan**

Whereas TIST has 14 PD in four countries, TIST operates as a single project. "TIST KE PD-CCB-Spt 16 Financial Plan 161231.xlsx" is the financial plan for the TIST project (confidential). TIST has been operating since 2000. In the past, TIST has received revenue from CAAC and various grants, such as from USAID. Since 2013, the sole source of revenue has been from the sale of carbon credits. This was part of the plan. We are on budget for carbon sequestration and on budget for expenses. Future revenues are dependent on the market price of VCU's. In the plan we have held future prices at \$5 per tonne and the project still provides ample cash flow, for the next 30 years.

## **G1.13. New Project Areas under Programmatic Approach**

This CCB PDD corresponds to PD KE-VCS-005. When KE-VCS-005 was first validated and verified, the associated CCB PD was KE-CCB-002, prepared under the 2nd Edition of CCB. The first validation and verification applied to 1,179 of the Small Groups, 8,692 members, 6,710 Project Areas and 2,556 ha. This new CCB PDD adds 14,982 new instances, expanding the PD to 5,173 of the Small Groups, 36,582 members, 21,692 Project Areas and 11,151 ha.

The VCS PD defines the geographic area for new instances to be the country of Kenya. All of the new instances are in Kenya. Any instances that may be added in the future will come from and be limited to this defined area, i.e., Kenya. The original Project Areas and their communities are listed in the Grove Summary worksheet of Appendix 04a.<sup>10</sup> The new instances and their communities are listed in the Grove Summary worksheet of Appendix 04b.<sup>11</sup>

## **G1.14. Eligibility of New Project Areas under Programmatic Approach**

Each Project Area must meet the grouped projects eligibility criteria:

- Meet the applicability conditions set out in the methodology applied to the project. See "Applicability of Methodology," below.
- Use the technologies or measures specified in the project description. Each new instance shall be and is treated in the same manner as the original instances and in accordance with the verified PD.
- Apply the technologies, or measures, in the same manner as specified in the project description. Each new instance shall be and is treated in the same manner as the original instances and in accordance with the verified PD.
- Are subject to the baseline scenario determined in the project description for the specified project activity and geographic area. See "Baseline scenario" and "Geographic area," below.
- Have characteristics with respect to additionality that are consistent with the initial instances for the specified project activity and geographic area. See "Additionality," below.

**Applicability of Methodology:**<sup>12</sup> The following addresses how the new instances address the applicability criteria of the methodology:

- Project activities are implemented on grasslands or croplands. As indicated on "Grove Summary" worksheets of Appendix 04a (original Project Areas) and Appendix 04b (new Project Areas),<sup>13</sup> project activities are implemented on grasslands and croplands.

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<sup>10</sup> "TIST KE PD-VCS-005e App04a Data 111102 Group.xls", <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

<sup>11</sup> "TIST KE PD-VCS-005e App04b Data 111102 Group.xls", <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

<sup>12</sup> AR-AMS0001, Section I.

<sup>13</sup> Appendix 04: TIST KE PD-VCS-005e App04a Data 161130.xlsx is Appendix 04a and TIST KE PD-VCS-005e App04b Data 161130.xlsx is Appendix 04b. See <http://www.tist.org/PD-KE-VCS-005%20Documents.php>



- Project activities are implemented on lands where the area of the cropland, within the project boundary, displaced due to the project activity, is less than 50 percent of the total Project Area. This condition was deemed met through a survey of the individual members that farm the land and through field observations. In the surveys, 100%<sup>14</sup> of the farmers indicated there was no displacement of cropland. Field observation shows that many of the farmers have chosen to plant trees along property lines and/or to plant their trees widely spaced in their fields and practice agro forestry. There were no observations that indicate that this condition was not met. In addition, all of this is supported by the overriding fact that TIST members are subsistence farmers that rely on their land for household food production. Carbon has little value compared to food, so they only plant in areas that will not cause them to displace higher value activities such as farming.
- Project activities are implemented on lands where the number of displaced grazing animals is less than 50 percent of the average grazing capacity of the Project Area. This condition was deemed met through a baseline survey conducted of the individual members that farm the land and through field observations. The survey indicates that displaced grazing only affects about 2.2%<sup>15</sup> of the area of the new instances. Field observation showed no evidence that grazing is significant in the Project Areas, or in the entire area, in which the Project Areas are located. Some farmers do keep a few head of cattle, but they are typically confined to pens and fed fodder. There were no observations that indicate that this condition was not met.
- Project activities are implemented on lands where 10 percent of the total surface Project Area is disturbed as result of soil preparation for planting. The minimum spacing recommended for the trees is two meters x two meters, or four square meters. The recommended size of the holes is 0.3 meters in diameter, or 0.07 square meters. The calculated area disturbed as a result of soil preparation for planting is less than 2%. Plowing does take place for intercropping, as part of the baseline activity and is not considered by the CDM AR Working Group to be part of the project activity.
- Carbon pools are above- and below-ground tree and woody perennials biomass. This is demonstrated by the calculations in Appendix 11a and Appendix 11b<sup>16</sup> whereby the only carbon pools are the above and below ground biomass of trees.
- Project emissions are considered insignificant and therefore neglected. Project emissions are insignificant because TIST farmers refrain from use of chemical fertilizers, use of nitrogen fixing tree species is insignificant and any fossil fuel emissions are di minimis.
- Demonstrate land eligibility (AR-AMS0001<sup>17</sup>, Appendix A): The requirements of Appendix A discuss the need to meet the forest definition of the host country. This is superseded by the VCS definition of an Afforestation, Reforestation and Revegetation (ARR) project.
- Demonstrate Additionality (AR-AMS0001<sup>18</sup>, Appendix B): See paragraph 4. Additionality, below.

**Baseline scenario:** The baseline scenario can be applied to all of the new instances. The methodology requires justification that “the most likely baseline scenario of the small-scale A/R CDM project activity is considered to be the land-use prior to the implementation of the project activity, either grasslands or croplands.”<sup>19</sup> The baseline field observation as detailed in the "Grove Summary" worksheets<sup>20</sup> indicates the

<sup>14</sup> Appendix 04b, "Grove Summary" worksheet, Column AG

<sup>15</sup> Appendix 04b, "Grove Summary" worksheet, Column BH

<sup>16</sup> TIST KE PD-VCS-005I App11a Verif 02 Monitor Data 161110.xlsx is Appendix 11a (original Project Areas) and TIST KE PD-VCS-005I App11b Verif 02 Monitor Data 161110.xlsx is Appendix 11b (new Project Areas).

<http://www.tist.org/PD-KE-VCS-005%20Documents.php>.

<sup>17</sup> TIST KE PD-CCB-Spt 39 CDM AR-AMS0001 Ver06.pdf at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

<sup>18</sup> Ibid.

<sup>19</sup> AR-AMS0001, Section II.5.

<sup>20</sup> Appendix 11b , Columns AV and AW

Project Areas are grassland and cropland prior to implementation of the project activity. That this is also the most likely use of the Project Areas, without the project activity, is supported by:

- The Project Areas are all private lands owned by farmers conducting the project activity. They have a history of farming and use of the land, other than natural forest or long-term forestry.
- These lands are located in an area populated by subsistence farmers, who use wood for their primary fuel. As supported by the references in the PD, wood use, agriculture and increasing population have been key factors in deforestation.
- These factors lead to the conclusion that there is little reason to believe that the Project Areas will revert to forest without intervention.
- There are no alternative uses of this land that can be reasonably expected.

**Geographic area:** The VCS PD limits the new instances to the country of Kenya<sup>21</sup>. All of the new instances are in Kenya, as demonstrated by the KML files.<sup>22</sup>

**Additionality:** The additionality demonstration described in the VCS PD<sup>23</sup> can be applied to all of the new Project Areas. Regarding the Project Proponent, the PD discusses that fact that TIST does not create or sell any products other than GhG credits associated with carbon sequestration. This remains true. For the Small Groups or members, the PD discusses:

- Investment barrier – TIST members are poor and lack investment capital to plant trees. TIST provides tree payments that overcome the investment barrier.
- Barriers due to social conditions and lack of organization – tree planting on the scale that TIST has accomplished requires more than a single individual. TIST provides the structure and training to overcome this barrier.
- Laws and regulations requiring tree planting – Tree planting takes place on private lands and there are no laws or regulations requiring this.
- Common practice – while there are farmers planting trees without the expectation of carbon revenues, they lack the financial motivation that TIST farmers have to maintain the trees for the long term, through the sale of carbon credits.

**Capacity Limits:** The PD is based on the CDM small-scale methodology, which establishes a capacity limit of 16,000 tonnes per year.<sup>24</sup> Under the VCS Grouped Project, this is superseded by the definition of an instance. An instance is limited to one percent, which for a 30-year project is 4,800 tonnes. All of the new instances are less than the one percent threshold. This is documented in the "Grove Summary" worksheet.<sup>25</sup>

### G1.15. Scalability Limits

There are no applicable scalability limits. TIST has demonstrated that it is scalable, by going from 40 Small Groups (less than 300 people) when it started in 2000, to over 11,000 Small Groups and over 78,000 members in four countries in 2016. Since the major activity is planting trees, an activity that is beneficial to the environment on a local and global scale, the expansion of TIST, or TIST-like programs, is deemed

<sup>21</sup> TIST KE PD-VCS-005a PD Text 111102.pdf, Section 1.9, Project Location. <http://www.tist.org/PD-KE-VCS-005%20Documents.php>.

<sup>22</sup> See Appendix 03: TIST KE PD-VCS-005d App03a PA Plots 111102.kml, TIST KE PD-VCS-005d App03b PA Plots 161115.kml, TIST KE PD-VCS-005c App03d PA Plots 161115.kml and TIST KE PD-VCS-005d App03d PA Plots 161115.kml at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

<sup>23</sup> TIST KE PD-VCS-005a PD Text 111102.pdf, Section 2.5, Additionality.

<sup>24</sup> Report of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol on its third session, held in Bali from 3 to 15 December 2007, Decision 9/CMP.3, P. 26

<sup>25</sup> Appendix 11b , Columns AZ to BD

beneficial. As long as there is a carbon market to support these programs, there is a potential to reach more subsistence farmers, plant more trees, sequester more carbon, provide more training, improve food security, address deforestation, provide sustainable fuel wood supplies, make more islands of biodiversity and provide health benefits and training.

## **G2. Without-project Land Use Scenario and Additionality**

### **G2.1 Most likely scenario**

The most likely land-use scenario is based on CDM small scale afforestation reforestation methodology AR-AMS0001 Version 06: Simplified baseline and monitoring methodologies for small-scale A/R CDM project activities implemented on grasslands or croplands with limited displacement of pre-project activities. The most likely scenario without TIST is for the Project Areas to continue to be grasslands and cropland. The baseline field observation, as detailed in worksheet "Grove Summary", indicates the Project Areas were grassland and cropland prior to implementation of the project activity. As areas of long term and continuous human occupancy and activity, they have already undergone deforestation, loss of natural habitat and loss of biodiversity. Literature indicates that the Project Zone continues to undergo deforestation, loss of habitat and loss of biodiversity. It is projected that without the intervention of TIST, that under favorable conditions, at best, the landscape will remain the same. Under less favorable conditions, lands would continue to degrade. This baseline projection is supported by:

- The Project Areas are all private lands owned by subsistence farmers conducting the project activity, or on some sort of communal land that has been affected by human activity. The land has a history of farming and land use other than natural forest or long-term forestry.
- These lands are located in an area populated by subsistence farmers who use wood for their primary fuel. As supported by the references below in section G2.2, wood use, agriculture and increasing population have been key factors in deforestation.
- These factors lead to the conclusion that there is little reason to believe that the Project Areas will revert to forest without intervention.
- Without intervention there are no alternative uses of this land that can be reasonably expected.

### **G2.2 Document how project benefits would not have occurred without project**

Additionality of TIST is demonstrated using the "Assessment of Additionality" contained in Appendix B of Clean Development Mechanism Methodology AR-AMS0001, which demonstrates that the project benefits would not have occurred in the absence of the proposed project activity. The barriers selected were "investment barrier" and "barriers due to social conditions, lack of organization".

From the Project Participant's perspective, TIST has numerous investment barriers. TIST does not create or sell any products, other than GhG credits, associated with carbon sequestration. The trees and their products are owned by the Small Groups. Any revenue generated by the tree products belongs to the Small Groups. The TIST GhG "business" has been funded by Clean Air Action Corporation (CAAC), as an investor, based solely on future GhG revenues. There is no business, or business case, without carbon, revenues. There is no payback or ROI, without carbon revenues. But for the expectation of a carbon market and the expectation of the sale of GhG credits from the project activity, CAAC would not have invested in TIST. Without carbon revenues, TIST is not viable or sustainable.

From the Small Groups or member's perspectives, there are barriers that have prevented reforestation of these lands:

**Investment barrier:** Tree plantations require investment to obtain seedlings and, in the case of TIST farmers, to take land out of current revenue production activities, such as cropland, for long-term gain. Investment requires access to credit. However, due to their low income, the farmers participating in TIST



have little opportunity for investment loans or capital. Banks tend to be reluctant to lend to those living at the subsistence level, because they have few assets for collateral and little disposable income available for debt service. According to The International Fund for Agricultural Development (IFAD), “more than one billion people – 90 percent of the world’s self-employed poor – lack access to basic financial services, depriving them of the means to improve their incomes, secure their existence, and cope with emergencies.”<sup>26</sup>

At a more local level, a Kenya Participatory Management Study<sup>27</sup> revealed:

“access to credit and extension services is limited. The majorities are excluded from the formal financial sector due to lack of collateral and bankable proposals, and thus mainly rely on merry-go-rounds. Those who can afford seek such services from private extension providers, who in turn charge them exorbitantly. The study reinforces the findings of the first PPA conducted in 1994 that showed that only 3.7% of the responding households had access to the formal credit market.”

TIST members are the people described above. They are subsistence farmers with little access the credit required for a plantation. Table 2.5.A is based on community data developed by the Kenya Ministry of Agriculture in Meru East and West Divisions using Participatory Analysis of Poverty and Livelihood Dynamic (PAPOLD).

<b>Table 2.5.A Annual Income Brackets</b>				
<b>Income Level (Ksh)</b>		<b>Income Level US\$</b>		<b>Pct of Groups</b>
<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>	
0	12,000	\$0	\$160	5%
12,000	60,000	\$160	\$800	40%
60,000	180,000	\$800	\$2,400	25%
180,000	300,000	\$2,400	\$4,000	15%
300,000	420,000	\$4,000	\$5,600	10%
420,000	above	\$5,600	above	5%

While the trees can have a long-term financial benefit without the carbon component, day-to-day household expenses prevent these farmers from spending their minuscule income on reforestation projects. For example, seedlings cost Ksh 5 to Ksh 30 per seedling. A farmer wishing to plant 500 trees would need Ksh 2,500 to Ksh 15,000 of upfront capital to finance a tree plantation. This is a significant portion of their annual income and, in the case of subsistence farmers, would take that land out of farming for 8 to 30 years (depending on the type of trees).

The following table provides a cost example of the initial costs to the farmers to start a plantation. Without TIST, the farmer must buy the seedlings and incur labor costs. Without TIST, an investment is required, but there is no credit available to fund it. TIST overcomes the investment barrier two ways. First, it provides training that reduces the capital required to develop a tree plantation. The training teaches TIST members how to obtain seeds and build nurseries at zero cost, thereby, reducing the need for credit. Second, under the terms of the Project Participant’s contracts with the TIST Small Groups, the farmers receive an annual advance on their potential carbon revenues, which eliminates the need for credit.<sup>28</sup> These payments are paid, at least annually, based on the number of live trees counted each year. The

<sup>26</sup> Accessed 22 September 2010 at <http://www.ifad.org/media/press/2004/38.htm>.

<sup>27</sup> John Thinguri Mukui, “Poverty Analysis in Kenya: Ten Years On,” Study conducted for the Central Bureau of Statistics (CBS), Society for International Development (SID), and Swedish International Development Agency (SIDA) February 4, 2005, p.10. Accessed 22 September 2010 at <http://www.worldbank.org/afr/padi/Poverty%20Analysis%20in%20Kenya%20by%20John%20Mukui.pdf>.

<sup>28</sup> “The International Small Group and Tree Planting Program Carbon Credit Sale Agreement” among Small Groups and CAAC provides the payment terms. Examples of the Agreement were provided to the DOE during validation.

payments are \$0.02 per tree per year and are initially of greater value than the value of the carbon. Ultimately, the Small Groups will receive 70% of the net carbon revenues.

<b>Table 2.5.B Start-up Cost Comparison: 1 ha Plantation<sup>29</sup></b>		
	<b>Without TIST</b>	<b>With TIST</b>
Live Trees	500	500
Income	\$ -	\$ 10
Cost of a 500 Tree Plantation		
Seedlings	\$ 141	\$ -
Labor	\$ 38	\$ -
Total Yearly Cost	\$ 178	\$ -
Income/(Loss)	\$ (178)	\$ 10

**Barriers due to social conditions, lack of organization:** Planting large plantations requires more than a single individual. The local communities lack the organizational structure to put together a volunteer effort to plant trees. This statement is supported by the fact that Kenya has had Forestry Policies since 1957 but is still seeing annual losses in forest cover (see below). TIST and the Small Group approach provide the organizational structure necessary to overcome this barrier. TIST provides the training and the member's Small Group provides the necessary manpower and support.

**Forest Policies:** Kenya has had a series of forest policies since 1957.<sup>30</sup> In spite of them, there is a clear pattern of rural firewood use and forest degradation in Kenya that supports the case that deforestation, loss of natural habitat and loss of biodiversity on each individual Project Area would continue, and at best, stay the same, without an intervention such as TIST. The lands of and surrounding the Project Areas have been degrading for decades, due to human intervention:

According to the Kenya environmental group, Green Belt Movement,<sup>31</sup> "at the turn of the 20th century, Kenya had a forest cover of well over 10%. Today, this has been reduced to a meager 1.7% due to deforestation, commercial agriculture, charcoal burning, forest cultivation and replacement of indigenous forest with exotic plantations."

According to the FAO<sup>32</sup>, Kenya has lost over 12,000 ha of forest per year between 1990 and 2005, falling from 3,708,000 hectares to 3,522,000 hectares. Primary forest loss during that period averaged 2,400 hectares/yr, dropping from 742,000 hectares to 704,000 hectares. It was estimated that 26.6 million m<sup>3</sup> (over bark) of wood products was removed in 2005, which was equal to 9.5% of the country's growing stock. Of this, 24,256,000 m<sup>3</sup> (over bark) was removed or fuel wood.

The specific Project Areas are part of this environment. They are lands owned and used by the rural residents and are subject to constant pressure to provide fuel wood, food and livelihood for these subsistence-level farmers. As shown in Appendix 4,<sup>33</sup> very few trees existed in the Project Areas prior to TIST tree planting, demonstrating the level of deforestation that continued in spite of government policies.

<sup>29</sup> See Appendix 04, "Plantation Costs" worksheet for assumptions and references.

<sup>30</sup> Abwoli Banana, Paul Ongugo, Joseph Bahati, Esther Mwangi and Krister Andersson, "Resource, Recourse And Decisions: Incentive Structures In Forest Decentralization and Governance In East Africa," page 5. Accessed November 5, 2009. [http://pdf.usaid.gov/pdf\\_docs/PDACO151.pdf](http://pdf.usaid.gov/pdf_docs/PDACO151.pdf)

<sup>31</sup> UNDP, "Community Action for Mt. Kenya Forest, the Environment and Sustainable Livelihoods," a UNDP GEF/SGP grant report. [http://www.ke.undp.org/GEF-SGP/Compact\\_Summary\\_Green\\_Belt\\_Movement.pdf](http://www.ke.undp.org/GEF-SGP/Compact_Summary_Green_Belt_Movement.pdf).

<sup>32</sup> Global Forest Resources Assessment, 2005 (FAO). <http://www.fao.org/forestry/fra/fra2005/en/>

<sup>33</sup> See "TIST KE PD-VCS-005e App04a Data 161130.xlsx" and "TIST KE PD-VCS-005e App04b Data 161130.xlsx". The Baseline Data worksheet show the tree counts before TIST and the Grove Summary worksheets show the trees planted by TIST. <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

## **G3. Stakeholder Engagement**

### **G3.1. Full Project Documentation Made Accessible**

Stakeholders are given access to the full project documentation in several ways:

- The CCB project documents are posted with the CCB as part of the 30-day comment period.
- TIST holds a public meeting. Public notice of the meeting is published in two major newspapers, Taifa Leo in Swahili and the Daily National English. Links to the CCB project web page are included.
- If we have an email address for a stakeholders listed in section G1.6, they are sent an email with a link to the CCB project web page and notice of the public meeting. Links to the CCB project web page are included, as well as links to all of the CCB and VCS documentation.<sup>34</sup>
- The email notices contain a summary of the project.
- CCB Support Document 14h<sup>35</sup> provides exact copies of the notices.

### **G3.2. How Information is provided to the Communities.**

TIST membership is voluntary and members join one of two ways. The first is as part of a major expansion, such as when TIST comes to a new country (such as Kenya in 2004). The second is by forming, or joining a new Small Group, in an existing Cluster.

Section G1.5 describes the way TIST enters a new area. We make contact with the stakeholders, hold seminars to describe the program and then see if there is an interest from the farmers. In the early seminars, the information about the costs, risks and benefits are explained. Interested farmers tell their friends and if enough interest is shown, they begin forming Small Groups and Clusters. Larger seminars are held.

If a Cluster has already been formed in an area, new members can join an existing Small Group, or get with other like-minded farmers and form a new one.

When a farmer, or Small Group, decides to join they begin the application and registration process. It involves training, application, site visit and grove baseline, signing the GhG contract, and registration.

The interested farmer needs to attend a Cluster meeting. The Cluster representative will explain TIST eligibility requirements and what the TIST program is about. The farmers should then form a Small Group and the Group should attend the next Cluster meeting. SGs should attend at least two TIST Cluster meetings, before receiving a TIST Application Packet.

The Application Packet includes these materials:

- Introduction to TIST<sup>36</sup>
- TIST Values<sup>37</sup>
- TIST Eligibility Requirements<sup>38</sup>

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<sup>34</sup> <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

<sup>35</sup> Support Document 14h is "TIST KE PD-CCB-Spt 14h Public Comments PD-005 V02.docx" at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

<sup>36</sup> TIST KE PD-CCB-Spt 29 TIST Intro FAQ - 161001.docx at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

<sup>37</sup> TIST KE PD-CCB-Spt 30 TIST Values 160726.doc at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

- GhG Contract<sup>39</sup>
- TIST Small Group Application<sup>40</sup>

Groups will receive training on the most important topics in the TIST program during the application phase. The trainings will take place in monthly Cluster meetings, in weekly Small Group meetings, and be supported by the TIST Newsletter. The trainings include:

- What is TIST? How does it work?
- TIST Eligibility Requirements
- TIST Values and why they matter
- Small Group Best Practices
- Tree species and their benefits
- Starting and maintaining a nursery
- Conservation Farming
- GhG Contract

Before the grove baselines are done, the Cluster representative should get to know the Group members, asking them questions about how they know each other, what they have learned at TIST trainings, and their plans for tree planting with TIST. The following are some of the questions asked:

- Does the Small Group have 6-12 members?
- Are the Small Group members from at least three different households?
- Have at least two members of the Small Group attended one or more trainings on each of the eight required topics?
- Has the Small Group has met weekly for at least 10 of the past 12 weeks?
- Have all of the group members attended at least half of the weekly Small Group meetings held in the last 12 weeks?
- Has the Small Group practiced rotating leadership in weekly meetings?
- Does the group have at least two hectares (or five acres) of land on which they plan to plant trees?
- Have each of the Small Group members visited all of the proposed grove sites?
- Does the group have proof of land rights for each grove they intend to register?
- Have all of the proposed groves been without forest for at least 10 years?
- Do all of the Small Group members know the TIST Values and agree to follow them?
- Do all of the Small Group members know the TIST Eligibility Requirements?
- Do all of the members know TIST's requirements on tree spacing, species selection, and harvest?
- Do all members have a plan for planting 5,000 trees in five years?
- Does the group have at least one nursery?

When the Group Application and Group Interview have been completed and synched, the TIST database will generate a TIST ID number, and the Group will be listed in the database as an Applying Group.

The Group is then informed that they will be contacted by a baseline Quantifier to schedule a field visit, and that all group members must be present for the visit. The Cluster Representative should ask the group for a Primary Contact, who will help the baseline Quantifier coordinate the field visit.

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<sup>38</sup> TIST KE PD-CCB-Spt 31 TIST SG Eligibility Requirements.doc at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

<sup>39</sup> TIST KE PD-VCS-Spt 05 SG CO2 contract 080428.doc at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

<sup>40</sup> TIST KE PD-CCB-Spt 32 TIST SG Membership Application.doc at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

The baseline Quantifier will be given a list of Small Groups that need to be visited with the Group Name, TIST ID number, the Group's primary contact, and the Small Groups' Applications. When the baseline Quantifier visits the Group in the field, they will first need to walk around the potential groves to see if the representations in the Application are accurate, and if the grove sizes are large enough to qualify. If the groves qualify, the baseline Quantifier should complete the baseline. If the grove baselines show that the group has at least two hectares (or five acres) of land where they plan to plant trees, the land meets TIST requirements (< 30% canopy, not forested in the last 10 years), and the Group has at least one nursery, the group is eligible to sign the TIST GhG Contract and be registered as an official TIST Small Group. The baseline Quantifier reviews the GhG contract with the members to be sure they understand it.

Once all the steps above are complete, the baseliner can officially "sign-off" on the Small Group Registration and submit the registration on the Palm. The Small Group will be officially registered as a TIST group and they should write their TIST ID number on their Application form, GHG contract, and TIST folder.

The entire process takes about six months, so there is ample opportunity for the members to learn about the potential costs to the members (which is designed to be zero), risks (which should be minimal) and benefits (which should be significant). Membership is voluntary, so the farmers can withdraw any time before they register and sign the GhG contract.

### **G3.3 Measures to Explain VV Process to Stakeholders**

This is done at the Public Meeting and through any comments that result from the CCB comment period. TIST will announce the intent to apply for a CCBA validation in Nairobi papers, announcing a public meeting and a public meeting will be held. In addition, emails will be sent to stakeholders announcing the public meeting, announcing the intent to apply and providing a link to the CCBA website where the project description is posted. The meeting is open to all and held in Meru, Kenya so that it is more convenient for local stakeholders to attend. During the meeting, the CCB process and project are summarized and a question and answer period is held. Specifics regarding the announcements, public meeting, emails and email recipients are in support document "TIST KE PD-CCB-Spt 14h Public Comments PD-005.doc."<sup>41</sup>

The announcement of the Auditor's visit was done by email for the non-TIST stakeholders on **21 January 2017**.<sup>42</sup> The TIST stakeholders learn about the visit from the Cluster Servants at Cluster meeting. The Cluster Servants were told of the field visit at a training seminar on **January 18, 2017**. The intent to validate and verify this PD and the date of the field visit were announced in the February 2017 Mazingira Bora.<sup>43</sup>

### **G3.4 Consultation**

TIST was formed in response to problems expressed by Tanzanian subsistence farmers who participated in Small Group seminars starting in 1999. These problems – recurrent famine, declining soil fertility, disease, and lack of shade and firewood – are shared by millions of smallholder farmers in Kenya. When TIST was invited to expand to Kenya by USAID, we used the same consultation approach to build a program that worked for Kenyan farmers.

As noted in G1.5, TIST Kenya began with a trip around Mt Kenya, where community leaders in Meru and Nyeri were briefed on TIST to gauge the level interest that local farmers might have. The first TIST seminar of TIST Kenya was held in Nanyuki from February 21, 2005 to February 26, 2005. The seminar began with the process of customizing TIST to the desires and needs of farmers in the Meru and Nanyuki areas. Seventy-three people attended; 40 men and 33 women. This consultation is documented in the first TIST

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<sup>41</sup> TIST KE PD-CCB-Spt 14h Public Comments PD-005 V02.docx at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

<sup>42</sup> Ibid.

<sup>43</sup> <http://www.tist.org/i2/moreinfo.php>

Kenya newsletter, the February 2005 issue of Mazingira Bora.<sup>44</sup> Subsequent initial consultations are documented in the April 2005 Mazingira Bora.<sup>45</sup> Because TIST is for the farmers and by the farmers, the consultations are ongoing. A full library of Mazingira Boras is available to demonstrate what has transpired in the program.<sup>46</sup>

Since TIST was ultimately designed by the participants and the participants are from the community, it can be stated that:

- Community Groups and Other Stakeholders have influenced project design and implementation
- The CCB Gold section will demonstrate that TIST has been optimized to benefit the community
- TIST respects the local customs, values and institutions
- Consultation with stakeholders such as KFS and USAID have addressed maintaining high conservation values
- TIST has a constant consultation process in effect

### **G3.5. Consultations Directly Undertaken with Communities and Other Stakeholders**

All consultations and participatory processes have been undertaken directly with Communities and other Stakeholders. This is demonstrated through the structure of the program and documented using footnote references 43, 44 and 45.

### **G3.6 Measures to Enable Effective Participation**

The measures needed and taken for effective participations are:

- Involve the communities in the design stage of the project; before it is implemented. TIST determined the needs of the farmers through small group visioning exercises, to learn their needs and desires. When TIST came to Kenya, they brought in the community members right away to find out what would work.
- Hold regular seminars to keep the community members informed and to see what is working and what is not.
- Use a structure such as the Small Groups, Clusters and newsletters for training, to disseminate information and to develop other program elements.
- Use rotating leadership at all levels.
- Use a Leadership Council made up TIST farmers that have excelled in leadership to operate the program.
- Train and use TIST farmers to do the monitoring and keep them trained through seminars and internal audits.
- Involve the other stakeholders early. We met with NGOs such as Green Belt and World Agroforestry Centre and government agencies such as USAID KE, KWS, KFS, KEFRI and maintain contacts.

### **G3.7 Measures to Ensure No Discrimination or Sexual Harassment**

The measures taken are to inform the members and workers of TIST policies, to inform them that they should contact the Leadership Council if they have been a victim of sexual harassment, or discrimination, and to inform them that there is a grievance process that they can follow.

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<sup>44</sup> TIST KE PD-CCB-Spt 33 Mazingira Bora 050201.pdf at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

<sup>45</sup> TIST KE PD-CCB-Spt 34 Mazingira Bora 050401.pdf at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

<sup>46</sup> <http://www.tist.org/i2/moreinfo.php>



The sexual harassment policy<sup>47</sup> and non-discrimination policy<sup>48</sup> are posted on the TIST Mobile website<sup>49</sup> where it is accessible by members with a mobile phone. In addition, the February 2017 Mazingira Bora<sup>50</sup> had an article on sexual harassment, discrimination and the grievance procedure.

A member that has been found to discriminate or sexually harass can be removed from TIST. A TIST worker that discriminates or sexually harasses can be dismissed.

### **G3.8 Handling unresolved conflicts and grievances**

A grievance policy<sup>51</sup> is available on TIST Mobile.<sup>52</sup>

The grievance procedure is intended as the tool by which members and workers may formally have a grievance heard by TIST management.

All grievances are first brought to the attention of the Leadership Council, where the issues are compared to standard TIST policy, TIST values and/or the Greenhouse Gas agreement among the Small Group members and CAAC. TIST policies and values are the subject of training at seminar, Cluster meetings, Small Group meetings and are published periodically in the Mazingira Bora. The Leadership Council shall give the aggrieved party an answer within 30 days of receipt of the formal complaint.

If the issue is not resolved within 30 days, the aggrieved party shall be informed that the case must be presented to TIST Management and shall inform TIST Management of the issue. Where precedence or policy exists, TIST Management shall use such documents in final decision making and respond to the aggrieved person within 30 days of their receipt of the formal complaint. Where new issues arise that are outside the existing precedence, or policy, the issue shall be brought to the next seminar or Leadership Council meeting, where decisions are made by representatives of the Small Groups, Kenya Staff and TIST Management.

If conflicts or grievances cannot be resolved internally, CAAC and the aggrieved party shall agree upon a mediator to whom they shall submit the issue. Any grievances not resolved through mediation shall be subject to arbitration in through the Chartered Institute of Arbitrators, Kenya Branch within 30 days of the close of mediation.

The principle of free, prior and informed consent gives the community the right to give, or withhold, its consent to proposed projects that may affect the lands they customarily own, occupy or otherwise use. First, TIST membership is voluntary. Second, when they decide to join they are trained in the participation requirements. This can be a six-month process. Third, they are trained in the greenhouse gas contract before they sign it. They are free to not sign the GhG contract or register with TIST. Fourth, they participate directly in the design of the project. The farmers plant trees voluntarily on their own land and own the trees and their products. There is never a requirement, request or expectation that any involuntary relocation of people, or of the activities, takes place.

To date we have not had a formal grievance. If there is one, it will be published in the Mazingira Bora and presented to the Clusters.

### **G3.9 Measures to Provide Orientation and Training**

TIST begins in an area with a series of orientation seminars. TIST members are introduced to the program and participate in the customization of the program to the locale. Virtually all the local staff is hired from the

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<sup>47</sup> TIST KE PD-CCB-Spt 36 Sexual Harassment 170120.doc at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

<sup>48</sup> TIST KE PD-CCB-Spt 37 Non-Discrimination 170120.doc at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

<sup>49</sup> <https://www.tist.org/mobile/secure/login.php?ses=gea0rj8ej2odmk314l6dofd7q3> , login required.

<sup>50</sup> <http://www.tist.org/i2/moreinfo.php>

<sup>51</sup> TIST KE PD-CCB-Spt 35 Grievance Policy 170120.doc at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

<sup>52</sup> <https://www.tist.org/mobile/secure/login.php?ses=gea0rj8ej2odmk314l6dofd7q3> , login required.

TIST membership. All Quantifiers and trainers are from the local membership. Staff and Quantifiers are hired based on ability, not gender, tribe, cultural background, or level of education. However, all effort is made to ensure a balance in gender and tribal affiliation. Training is passed on to new workers through the seminars and working with an experienced TIST member. As needed, the US team holds seminars to provide new information.

Cluster Servants/Quantifiers receive ongoing training as needed and attend a training seminar at least once per year. They are given access to the Quantifier Manual.<sup>53</sup> During the seminars, they are trained on the TIST monitoring plan, which includes use of the PDAs and GPS, use of the custom data collection software, how to maintain their data, synchronizing their data with the TIST server, the importance of good data, taking tracks of the Project Area perimeters, taking secondary tracks of the Project Area perimeters, counting trees, the importance of proper tree counts, identifying tree species and tree ages, taking proper circumference measurements, keeping accurate expenses, GhG contracts and any new program initiated.

Small Groups training is ongoing. The Small Groups are all assigned to "Clusters," an administrative unit within walking distance of a central point. The Cluster meetings are supposed to be held monthly and will take place at least once per year at each Cluster. While attendance is voluntary, Small Groups are encouraged to send representatives to every meeting. Training includes Conservation Farming, biodiversity, cook stoves, the GhG contract, climate change, selecting tree species, the benefits of different species, preparing nurseries, tree management, HIV/AIDS, malaria and other subjects of interest to the members. The three Cluster Leaders are rotated every six months. The Cluster Servants train them and guide them.

### **G3.10 Equal Opportunity Employment.**

TIST does not have an expatriate staff. Although the main management staff and computer development are in the US, the Kenya program is run by Kenyans from the Meru and Nanyuki area. The 50 plus Quantifiers are TIST farmers trained to use the monitoring system. The land and trees planted belong to the TIST farmers. The TIST farmers work together to establish the best practices for their area (whereas the Ugandan and Indian farmers establish their own best practices more suitable to their areas). The local managers are the Leadership Council, which is made up of Kenyan farmers. Cluster meetings and Small Group meetings are run by Kenyans. All TIST members have an opportunity to be group leaders, regardless of education or gender. TIST members are utilized as volunteers, independent contractors and employees based on achievement, not gender, education or social status. TIST holds regular training seminars for Quantifiers and conducts regular audits to make sure their skills are honed.

We strive for gender equality. About half of our Cluster Servants/Quantifiers, Auditors, Cluster Leaders and Leadership Council are female. Females hold positions of responsibility like voucher payments and expansion. When Seminars are held, Clusters must send at least one man and one woman. When a Cluster shows up with all males, they are sent home with instructions to send a woman.

Opportunities are open to all, especially marginalized people. We have widow groups that care for orphaned children, who are rotating leaders in their Small Groups and are picked to attend seminars. We do not have a formal education requirement for any position. Those that have proven they can do the job are the ones doing the job.

### **G3.11 Relevant workers right laws**

The relevant laws are:

- The Employment Act, 2007
- Regulation of Wages and Conditions of Employment Act
- National Hospital Insurance Fund Act, 1998

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<sup>53</sup> TIST KE PD-VCS-Spt 03 Quantifier Manual 101221.doc at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>



Most of the Kenyans working for TIST knew their rights before starting employment. Even so, CAAC uses an employment contract that was vetted by local counsel that reiterates the more important parts of the relevant employment law such as salary, types of leave, rest days and termination. Quantifiers are independent contractors. Their contract has been reviewed by local counsel. Workers are given the contract to read well in advance of signing and given the opportunity to ask any questions about the terms.

### **G3.12 Occupational Safety**

TIST members are conducting activities that they normally do, i.e. farming using manual labor. TIST workers such as Cluster Servants walk or use public transportation. Their job does not require them to engage in activities that are inherently unsafe. The risks facing TIST workers are minimal and no different than those affecting anyone living in the area. Such risks include:

- riding in a matatu (the local mini bus transportation) where there is risk of crash or robbery;
- venomous or constricting snakes, which, although they have been mostly eradicated from the farm lands, still can be encountered;
- elephants, which are present in the Meru area.

TIST has a Standard Operating Procedure to address safety. To ensure that safety policy and safety issues are understood, each Quantifier will be briefed on the safety policy annually.<sup>54</sup>

## **G4. Management Capacity**

### **G4.1 Governance Structure**

The project proponent is Clean Air Action Corporation (CAAC). The role of CAAC and other parties involved with TIST are summarized:

- **Clean Air Action Corporation (CAAC)** is a for profit US corporation that manages the GhG component of TIST. CAAC is TIST's largest contributor, provides technical assistance and uses its host country subsidiaries to manage operations.
- **Institute of Environmental Innovation (I4EI)**, a US based non-profit organization, manages the TIST sustainable development program components. I4EI provides funding from government agencies, foundations, and private donors.
- **Thousands of TIST Farmers** make up the Small Groups, plant the trees on their lands, manage their own trees and make up the core of TIST.

Operating within the TIST Structure are:

- **Leadership Council.** It is made up of six to eight TIST farmers and two full time managers (Kenyan). They oversee day-to-day operations. Leadership is internally rotational and several of the positions are externally rotational.
- **Tech Support and QAQC.** This is held by a TIST member that rose through the program based on his abilities. He is in charge of daily desk reviews and keeping the field monitoring system operational.

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<sup>54</sup> see "TIST KE PD-CCB-Spt 13 Quantifier Safety 110110.doc" at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

- **Voucher Payments.** This is handled by a team of TIST farmers that have proven their ability to oversee voucher payments.
- **Cluster Leaders.** There are three Cluster leader positions per Cluster: Cluster Leaders, Co-leaders, and Accountability people. They serve for a period of four months. After four months of service, the Cluster leader rotates out, the Co-leader becomes the Leader, the Accountability person becomes the Co-leader and the Accountability person is filled by Small Group members from the Cluster.
- **Expansion Team.** This team is responsible for expanding TIST to new areas.
- **Cluster Servant.** They serve as Quantifier, trainer and liaison for one or more Clusters.

## G4.2 Technical Skills to Implement the Project

The two founders of CAAC have almost 85 years combined experience in energy, natural resources, monitoring, quality control, transportation, biofuels, pollution control technologies, emission trading, trading program development, third party due diligence, computer technology and management. They began CAAC in 1993 and helped develop emission trading programs in the US and Canada and were responsible for many firsts in innovative emission control (See CAAC [website](#)).

TIST was established in direct response to the needs developed and expressed by Small Groups of Tanzanian subsistence farmers in 1999 and 2000. Attending a Small Group training seminar organized by the Anglican Diocese of Mpwapa in July 1999, one of CAAC's founders participated in a visioning exercise with local subsistence farmers. They expressed deep concern about recurrent famine, poor crops, lack of shade and firewood, declining rainfall, declining soil fertility, poor access to water for personal and agricultural use, poor diet, regular health problems including TB and Malaria, lack of economic opportunity, poor cattle forage on eroded lands, and the decline of wildlife due to over hunting and lack of forests. The Small Group seminar, however, did not stop with identifying the local problems; participants established the goals of starting hundreds of Small Groups to plant trees, reduce poverty, improve health, and prevent famine. They decided the groups should work together with each other, and with resources in the US and the UK, to share “njia bora” (best practices) and to start achieving the goals.

With CAAC's involvement with nascent GhG trading in Canada, there was an obvious way to bring these improvements to the farmers using carbon credits as a financial tool.

TIST has been operating successfully for over 16 years and has expanded to four countries, 78,000 farmers and planted over 16,000,000 documented trees. The monitoring system they developed won a Computerworld Honors Laureate in 2007. TIST has 14 VCS PDs, many of which have gone through two verifications. TIST has seven CCB PDs under the 2nd edition, six of which are CCB Gold for exceptional community benefits. TIST was the first project to be verified under CCB. Its successes with CCB demonstrate it has the skills required to implement the project successfully, including community engagement, biodiversity assessment and carbon measurement and monitoring skills.

The following summarizes CAAC carbon project development experience:

- **TIST Program, Tanzania,** a small-hold farmer A/R project. It began in 1999, with the first tree planting in 2000. The project is centered around Mpwapa and Morogoro and includes over 2,000 farmers.
- **TIST Program, India,** a small-hold farmer A/R project. It began in 2002, in the rural area outside of Chennai, Tamil Nadu. There are about 5,900 farmers and 1.7 million trees. A subset of the Project Areas was been validated and registered as a CDM project (subsequently withdrawn due to a lack of markets for tCERs). There is one validated and verified VCS project, which has been validated and verified under CCB.

- **TIST Program, Uganda**, a small-hold farmer A/R project. It began in 2003 and is centered around three towns in southwest Uganda (Bushenyi, Kabale and Kanungu). There are about 7,800 farmers and about 5.8 million trees. The DNA approved the project contingent on submitting a PD based on an approved methodology. They also approved the EIA. There are six validated and verified VCS projects, all of which have been validated and verified under CCB (Gold for exceptional community benefits).
- **TIST Program, Kenya**, a series of small-hold farmer A/R projects. The project started in 2004 and is centered around Mt Kenya. There are about 65,000 farmers and 8.3 million trees. The project has been accepted by the forest department and DNA for CDM. An EIA was accepted by the National Environmental Management Authority (NEMA). TIST Kenya has seven validated and verified VCS projects, all of which were also validated and verified under CCB (Gold for exceptional community benefits).
- **Sulfur Hexafluoride emission reductions** from electric power equipment in substations of Duquesne Light Company. Reductions were made at numerous locations in Pennsylvania from 1996 through 1999. The reductions were approved as credits under the Pilot Emissions Reduction Trading Program (PERT) in Ontario Canada. CAAC managed the project.
- **Methane emission reductions** through the recovery of landfill gas from the Lancaster Landfill in Lancaster, New York. Reductions were made 1995 through 1998. The reductions were approved as credits under the Pilot Emissions Reduction Trading Program (PERT) in Ontario Canada. CAAC managed the project.

#### **G4.3 Financial health of the CAAC**

CAAC has been in business since 1993 and has operated TIST for over 16 years. CAAC is profitable after all TIST expenses. Financial statements and a financial plan (confidential) have been made available to the Validator.

TIST began, in late 1999, on the expectation that once the trees were large enough, the project would be self-funding. A series of financial projections were developed that showed that after 6 to 10 years (depending on different financial cases regarding market price, growth rate, tree mortality, etc.) the project would be sustainable based solely on carbon revenues. The key to success was very low costs. TIST has designed the program to minimize cost, developing an award winning monitoring system, building Host Country capacity and relying on voluntary effort. Still, there is a cash shortfall in the early years of the project. This is made up by external sources. CAAC has provided funding to make up this shortfall on the carbon side, through its own profits and advanced sales of credits. I4EI has provided sustainable development funding that offsets much of the project cost, obtaining funding through USAID and private donors. The fact that TIST is in its 10th year demonstrates its longevity.

The Project Proponent, or any of the other entities involved in project design and implementation, are not involved in, or are not complicit in any form of corruption such as bribery, embezzlement, fraud, favoritism, cronyism, nepotism, extortion, or collusion. CAAC is a small company. Its CEO and Vice president are active in the day to day operation and are very familiar with the financial aspects of CAAC and TIST and are aware of no instances of the aforementioned types of corruption within either organization. The USAID grants also contained prohibitions of these types of corruption. USAID completed an audit of TIST in 2016 and found no evidence that these have occurred.

## **G5. Legal Status and Property Rights**

### **G5.1 Property Rights**

There are three different land classifications in Kenya: private land, public land, and community land. Private land is land owned by an individual under freehold or leasehold tenure. Public land is vested in the government for the benefit of the people in Kenya. It includes roads, all water bodies, forests, national parks, and land that has minerals, among others. Community land is held by and managed by communities. It includes land registered under group representatives, shrines, grazing areas and ancestral lands.

Though freehold and registered deeds have been around for decades, the financial burden to subsistence farmers has meant that not all freehold land is held by a registered deed. Some are in the process of being registered and have beacon certificates. Others are owners through customary tenure. In the latter cases, the ownership and boundaries are recognized by the community as if they were freehold. The ownership status of each Project Area in this PD is listed in the Grove Summary worksheet of VCS Appendix 04.<sup>55</sup> 79% are registered deed, 10% are beacon, 6% are customary tenure and the remainder is other. Of the other, 279 are public lands in the Lower Imenti Forest. TIST has an Agreement with KS for TIST farmers to clear invasive plants (*Lantana camara*) and plant indigenous trees in selected areas of the forest. Eleven Project Areas are on school grounds. The remainder is on private land with the permission of the owners (husbands, family members and other Small Group members).

The demonstration that all Property Rights are recognized, respected, and supported is based on the Registered Land Act (Cap 300, Laws of Kenya).

### **G5.2 Property Rights Demonstrations**

The following demonstrations are provided:

- The project will not encroach uninvited on private property, community property, or Government property. TIST is voluntary and does not take any lands or encroach on any lands. The lands are controlled by the farmers. By the GhG contract<sup>56</sup> they maintain ownership of the land and trees. Planting in the Lower Imenti Forest is allowed by agreement.<sup>57</sup>
- The Free, Prior, and Informed Consent has been obtained of those whose property rights are affected by the project through a transparent, agreed process. As noted in G3.8, TIST has a series of trainings for the farmers about the project before they register and sign the GhG contract. They only sign the contract and join if they chose to. If they join, they choose the trees they plant, where they are planted and what programs they wish to implement.
- Appropriate restitution or compensation has been allocated to any parties whose lands have been or will be affected, by the project. By contract,<sup>58</sup> they receive an advanced carbon payment (tree payment), 70% of the profits from the sale of their carbon and all the tree products. They keep the trees and land and any other benefits that they derive from membership

### **G5.3 No Involuntary Removal or Relocation**

The GhG Contract<sup>59</sup> does not mention or allow any removal or relocation. There are no cases where TIST has requested or required relocation.

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<sup>55</sup> TIST KE PD-VCS-005e App04a Data 111102 Group.xls and TIST KE PD-VCS-005e App04b Data 161130.xlsx at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

<sup>56</sup> TIST KE PD-VCS-Spt 05 SG CO2 contract 080428.doc at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

<sup>57</sup> TIST KE PD-CCB-Spt 38 Lower Imenti Agmt 131108.docx at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

<sup>58</sup> TIST KE PD-VCS-Spt 05 SG CO2 contract 080428.doc at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

<sup>59</sup> Ibid.

## **G5.4 Illegal Activities in the Project Zone**

The Project Zone is the land owned or controlled by the farmers and no illegal activity (e.g. illegal logging) has been identified. The farmers own the trees and can choose to cut them down. However, if the trees are TIST trees, they will be in violation of the GhG contract wherein they have promised to maintain them. Since this is the source of TIST's GhG revenues and the removal has to be offset by other trees, TIST continues to train the members in the GhG contract and the benefits of keeping the trees.

## **G5.5 Disputes over Rights**

No ongoing or unresolved conflicts or disputes over rights to lands, territories and resources have been identified. As freehold lands, the individual rights to the Project Areas have been established. In the case of the Lower Imenti Forest, there were illegal settlements that led to deforestation. However, the public nature of the forest was never in dispute and the illegal settlements were removed.

## **G5.6 List of All Relevant Local and National Laws and Regulations**

As a tree-planting program that takes place voluntarily on existing farm land, there are few laws that are relevant to TIST. They are, however:

- The employment laws listed in G3.11. CAAC uses Kenya counsel to advise on issues relating to employment.
- Companies Act, (Law of Kenya Cap. 486). CAAC is registered as a branch and must remain in good standing to operate in Kenya.
- Environmental Management and Co-ordination Act, 1999.60 In conformance with the Act, TIST submitted an EIA<sup>61</sup> to the National Environmental Management Authority (NEMA) and because it received no further communication from NEMA, completed all of its obligations under the Act.
- Directive Regarding Eucalyptus and Riparian Lands. In March 2011, NEMA issued an Order on wetlands whereby "those encroaching into wetlands and adjacent riparian land to vacate." Pertinent to TIST is the instruction to remove "Eucalyptus trees from riparian land." NEMA directed the Water Resource Management Authority to "peg, mark and secure" all riparian lands subject to this order. At this time, no TIST Project Areas have been designated riparian lands and no TIST farmers have been told to remove any eucalyptus trees.

## **G5.7 Document Approval from Appropriate Authorities**

Planting trees on your own land is unregulated in Kenya and requires no approvals. As noted above, we were required to submit an EIA to NEMA and did so.

## **G5.8 Demonstrate Project Proponent's Ability to Claim Project**

The Project Proponent has a GhG contract<sup>62</sup> among all of the Small Groups that covers all of the Project Areas. The contract gives the rights to the carbon to the Project Proponent. As part of the validation and verification for VCS, the VV body typically reviews a random sample.

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<sup>60</sup> Environmental Co-ordination and Management Act states that all Kenyans have the right to a clean and healthy environment and sets up the administrative and legal structure to provide it. It sets up the National Environmental Management Authority (NEMA) to oversee this effort. It requires a national environmental plan and district plans. It also requires environmental impact assessments conducted by an authorized consultant for any project that is "out of character with its surroundings." Included in this category is "reforestation and afforestation." Relying on Section 59.8 and 59.9 of the Act, if there is no response from NEMA within 6 months of submitting the EIA, the proponent may begin its undertaking.

<sup>61</sup> TIST KE PD-CCB-Spt 04 EIA Report NAREDA 100506.doc at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

### **G5.9 Tradable Climate Benefits**

This PD is associated with the VCS PD "TIST Program in Kenya VCS-005" and all carbon credits will be issued by VCS. The VCS program has its own backstops in place to prevent double counting. The Project Proponent states that it is not registering these credits with any other entity and that the Host country is not making any claim to them. In addition, the project is not claiming any tradable credits for community or biodiversity credits.

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<sup>62</sup> TIST KE PD-VCS-Spt 05 SG CO2 contract 080428.doc at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

## Climate Section

This CCB PDD meets the requirements of the Climate Waiver.

- The project meets the requirements for validation under VCS. The validation document for the original Project Areas is the original PD.<sup>63</sup> Per the VCS requirements, the validation of the new Instances (Project Areas) is in the Monitoring Report.<sup>64</sup>
- The project has the same name, is the same size, incorporates the same Project Areas, has the same Proponent, has the same project start date, uses the same activities and has the same without-project scenario.

The official VCS documents are available on the VCS Project Database at [http://www.vcsprojectdatabase.org/#/project\\_details/737](http://www.vcsprojectdatabase.org/#/project_details/737).

Please refer to the following document:

- Project Description:  
<http://www.vcsprojectdatabase.org/services/publicViewServices/downloadDocumentById/8132>
- Validation Report:  
<http://www.vcsprojectdatabase.org/services/publicViewServices/downloadDocumentById/24957>

The relevant documents are also available at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>:

- TIST KE PD-VCS-005a PD Text 111102.pdf: The original VCS PD covering the Project Areas
- TIST KE PD-VCS-005k App10 Verif 02 Monitoring Rpt 161123.doc: The VCS Monitoring Report that adds the new instances. Included is the eligibility analysis for the new instances.
- TIST KE VCS-005a ESI Validation Report 111216.pdf: The Validation Report for the original Project Areas
- TIST KE VCS-005i EPIC Verification Report 170828.pdf: The VCS Verification Report for the Project

The successful Validation and Verification Reports are also available on the APX registry.

The VCS PD estimates 9.7 million tonnes CO<sub>2</sub>e of reductions through 2033.

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<sup>63</sup> TIST KE PD-VCS-005a PD Text 111102.pdf at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

<sup>64</sup> TIST KE PD-VCS-005k App10 Verif 02 Monitoring Rpt 161123.pdf at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

## Community Section

### **CM1. Without-Project Community Scenario**

#### **CM1.1 Community Information, Description of Communities in Project Zone**

The predominant ethnicity of the people in the Project Zone and of the TIST members is Meru, Kikuyu and Kalinjin.

The Meru people are concentrated on the east side of Mt Kenya, the Kalinjin in the Rift Valley and the Kikuyus on the west side of Mt Kenya. The Meru people are believed to have migrated to the Mt Kenya area in the 14th century and the Kikuyu people in the 16th century. The Kalinjin people migrated to the Rift Valley from 500 to 1600 years ago. The Meru speak Kimeru, the Kikuyu speak Kikuyu and the Kalinjin speak Kalinjin. There are no "indigenous" people living in the Project Areas or Project Zones.

There is not much difference among the peoples and much less every day. Where isolation limited interaction in the past, Kenya's roads and transportation system has changed this. They primarily identify as Kenyans and many can speak multiple languages, including Kiswahili and English, the official languages.

Members of all three peoples interact in TIST. Because Small Groups and Clusters are located near the members, there is separation due to geography. However, they interact at seminars and follow the same TIST values. TIST LC members and Quantifiers range across the Project Zone and work with people of different cultures.

The following community information is based on a survey of 416 households in the Meru and Nanyuki Project Areas. The gender breakdown was 206 (49.5%) males and 210 (50.5%) females. See Table CM1.1.1.

#### **CM1.1.1: Distribution of respondents by Gender and the Project Areas**

<i>Gender</i>	<i>Total Sample</i>		<i>Meru Project Area Sample</i>		<i>Nanyuki Project Area Sample</i>	
	<i>Freq.</i>	<i>%</i>	<i>Freq.</i>	<i>%</i>	<i>Freq.</i>	<i>%</i>
Male	206	49.5	123	48.6	83	50.9
Female	210	50.5	130	51.4	80	49.1
Total	416	100	253	100	163	100

The sample shows that young, middle age and elderly respondents were included, although more households in relative young age categories (31 to 45) were interviewed, as compared to other age brackets, as indicated in Table CM1.1.2.

#### **CM1.1.2: Age Distribution of Household Respondents**

<i>Age categories (Years)</i>	<i>Total Sample</i>		<i>Meru Project Area Sample</i>		<i>Nanyuki Project Area Sample</i>	
	<i>Freq.</i>	<i>%</i>	<i>Freq.</i>	<i>%</i>	<i>Freq.</i>	<i>%</i>
21 to 30	56	13.5	43	17.0	13	8.0
31 to 45	156	37.5	96	37.9	60	36.8
46 to 60	125	30.0	80	31.6	45	27.6



61 and above	79	19.0	34	13.4	45	27.6
Total	416	100	253	100	163	100.0

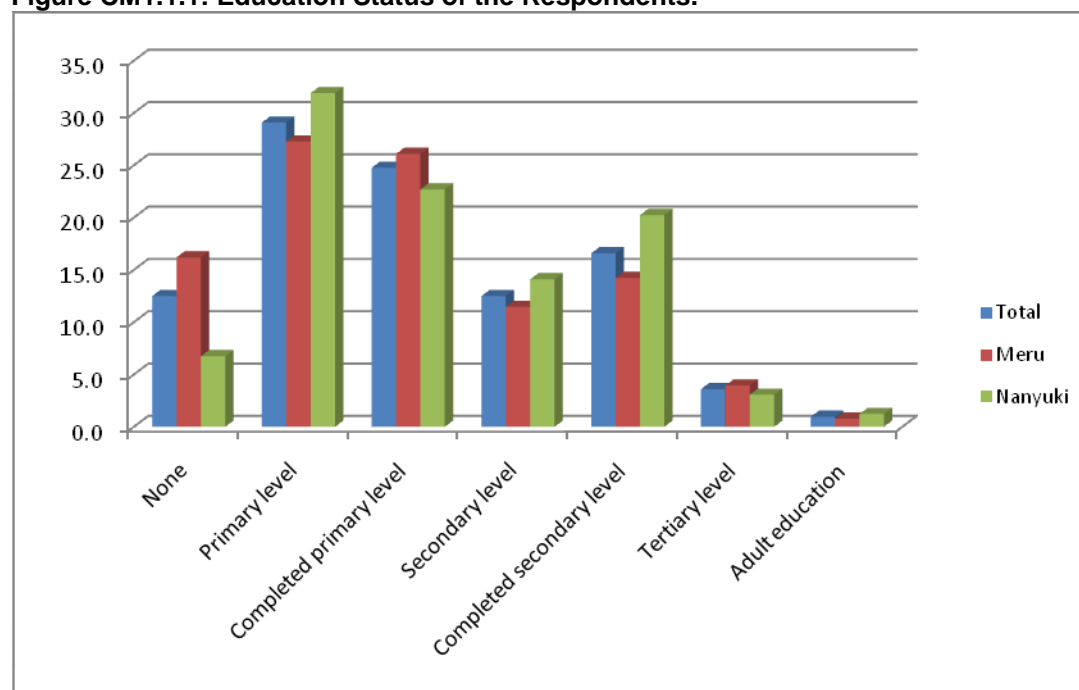
The majority of the households sampled (88.9%) are married, which is an indication of the household typologies over the Project Areas. A combined household of the unmarried, of the widowed couples and those separated or divorced represents slightly over 10 percent of the entire households, as contained in Table CM1.1.3.

#### CM1.1.3: Marital Status of Households Sampled

Marital Status	Total Sample		Meru Project Area Sample		Nanyuki Project Area Sample	
	Freq.	%	Freq.	%	Freq.	%
Single	19	4.6	10	4.0	9	5.5
Married	370	88.9	229	90.5	141	86.5
Widow/widower	20	4.8	13	5.1	7	4.3
Separated/divorced	7	1.7	1	0.4	6	3.7
	416	100	253	100	163	100

As can be observed in Figure CM1.1.1, the Project Area's illiteracy levels stand at 12.5 percent. Nanyuki area has less illiteracy level (6.7%) and has a generally higher number of respondents who have secondary education, which is the ordinary education level in Kenya.

**Figure CM1.1.1: Education Status of the Respondents.**



Farming is the main occupation of the respondents. Other insignificant livelihood activities are casual labor, employment, business and reliance on pension as presented in Table CM1.1.4.

**Table CM1.1.4: Occupational Status**

Occupational Status	Total Sample		Meru Project Area Sample		Nanyuki Project Area Sample	
	Freq.	%	Freq.	%	Freq.	%
Farmer	379	91.1	232	91.7	147	90.2
Casual Labour	2	0.5	1	0.4	1	0.6
Formal employment	14	3.4	10	4.0	4	2.5
Business	14	3.4	6	2.4	8	4.9
Informal employment	6	1.4	4	1.6	2	1.2
Pension	1	0.2			1	0.6
Total	416	100	253	100	163	100

The people that live in the Project Zone are mostly subsistence farmers. Average annual income is shown in Table CM1.1.5 and is based on community data developed by the Kenya Ministry of Agriculture in Miriga Meru East and West Divisions, using Participatory Analysis of Poverty and Livelihood Dynamic (PAPOLD).

**Table CM1.1.5 Annual Income Brackets**

Income Level (Ksh)		Income Level US\$		Pct of Groups
Min	Max	Min	Max	
0	12,000	\$0	\$160	5%
12,000	60,000	\$160	\$800	40%
60,000	180,000	\$800	\$2,400	25%
180,000	300,000	\$2,400	\$4,000	15%
300,000	420,000	\$4,000	\$5,600	10%
420,000	above	\$5,600	above	5%

## CM1.2. High Conservation Values Areas Related to Community Well-being

There are three major HCVs in the vicinity of the Project Zone; Mt Kenya National Park, Aberdare National Park and Meru National Park. They are shown on the maps in G1.7.

Mt Kenya and the surrounding protected forests have High Conservation Values. The core of the mountain is located within Mt Kenya National Park. The lower flanks of the mountain are within the Mt Kenya Forest reserve, which also serves as a buffer between the park and populated farmland where the TIST Project Areas are located. Extending to the northeast towards the Nyambeni range and Meru National Park are a series of gazetted forests that serve as wildlife corridors. They include the Upper Imenti, Meru and Lower Imenti Forests. To the southwest of Mt Kenya is the Nyeri Forest that helps form a corridor to the Aberdare National Park and Forest.<sup>65</sup>

The HCV of Mt Kenya is recognized. The national park was established in 1949. It was designated as a UNESCO biosphere reserve in 1978 and was made a UNESCO World Heritage Site in 1997. As the second tallest mountain in Africa, it is a vital water catchment for Nairobi and central Kenya.<sup>66</sup> At 17,057 feet and straddling the equator, it provides diverse ecosystems ranging from African savannah to alpine glaciers.<sup>67</sup>

<sup>65</sup> HCV Indicator 8.1. Globally, regionally or nationally significant concentrations of biodiversity values (protected areas, threatened species, endemic species, and areas that support significant concentrations of a species during any time in there.)

<sup>66</sup> HCV Indicator 8.4. Areas that provide critical ecosystem services (e.g., hydrological services).

<sup>67</sup> HCV Indicator 8.2. Globally, regionally or nationally significant large landscape-level areas where viable populations of most, if not all, naturally occurring species exist in natural patterns of distribution and abundance.

Aberdare National Park was established in 1950. The mountains in which it is located are considered one of the five "water towers" of Kenya.<sup>68</sup> The park is surrounded several national forests. The park is described as:

steep forested ravines and open moorland characterize the Aberdare National Park. The park provides a habitat for elephants, black rhinos, leopards, spotted hyenas, olive baboons, black and white colobus monkeys, buffalos, warthogs and bushbucks among others. Rare sightings include those of the Giant Forest hog, bongo, golden cat, serval cat, African wild cat, African civet cat and the blue duiker. Visitors can indulge in picnics, trout fishing in the rivers and camping in the moorlands. Bird viewing is rewarding, with over 250 species of birds in the park, including the Jackson's Francolin, Sparrow hawks, goshawks, eagles, sunbirds and plovers.<sup>69</sup>

Meru National Park is located northeast of Mt Kenya and occupies 870 square kilometers. Surrounding it are Kora National Park, Mwingi National Reserve and Bisanadi National Reserve. This area mostly thorny bushland with dense riverine forests of Doum and Raffia palm.<sup>70</sup> It offers "Grevy's Zebra, Elephants, Eland, Bush Pig, Waterbuck, Cheetah, Leopard, Reticulated Giraffe, Hippopotamus, Bohor Reedbuck, Hartebeest, Python, Puff Udder, Cobra, Buffalo, more than 427 recorded species of birds".<sup>71</sup>

All three areas provide critical ecosystem services. Mt Kenya and Aberdare are considered two of the five water towers of Kenya. While Meru is not a water tower, it is host to 13 rivers. All three host an abundance of wildlife.

The parks themselves are restricted. For the most part the contribution to well-being is from tourism. The bordering reserves and forest can supply fuel wood and other tree products.

Mt Kenya is important to the cultural identity of Kikuyu and Meru. Their tribal beliefs are that their gods lived on the mountain.

### **CM1.3 Changes in the Well-being without Project Land Use Scenario**

Without the project, 65,000 subsistence farmers in the Project Zone would not be participating in the sustainable development, reforestation and health training of TIST. The communities would not receive the added income that has been paid to the TIST farmers as a carbon stipend and they would not receive the 70% of the project profits, once the carbon sequestered in the trees is enough to sustain the project. This added income would not be available to help pay for primary education uniforms, secondary education, metal roofs and other necessities. The farmers would not have planted the over four million trees already documented by the project. They would not have built nurseries and grown millions of seedlings. They would not have begun to grow their own sustainable on-farm fuel supplies. They would not have started using FAO Conservation Farming practices, which have been documented to increase crop yields 2 to 10 times. They would not have received training in using more fuel-efficient cooking stoves, or received training on the effects of indoor cooking smoke. They would not have received training on HIV/AIDS, malaria, hygiene, clean drinking water and nutrition. They would not have had the opportunity for developing leadership skills and become Small Groups leaders regardless of gender, religion, education or general background.

Likely changes in water, soil and other locally important ecosystems, without the project, are in a continued decline. Illegal harvesting of wood and charcoal in protected areas continues, supported directly or indirectly by the people who live in the Project Zone, because of their need for cooking fuel. The cutting of these trees leads to loss of soil stability and erosion. It also leads to a loss of water retention. The result is higher sediment load in the critical water, supplies of the "five towers", loss of soil due to erosion and

<sup>68</sup> HCV Indicator 8.4. Areas that provide critical ecosystem services (e.g., hydrological services).

<sup>69</sup> <http://www.kws.go.ke/content/aberdare-national-park>

<sup>70</sup> <http://www.kws.go.ke/content/meru-national-park>

<sup>71</sup> Ibid.

decrease in year-round water as run-off increases with each rainfall and less water is absorbed in the soil. Continued deforestation leads to loss of habitat and biodiversity. The project addresses each of these and helps reverse or mitigate them.

## **CM2. Net Positive Community Impacts**

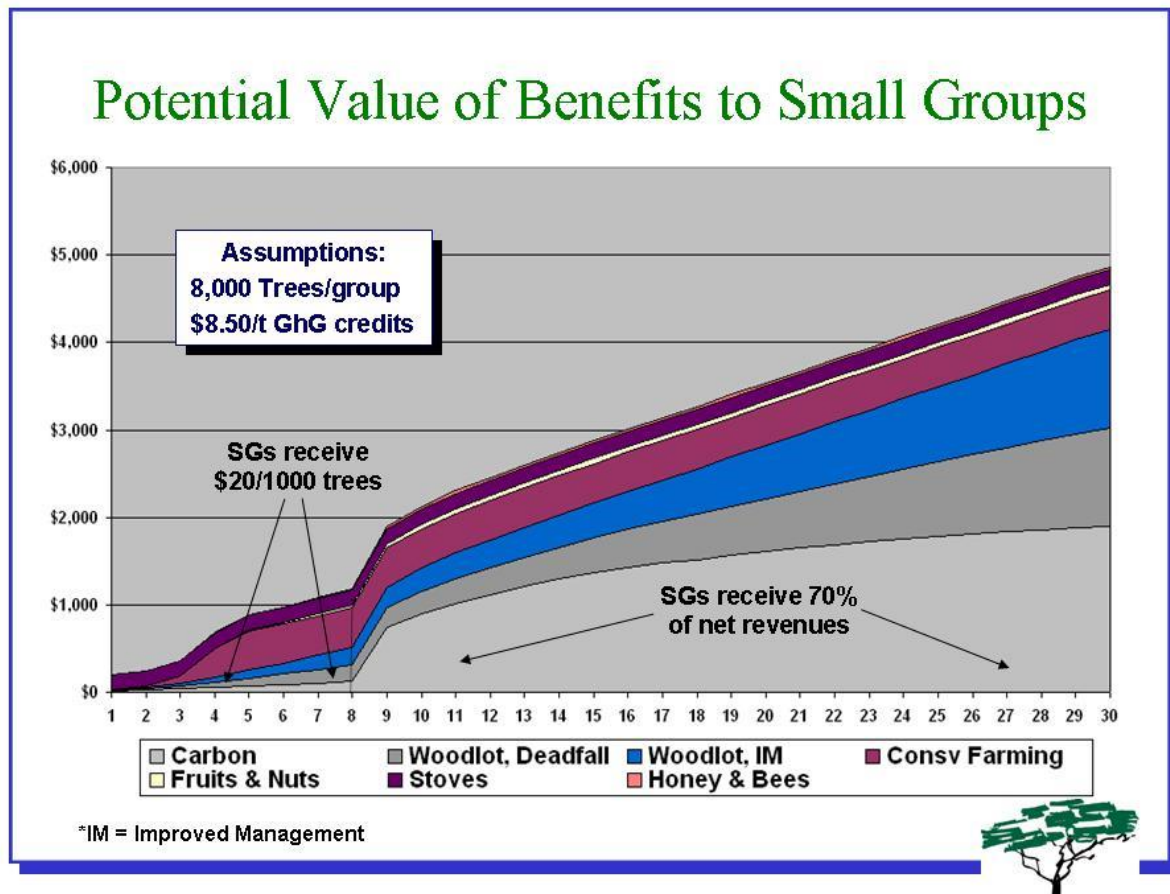
### **CM2.1 Impact of Project, with Project Scenario**

The project will create a positive socio-economic impact. Some of the benefits that will be realized by the Small Group members and their families:

- **New job opportunities:** TIST requires a Host Country staff to operate. There are currently six staff employees and over 60 contract Quantifiers. TIST personnel travel by public transportation and buy food and supplies from local merchants, bolstering the local economy. TIST uses Host Country professionals such as accountants and lawyers. TIST staff is trained to use the handheld computers and GPS and how to collect data. They synchronize their devices in cyber cafés, requiring the use of personal computers.
- **Direct Effects to Small Groups:** TIST benefits thousands of Small Group members by providing a new source of income. Small Group members are paid for each tree they plant and maintain. When the project becomes self-funding from the sale of carbon credits, they will receive 70% of the net carbon revenues.
- **Small Group Structure:** Empowerment of Small Groups and creation of “best practices” improves farm production, health, and farmer life. Small Groups use “rotating leadership” which supports gender equality and develops the capacities of each member. The visible success of the TIST groups and the availability of wood, shade, lumber, fruit, and improved crop yields provides the entire community with positive examples.
- **Fruits and nuts from tree plantings:** The members select the trees to plant on their land and retain ownership of the trees and their products. To the extent that they plant fruit or nut trees, they will gain the food security and economic benefits the trees provide.
- **Wood products and limited timber from trees:** Besides owning the trees, the farmers have the rights to all dead wood. They may prune branches and collect fallen branches. The growth models used for extrapolating biomass include up to 70% mortality over a 30-year period. The farmers can use this biomass for their own consumption without affecting the estimated carbon stocks. In addition, the farmers may thin their trees as part of the on-going management of the Project Area and sell the harvested stems as timber.
- **Natural medicines, insecticides and other benefits from trees:** Some of the trees, such as the neem and moringa, provide other non-wood related benefits.
- **Capacity building on agricultural improvements, business skills, nursery development, and reforestation:** TIST has a well-developed capacity building program that promotes rotating leadership within the Small Groups, that focuses on gender equality and is made available to all members, regardless of education or social standing. TIST provides training in subjects such as Conservation Farming, nursery development reforestation, climate change, biodiversity, building and using more fuel-efficient stoves and runs the program like a business.
- **Address social and economic problems:** Small Groups organize to deal with other social and economic problems such as famine and AIDS. TIST also supplies training in these subjects. Famine is also addressed with the FAO Conservation Farming program, which can lead to over a doubling of crop yield for practitioners, and through proper tree selection (fruits and nut).

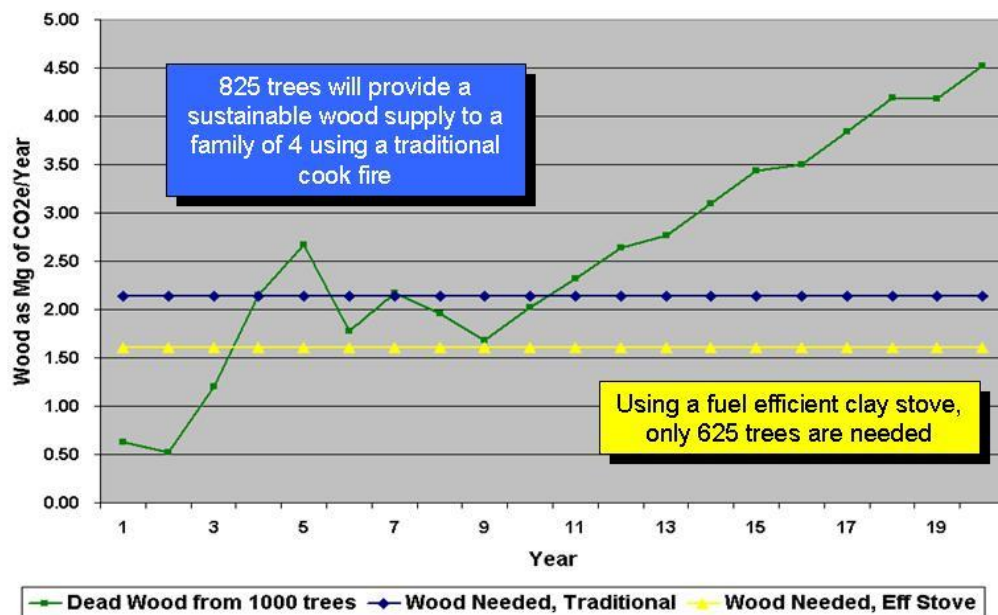
- **Improved beauty of the landscape:** This is a welcome attribute in an overused and degraded landscape.

The economic value to each member is dependent on which program elements they choose to adopt. The following chart illustrates the combined potential of several programs over time. As noted on the chart, it assumes that the Small Group plants 8,000 trees, which is about 1,000 trees per person. Underlying assumptions are based on conservative adoption rates and values gathered from TIST members.



Another benefit that the program provides is the potential for a sustainable fuel wood supply. The following chart models the deadwood available from planting 825 trees and how it can, if managed properly, lead to a sustainable wood supply for a family of four. The number of trees can be reduced by adopting fuel savings stoves.

# Sustainable Wood Supply



TIST's goal is to surpass "sustainability," so that people meet their needs today, in ways that improve the next generation's ability to meet its needs in the future.

## CM2.2 Mitigate Negative Well-being Impacts

Because the project takes place on private lands and the tree planting is by the landowners, and because the planting of trees is akin to the farming that has taken place on the lands for generations, there are few negative potential impacts to offsite stakeholders.

One that has been identified is the effect of eucalyptus trees on ground water and water courses. As stated, the farmers get to choose the type of trees they plant on their own lands. During training, TIST has been clear about some of the negative effects of eucalyptus trees. However, the Kenya Forest Department (now Kenya Forest Service) had historically encouraged the planting of eucalyptus, for years, to meet local needs for timber and utility poles.<sup>72</sup> Kenya Power and Lighting Company has been very vocal about their need for poles. Because of this, there are many eucalyptus trees in the project.

In order to reduce the number of eucalyptus trees, TIST has been requiring all Small Groups to reduce their percentage of eucalyptus to under 30% of their total trees and file forest plans that show how they are going to achieve this reduction.

## CM2.3 Net Well-being Impacts of the Project are Positive

<sup>72</sup> TIST KE PD-CCB-Spt 25 Eucalyptus Debate.pdf at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>



Without the TIST program, the communities carry on as they have. They are subsistence farmers doing what they can to eke out a living. They grow their own crop and raise their own livestock. Most do not practice any kind of Conservation Farming, or use more fuel-efficient stoves. Many don't have a stream of cash income that can pay for needed items such as other food and livestock, or even school fees for their children. Many are ignorant of AIDs and HIV, ways to avoid malaria and issues regarding clean water and air. TIST was designed to address these issues. Section CM1.2 itemizes the positive benefits our different programs and trainings. Each one is available to the members at zero cost.

Many of these programs have been covered in the Gold Level community survey (Section GL2) and monetized. It demonstrates that the program has an average benefit per person of over KES 140,000.

On the negative side, are the eucalyptus trees. However, although they are perceived to have a negative environmental impact, they are actually a good economic choice for most of the farmers. They grow fast and there is a cash market in poles and fuel wood.

Weighing the positives and the negatives, it has been demonstrated that the project has a net well-being impact compared to the "without project" land use scenario.

#### **CM2.4 HCV Areas Not Negatively Affected**

The project will not have a negative effect on the HCV areas. The project takes place on private lands that have been under human habitation and agriculture for generations. The planting of trees for the program will not cause displacement or move activities to the HCV areas. On the contrary, the two greatest threats to the HCV areas are deforestation and loss of biodiversity. The planting of new trees and availability of some of the biomass for use by the participants reduces deforestation pressure. The planting of woodlots on farms, especially where indigenous trees are planted, improves biodiversity and helps connect dispersed HCV areas with canopy.

### **CM3. Other Stakeholder Impacts**

#### **CM3.1 Positive and Negative Impacts on the Well-being of Other Stakeholders**

The positive effects on the well-being of the Other Stakeholders are:

- Improved food security. As TIST farmers grow more food through Conservation Farming and from fruit and not trees, there will be more local food.
- As TIST members undergo training, there will be spill over to friends and neighbors outside the TIST community. This includes Conservation Farming, successful tree planting, construction tree nurseries, building and using more fuel efficient stoves, indoor cooking pollution, use of trees for stabilizing soil and water courses, using mosquito nets, ways to mitigate climate change and all the other training themes.
- More locally sourced fuelwood. As the TIST trees grow, some of the farmer will have sustainable woodlots. Others will have more fuel wood from pruning, thinning and natural mortality. Some will have an excess that they can sell. The overall reduction in demand by TIST farmers will mean more supply for the Other Stakeholders.

The negative effects on the well-being of the Other Stakeholders are:

- If TIST training and program adoption is extremely successful, it could lower food cost, which would have a negative effect on food vendors.

- If TIST farmers are extremely successful, it could lower fuelwood cost, which would have a negative effect on fuelwood vendors.

### **CM3.2 Mitigate the Negative Well-being Impacts on Other Stakeholders**

The potential negative effects on the few food and fuel vendors are minimal and are actually positive for all the Other Stakeholders. We do not believe there is any mitigation necessary.

### **CM3.3 Mitigate the Negative Well-being Impacts on Other Stakeholders**

After comparing the positive and negative effects listed in CM3.1, it seems reasonable to conclude that the demonstration has been made.

## **CM4. Community Impact Monitoring**

### **CM4.1 Develop Community Monitoring Plan**

Since this Project has been active for years, it already has a monitoring program.

The monitoring will be of the TIST members, both within this PD (35,000 people) and of TIST Kenya as a whole (65,000 people).

The following are the components of the Community Impact Monitoring plan.

- Number of Small Group members in PD (male and female).
- Number of Small Groups in PD.
- Number of community members in TIST Kenya (male and female).
- Number of Small Groups in TIST Kenya.
- Number of community members active in TIST Kenya.
- Number of community members adopting natural resource management practices.
- Number of community members with greenhouse gas agreements with TIST.
- Total payments to community.
- Number of community members adopting Conservation Farming.
- Number of person-training sessions in climate change (male and female).
- Number of person-training sessions on HIV/AIDS (male and female).
- Number of person-training sessions on biodiversity (male and female).
- Number of live trees planted by TIST Kenya.
- Number of live trees planted in PD.
- Number of fruit or nut trees in PD.
- Number of eucalyptus trees in PD.
- Number of people employed by TIST or under contract to deliver services.

In addition, more program components, such as GPS tracts of all the Project Areas, are being obtained in the climate change monitoring plan.

Monitoring will be done as part of the overall monitoring of TIST. Data will be collected by TIST Quantifiers as they visit each Small Group, to count trees by species, count and measure Conservation Farming plots and count fuel efficient stoves. Trainers will collect training information at meetings, which will include the subjects covered and the number of people attending. The metric for training will be person-sessions, meaning the numbers reported are expected to exceed the number of members. Contracts will be collected and recorded by the administrative staff. The number of people employed, or under contract, with TIST and the amount of GhG payments to Small Groups will be obtained from administrative records.

Field data will be recorded on custom programmed hand held computers and uploaded to the TIST database. Data will be kept at least three years from the end of the reporting period.

#### **CM4.2 Develop Monitoring Plan for HCV**

The monitoring plan for the Lower Imenti Forest follows:

Number of Small Groups in Lower Imenti Forest  
Number of TIST indigenous trees in Lower Imenti Forest  
Number of hectares if TIST indigenous trees in Lower Imenti Forest  
Number of Project Areas in Lower Imenti Forest  
Number of Project Areas with indigenous trees in Lower Imenti Forest

#### **CM4.3 Disseminate Monitoring Plan**

All of the CCB and VCS documents, including the monitoring data, are available to the public on a dedicated web page.<sup>73</sup> Stakeholders are informed of this when they receive the email<sup>74</sup> advising them of the public meeting (section G3.3, above), at the public meeting, through reading this report that will be made public on the CCB project page and through reading the VCS registry posting.

### **GL2. Exceptional Community Benefits**

#### **GL2.1 Demonstrate Smallholders Rights the Project Area**

Each TIST member has signed a Small Group "Carbon Credit Sale Agreement" with the Project Proponent, wherein they attest to having rights to the Project Areas. As freehold land, they own the trees that are planted in the Project Area and their products. The carbon credits are an intangible product and no statutes exist to take away those rights. Each Agreement is posted on the TIST website (designated by an Adobe icon). For the protection of the members, access is password protected. Random contracts have been selected by the Verifiers for review.

#### **GL2.2 Demonstrate Project Generates Short- and Long-term Net Benefits**

Section CM2.1 summarizes the well-being benefits. They're both short-term and long-term benefits. Section CM2.2 lists the few theoretical negative benefits and Section CM2.3 concludes the project has an overall net benefit to the communities.

This is demonstrated further through the participatory surveys conducted of the members. As noted, TIST is a community-based program comprised of about 65,000 Kenyans (although not all subject to this PD). TIST developed a monitoring tool to identify some of the positive and negative impacts experienced by TIST members. Done in the form of a survey conducted with 124 random TIST members between June and August 2011, the interview tool consisted of 39 questions. The instructions for the survey are available in the survey overview document, CCB Support Document 17.<sup>75</sup> The survey form is available in CCB Support Document 18.<sup>76</sup> The four main topic areas of the survey were:

1. demographic/basic information (including literacy, income);

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<sup>73</sup> <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

<sup>74</sup> TIST KE PD-CCB-Spt 14h Public Comments PD-005 V02.docx at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

<sup>75</sup> TIST KE PD-CCB-Spt 17 GL2 Survey Overview.doc

<sup>76</sup> TIST KE PD-CCB-Spt 18 GL2 Community Benefits Survey.doc

2. TIST membership and participation information (including barriers to participation);
3. benefits from TIST activities (economic, environmental, and social, quantitative and perceptual) and negative impacts; and
4. Conservation Farming and food security.

The indicators were measured in order to differentiate between poorer and more vulnerable households using the Sustainable Livelihoods Approach and to identify and assess whether positive and negative impacts of the program are affecting households equally.

In March 2015, a similar survey was conducted for TIST by Yale School of Forestry & Environmental Studies and New England College. The number of members surveyed was 61. The survey results are available as Support Document 27.<sup>77</sup>

The results of the survey and the analysis of the results are in the report from the independent contractor, Support Documents 19 and 27. The following highlights how TIST provides exceptional community benefits. The results of the survey indicate that TIST has highly positive net benefits to the participants and community.

**Project Explicitly Pro-Poor.** The original survey indicates that 35.5% of the respondents make less than KES 12,000 (US\$123) per year and a cumulative total of 85% make less than 60,000 Ksh (US\$616) per year.<sup>78</sup> The Yale/NEC survey indicates 16% of the respondents make less than KES 1,000 (US\$116) and 71% make less than KES 5,000 (US\$582) per year.<sup>79</sup> Since income level for abject poverty varies between US\$1.00 per day and US\$2.00 per day, it is clear that most of the members of TIST are poor. Further analysis in the original report identified 15% of TIST members as particularly vulnerable meaning they met the following criteria:

- their animal ownership is in the lowest quartile (six animals or less);
- their land ownership is in the lowest quartile (two acres or less);
- there is only one adult living in the household, or single marital status.

The Yale/NEC survey only identified a single respondent (2%) that met the income criteria and the three vulnerability criteria. This person was in the KES 1,000-5000 income bracket. For the purpose of this analysis, this person is classified as Vulnerable 1. The Survey also identified five respondents (8%) in the "less than KES 1000" income bracket that fell below that animal ownership and land ownership vulnerability criteria, but were married. These respondents are classified as Vulnerable 2.

**Benefits to the Poor.** The surveys included questions to determine the benefits that the program provided to the members. In addition to the many trainings provided (see Community Impact Monitoring Report and the survey report), there are many cash and in-kind benefits. Since most of the members are poor, these indicators demonstrate how TIST benefits the poor.

Benefit	Original Survey	Yale/NEC Survey
Received a carbon stipend	34%. Average KES 296	69%. Average KES 1,069
Sold their own home-grown firewood or fruits/nuts	19% Average KES 4,814	70%. Average KES 25,992
Used/consumed their own home-grown fire wood or fruits/nuts	52%. Average KES 6,528	43%. Average KES 18,652
Harvested and used their own home-grown fodder/increased cattle	25%. Average KES 11,796	66%. Average KES 67,482
Trained in Conservation Farming	69%.	97%.

<sup>77</sup> TIST KE PD-CCB-Spt 27 YaleNEC Benefits Survey.xls

<sup>78</sup> Currency conversion, 97.25 KES = US\$1.00, 02 November 2011.

<sup>79</sup> Currency conversion, 103.5 KES = US\$1.00, 26 November 2015.

(CF) practices.		
Used CF practices and increase value of crop yield	49%. Average KES 12,150	82%. Average KES 7,483
Produced compost manure	29%. Average KES 6,913	54%. Average KES 6,366
Began keeping bees	19%. Average KES 1,040	26%. Average KES 1,134
Raised seedlings for sale or their own use	14%. Average KES 3,197	33%. Average KES 7,241

**Negative Impacts.** Because TIST is voluntary, few negative impacts were identified. While there were several scalar response questions in the survey, only a few could result in a "negative" response. The others only provided an indication of the level of perceived benefits.

- When asked if they lose money participating in TIST:

Response	All Surveys (n=124)	Vulnerable (n=19)	Women (n=61)
Very True	19%	21%	15%
Somewhat true	28%	26%	13%
Not at all true	58%	47%	59%

- When asked if they use too much land planting TIST trees and not enough for food and livestock:

Response	All Surveys (n=124)	Vulnerable (n=19)	Women (n=61)
Very True	5%	11%	3%
Somewhat true	15%	5%	16%
Not at all true	80%	84%	79%

- When asked if their families have less food to eat because of TIST:

Response	All Surveys (n=124)	Vulnerable (n=19)	Women (n=61)
Very True	10%	11%	10%
Somewhat true	10%	21%	16%
Not at all true	80%	68%	66%

- When asked if their friends and families were not happy that they were a members of TIST:

Response	All Surveys (n=124)	Vulnerable (n=19)	Women (n=61)
Very True	12%	11%	14%
Somewhat true	18%	11%	24%
Not at all true	70%	78%	62%

- When asked if they were too busy with TIST to do the important things they need to do:

Response	All Surveys (n=124)	Vulnerable (n=19)	Women (n=61)
Very True	10%	21%	11.5%
Somewhat true	16%	21%	11.5%
Not at all true	74%	53%	69%

In the Yale/NEC survey, the major negative issues centered on carbon payment. 25% of the respondents said they wanted more money for the carbon payments. At this time in the program, the farmers only receive a small tree stipend as an advance payment on the carbon. Once the project makes a profit, they will receive 70% of the profits. Unfortunately, the profitability of the project is tied to the voluntary carbon market and the prices received are low and there is no source for increases payments. 25% of the respondents also wanted more timely payments. This points to a need to keep improving the Cluster payment system. Though we have changed the payment system several times, including being an early adopter of the Mpesa mobile phone payment system, paying 65,000 farmers on a timely basis remains a challenge.

In summary, though there are many ways we can continue to improve TIST; there do not seem to be any "negative" effects that actually harm the farmers.

**Positive Net Benefit of TIST.** All the benefits from the Original Survey were monetized and the average for n=124 was KES 36,958. When it was determined for the vulnerable households (n=19), the total was KES 30,395. The total for women (n=61) was KES 36,749. In the Yale/NEC survey, the average for n=61 was 146,224. The benefits for the Vulnerable 1 person (n=1) were KES 72,560, for Vulnerable 2 it was KES 21,508 and for women it was KES 138,654.

The lower benefits for the Vulnerable 2 respondents appears to be the result of:

- 1) poor survey answers. Example: there were several cases where the respondent indicated they had benefits but no quantity was given and the survey calculated as a zero.
- 2) the respondent opted out or was unable to participate of some of the program elements. An example is livestock and animal products. The average for the total survey was 67,482 but the average for Vulnerable 2 was 10,436 reflecting the fact that three out of the five respondents reported no activity in this program. It is quite possible that the reason is that at their income bracket, they are unable to buy additional livestock.

While the Negative Impact section indicated that there is a perception among a few that there are some negative impacts, they were a minority. To determine if TIST violates the "do not harm" tenet of the Gold Level, we refer to the overall monetary benefits to all three classes (entire survey population, vulnerable households and women) and note significant increases in participant income. Furthermore, all groups reported more perceived benefits than negative impacts from their participation. Combining this with some of the benefits noted in the climate, community and biodiversity sections of the monitoring report, it is clear that TIST has established that no member of a poorer, or more vulnerable, social group will experience a net negative impact on their well-being or rights.

### **GL2.3 Risks for the Smallholders to Participate**

The risks to participating in TIST are covered in the discussions during the initial training prior to registration and during seminars. Trainers and Cluster Servants are available at Cluster meetings to answer any additional questions.

The identified risks are:

- The farmers could use too much of their farm land for tree planting and jeopardize their food security. TIST addresses this with training. 1) We ask that they only plant trees on land they don't need for crops. Sometimes this means that they just plant around their boundary or house. 2) We encourage them to plant some fruit and nut trees that can supplement their food supply and possibly lead to a cash crop allowing them to buy other food. 3) We train them in Conservation Farming to lead to higher crop yields than the traditional methods.
- They could spend money on seedlings but have their trees die. We do not want them spending money on seedlings. We train them to collect seeds to build Small Group nurseries. TIST was designed to have zero cost of entry for the subsistence farmer.



- Their trees could die. Early mortality is the biggest problem and it requires that the farmers follow the Conservation Farming method for their trees. Usually the trees thrive past the first year. If the trees die, they are free to use them for firewood. Historically, this has not been a common problem.

As noted in the negative impact section of GL2.2, and a worldwide membership of 78,000 volunteers, there is little risk and what risk there is does not seem to actually happen.

#### **GL2.4 Net Positive Impacts on Marginalized and/or Vulnerable People**

GL2.2 identifies the vulnerable people in the surveys. The original survey identified 15% of the respondents as vulnerable. Using the same criterion, the Yale/NEC survey only identified one respondent as most vulnerable (Vulnerable 1). However, we defined another subset of 8% by dropping the marital status criteria, and only including the "less than KES 1000" income bracket (Vulnerable 2). They report the following benefits:

<b>Benefit</b>	<b>Original Survey</b>	<b>YN-Vulnerable 1</b>	<b>YN-Vulnerable 2</b>
Cash incentives including carbon	Avg: KES 5,168	Avg: KES 4,000	Avg: KES 750
Sale and use of tree products	Avg: KES 4,417	Avg: KES 4,550	Avg: KES 5,220
Compost or fodder	Avg: KES 306	Avg: KES 4,000	Avg: KES 480
Livestock and animal products	n/a	Avg: KES 56,160	Avg: KES 10,036
Improved yield from CF	Avg: KES 1,350	Avg: KES 2,500	Avg: KES 3,312
Honey used or sold	Avg: KES 476	Avg: KES 0	Avg: KES 2,000
Manure	n/a	Avg: KES 1,350	Avg: KES 600
Seedlings sold or used	Avg: KES 6,850	Avg: KES 0	Avg: KES 510

Results show that these vulnerable households experienced a range of benefits from sales and savings. Notably, incremental livestock and their products and harvesting tree products such as fruit, nuts, fodder and firewood was important for this sub-group, with the new survey showing it has higher values than the cash payments. The lack of honey and seedling benefits for the single Vulnerable 1 respondent is interpreted as more a choice rather than a barrier.

There also did not appear to be significant barriers to meeting attendance for these households. The average meeting attendance was 8.7 Cluster meetings per year and 1.4 Small Group meetings per month in the Original Survey. The meeting attendance of the Yale/NEC survey was 11.2 Cluster meetings for the last year and 2.3 Small Group meetings per month. The meeting attendance of the single Vulnerable 1 respondent was 12 Cluster meetings for the last year and three Small Group meetings per month. The meeting attendance of the single Vulnerable 2 respondents was 9.8 Cluster meetings for the last year and 1.8 Small Group meetings per month. There was no significant difference in number of health trainings for the vulnerable households in the Original Survey versus survey pool, with an average of 5.3 health-training sessions since their time at TIST. In the Yale/NEC survey, the pool average was 22 training sessions per respondent, 21 sessions for the Vulnerable 1 respondent and 11 sessions for the Vulnerable 2 respondents. The lower number for the Vulnerable 2 was in part due to the survey responses being text answers ("yes", received training) rather than the number of sessions attended.

#### **GL2.5 Net Positive Impacts on Women**

The study also showed that women benefit from participation in TIST. A Chi-square test of the Original Survey showed no significant difference (at  $p < .05$ ) between male (48%) and female (52%) participants who have held leadership positions since their time at TIST. The Yale/NEC Survey showed that women receive 92% of the average benefits of men and attended more Cluster meetings and received more training than men. This is an important finding, given traditional gender roles within the culture of the Project Area.

<b>Yale/NEC Survey Training Results</b>	<b>Women</b>	<b>Men</b>
SG meetings/month attended	Average 2.1 meetings	Average 2.4 meetings
Cluster meetings/year attended	Average 11.4 meetings	Average 11.1 meetings
Health training sessions attended	Average 23.6 sessions	Average 21.9 sessions

## **GL2.6 Design and Implementation of a Benefit Sharing Mechanism**

This has been addressed throughout this document. TIST was developed for and by the subsistence farmers in the program. The Project Proponent gets one thing from this program, carbon credits. In exchange, the farmers get a prepayment based on tree count and will ultimately receive 70% of the profits. The farmers maintain ownership of their land, the trees and the tree products. They get 100% of any firewood, fodder, fruits or nuts that come from the trees. They receive training in many life improving topics at no cost. They choose which program is best for them and keep all the benefits derived from their adoption. They decide when to plant, where to plant and what to plant.

## **GL2.7 Communicating Benefits, Costs and Risks to Smallholders**

As mentioned throughout this document, TIST has a several month period between applications and registration where the farmers learn about the program. This includes the benefits, costs and risks. The training is done by farmers, so what they are told is based on their own membership. The evidence for this is 78,000 enthusiastic members. As seen in the survey results, they attend Small Group and Cluster meetings where they share their experience. As individuals, they are the direct recipients of the benefits. The carbon prepayments are done at Cluster Meeting in a transparent fashion.

## **GL2.8 Project Governance**

As noted throughout this document, TIST relies on self-governance. There are four people in the US management team. We do the marketing, PD work, provide funding for the Host Countries and provide guidance. The Host Countries are run by the farmers. There are no ex-pats overseeing them.

The small holders are part of a Small Group. They generally meet weekly for training, to share the Mazingira Bora newsletter, review the results of quantification, plant trees, tend nurseries, review the payment vouchers and work together on projects too big for one person. They practice rotating leadership so everyone gets a chance.

They are members of a Cluster. Clusters meet once per month at a location within walking distance of the members. Each Small Group sends two representatives to each Cluster meeting, where they receive training from Cluster Servants and other trainers, pick up the Mazingira Bora, get the payment vouchers, and get their carbon prepayment through Mpesa. The Clusters have three administrators: Cluster Leaders, Co-leaders, and Accountability people. They serve for a period of four months. After four months of service, the Cluster leader rotates out, the Co-leader becomes the Leader, the Accountability person becomes the Co-leader and the Accountability person is filled by Small Group members from the Cluster. Both women and men are leaders.

The Host Country is managed by the Leadership Council. It is made up of six to eight TIST farmers and two full time managers (Kenyan). They oversee day-to-day operations. Leadership is internally rotational and several of the positions are externally rotational. A gender balance is kept.

We also have teams of specialists, all of whom are TIST members. The tech support and QAQC is led by a TIST member that rose through the program based on his abilities. He is in charge of daily desk reviews and keeping the field monitoring system operational. Voucher payments are handled by a team of TIST farmers that have proven their ability. The expansion team is responsible for expanding TIST to new areas. There are over 60 Cluster Servants that serve as Quantifiers, trainers and liaison for one or more Clusters. The team is gender balanced.

The TIST program has certain aspects that are un-changeable. The program and benefits to the farmers are based on the ability to create and market GhG credits and all governance decisions must be made with that in mind. Also, the voluntary carbon market demand and prices are weak. Any discussion impacting the budget must involve US managers. We have many documents, including the TIST values, to help the members manage the day-to-day operations.

#### **GL2.9 Project Developing the Capacity of Smallholders**

Please see GL2.8.

# Biodiversity Section

## **B1. Biodiversity Without–project Scenario**

### **B1.1 Biodiversity at Start of Project**

The information regarding the biodiversity within the Project Zone at the time the project began was based on field observations and literature research.

Kenya is widely known for its abundant and diverse wildlife, especially large mammals. Although many of these animals are occasionally present in the Project Zone, the long history of human habitation and agriculture have pushed them to isolated pockets of protected areas such as the Mt Kenya National Park, Mt Kenya Forest, Meru Forest, Upper Imenti Forest, Nyambini Forest and Ndare Forest. Human animal conflicts are present in the general area. For example, there are many long distance fencing systems present in the Meru area to keep elephants away from areas of human habitat. Both the Project Areas and the non-protected parts of the Project Zone are lands under the control of subsistence farmers, where wildlife has been long removed and replaced by domesticated animals and plants.

The native ecology of the Project Zone that is located on the slopes of Mt Kenya and on the northeast trending highlands that pass through Meru and include the Nyambeni Hills, is the East African montane forest. The East African montane forest ecology type is found in areas of high elevation in East Africa and contains moderate levels of species richness, relative to other areas of equatorial Africa. In its natural state this region was, at lower elevations, composed of montane and sub-montane forest with areas of grassland, bamboo forests, and rock outcroppings interspersed; at higher elevations the cover changes to heathland and moorland. There are several birds endemic to this region, many of them restricted to relatively small geographic areas. They include Aberdare cisticola (*Cisticola aberdare*), Abbotts starling (*Cinnyricinclus femoralis*, VU) and Kenrick's starling (*Poeoptera kenricki*), Hunter's cisticola (*Cisticola hunteri*), Jackson's francolin (*Francolinus jacksoni*), and Sharpe's longclaw (*Macronyx sharpei*). There are no endemic large mammals, likely due to the lack of vegetation, which is more readily available at lower elevations. However, there are many small mammals native to the area, mostly from the shrews and rat families, as well as certain species of mongoose, squirrel, and hyrax. They include *Crocidura gracilipes*, *Crocidura raineyi*, *Crocidura ultima*, *Surdisorex norae*, *Surdisorex polulus*, *Grammomys gigas*, *Tachyoryctes annectens*, and *Tachyoryctes audax*. There are also six different species of chameleons found in certain areas of the eco-region, as well as the montane viper (*Vipera hndii*).<sup>80</sup> Fauna include trees such as *Podocarbs*, *Prunus africana*, *Hagenia abyssinica*, *Juniperus procera* and *Olea* and plants from the *Ardisiandra*, *Cinnobotrys* and *Stapfiella* genera.<sup>81</sup>

While this area has always been fragmented by mountains, over time it has become further fragmented by human disturbance. Clearing of forests for agricultural purposes (i.e. subsistence farming) has become commonplace across much of the eco-region. This clearly decreases habitat for native flora and fauna and has led to an increase in soil erosion and degradation, and therefore the degradation of the water supply as well. This trend was acknowledged by the Kenya Forest Service in their 1999 report entitled "Aerial survey of the destruction of Mt. Kenya, Imenti and Ngara Ndare Forest Reserves," which essentially compares Landsat imagery from different years to determine deforestation trends. The report also states the dangers posed by conversion of land from its natural state for use as tea and coffee plantations.<sup>82</sup> In addition, there are many other documented cases of this clear history of land degradation which can be found on the website for the World Wildlife Fund (these can be found in the footnotes).

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<sup>80</sup> World Wildlife Fund. [http://www.worldwildlife.org/wildworld/profiles/terrestrial/at/at0108\\_full.html](http://www.worldwildlife.org/wildworld/profiles/terrestrial/at/at0108_full.html)

<sup>81</sup> White, F. (1983), *The vegetation of Africa: a descriptive memoir to accompany the UNESCO/AETFAT/UNSO vegetation map of Africa* by F. White. UNESCO, Paris. cited by Wikipedia at <http://en.wikipedia.org/wiki/Fromontane>, viewed August 15, 2011.

<sup>82</sup> World Wildlife Fund. [http://www.worldwildlife.org/wildworld/profiles/terrestrial/at/at0108\\_full.html](http://www.worldwildlife.org/wildworld/profiles/terrestrial/at/at0108_full.html)

The lower altitude areas in the vicinity of Nanyuki and Naro Moru are part of the Northern Acacia-Commiphora bushlands and thickets. The Acacia-Commiphora bushlands and thickets cover type is a transition zone between wetter climates in southern Kenya and the drier climates bordering Somalia to the north; meaning that there are flora and fauna species which thrive both in tropical conditions as well very dry conditions. In a natural state, the ground cover would be dominated by *Acacia*, *Commiphora*, and *Boswellia*, and *Aristida*, *Stipa*, and *Chloris* grasses. Many of the large mammals commonly found across equatorial Africa, such as zebras, elephants, oryx, and rhinoceros, would naturally inhabit this region, but due to human encroachment are now restricted to the above mentioned parks and reserves. There are a few important endemic groups of species found in isolated locations, these include gerbils, rats, geckos, and larks.<sup>83</sup>

Much of this land has been converted for agricultural use, and so lacks most of the naturally occurring species. Due to a decrease in elephant populations, there has been an increase in forest cover (as opposed to more open scrublands). This is because elephants naturally suppress tree growth by knocking down trees for food. As mentioned above, there are many gazetted forests around Mount Kenya, with people living immediately adjacent to the forests.<sup>84</sup> This history of human habitation threatening the biodiversity of areas around Mt Kenya has been acknowledged by the Kenya Forest Service and is in fact being addressed in a national campaign to raise awareness of deforestation and increase forest cover.<sup>85</sup> The World Wildlife Fund also acknowledges these issues on their website and cites several of the above mentioned reports.

With the exception of some protected forests, little of the Project Zone that surrounds the Project Areas is in a natural state. This is due to high level of human activity, primarily for agriculture.

### **B1.2 High Conservation Value Areas in the Project Zone include**

The lands of the Project Zone are located in an area populated by subsistence farmers. The area has been settled for generations and has been degraded by human activity.

There is one HCV in the Project Zone, Lower Imenti National Forest. As part of the forest buffer around Mt Kenya, it is a protected area that is host to an elephant herd. It was severely degraded between the 1980's and 2000 due to an influx of "squatters".<sup>86</sup> In 2004-2005, the farmers were evicted by the Government of Kenya, and the land was left fallow. Instead of natural regeneration of diverse species, the exotic, invasive species *Lantana camara* took over and has overwhelmed natural regeneration. The deforestation and lantana invasion has caused a near collapse of biodiversity, with loss of many plant and animal species, leaving greatly diminished species diversity in the forest.

The vision of the Lower Imenti Participatory Forest Management Plan is "Lower Imenti Forest will be reclaimed from the invasive exotic species, returned to productive use, and then managed and conserved, sustainably providing goods and ecosystem services that lead to improved livelihoods of the forest adjacent communities, Kenyans, and the world at large."<sup>87</sup> The overall management objective of the management plan is to engage the local communities living around Lower Imenti Forest in a participatory process that promotes rehabilitation of degraded lands, and then conservation and management of the forest and local community livelihoods.<sup>88</sup> This document provides guidelines for staged reclamation of land infested by lantana and restoration of biodiversity using indigenous trees and natural regeneration when possible.

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<sup>83</sup> World Wildlife Fund. [http://www.worldwildlife.org/wildworld/profiles/terrestrial/at/at0711\\_full.html](http://www.worldwildlife.org/wildworld/profiles/terrestrial/at/at0711_full.html)

<sup>84</sup> World Wildlife Fund. [http://www.worldwildlife.org/wildworld/profiles/terrestrial/at/at0711\\_full.html](http://www.worldwildlife.org/wildworld/profiles/terrestrial/at/at0711_full.html)

<sup>85</sup> Kenya Forest Service.

[http://www.kenyaforestservice.org/index.php?option=com\\_content&view=article&id=157:forestry-minister-assures-lifting-of-logging-ban&catid=223:hict&Itemid=98](http://www.kenyaforestservice.org/index.php?option=com_content&view=article&id=157:forestry-minister-assures-lifting-of-logging-ban&catid=223:hict&Itemid=98)

<sup>86</sup> TIST KE PD-CCB-Spt 40 PFMP Lower Imenti 120530.doc at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

<sup>87</sup> Ibid.

<sup>88</sup> Ibid.

In 2012, the Kenya Forest Service gave CAAC and TIST permission to reforest some of the degraded areas of the Lower Imeni. They were given access to 200 ha to reforest in indigenous trees. TIST farmers carried out limited cultivation of the land cleared of *lantana* using Conservation Farming techniques, pioneer ground cover establishment, and inter-cropping of food and tree crops for the first three to five years of the tree growth, until the trees are large enough to shade-out and outcompete the *lantana*. In all cases, where members are cultivating for crops, they must also plant approved indigenous tree species at three meter spacing.

**Proximal VCVs:** As noted in CM1.2, there are three major HCVs in the vicinity of the Project Zone; Mt Kenya National Park, Aberdare National Park and Meru National Park. They are shown on the maps in G1.7.

Mt Kenya and the surrounding protected forests have High Conservation Values. The HCV of Mt Kenya is recognized. The national park was established in 1949. It was designated as a UNESCO biosphere reserve in 1978 and was made a UNESCO World Heritage Site in 1997. It is one of Kenya's five "water towers".<sup>89</sup> Aberdare National Park was established in 1950. The mountains in which it is located are considered one of the five "water towers" of Kenya.<sup>90</sup> Meru National Park is located northeast of Mt Kenya and occupies 870 square kilometers. While Meru is not a water tower, it is host to 13 rivers.<sup>91</sup>

### **B1.3 Biodiversity in Without-Project Scenario**

With the intervention of TIST, the Project Zone would continue to be farmed by the subsistence farmers that own the land. Due to decades of farm and intense human occupation the biodiversity has become a fraction of its natural state. For the most part, the farm plots are small and with each new generation they become smaller as they are shared by the farmer's offspring. The population of Kenya has quadrupled since 1970, putting more pressure on habitat availability, landscape connectivity and threatened species. Without intervention, there seems little likelihood that this trend will halt or reverse itself.

## **B2. Net Positive Biodiversity Impacts**

### **B2.1 Estimate Changes in Biodiversity**

As noted, the Project Areas are grasslands or croplands on private lands owned by subsistence farmers. They have a history of farming and as such, the baseline biodiversity is extremely low. Natural wildlife populations were eliminated or driven off, long ago and are currently restricted to transient animals. As such, the approach to improving biodiversity in the Project Areas must start with the basics and, in this case, means to plant indigenous trees. Isolated woodlots with indigenous trees will improve the connectivity of wildlife between natural forests.

Indigenous tree planting data are based on an evaluation of data provided from the monitoring plan, including tree counts by species and by Project Area. The results of indigenous tree planting to date are:

- 411,229 new indigenous trees
- 1,859 ha of indigenous trees

The Table B2.1 lists the indigenous species planted to date.

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<sup>89</sup> HCV Indicator 8.4. Areas that provide critical ecosystem services (e.g., hydrological services).

<sup>90</sup> HCV Indicator 8.4. Areas that provide critical ecosystem services (e.g., hydrological services).

<sup>91</sup> Ibid.



**Table B2.1**

<b>Scientific Name</b>
Acacia abyssinica
Acacia albida
Acacia mellifera
Acacia nilotica
Acacia seyal
Acacia spp.
Acacia tanganyikensis
Acacia tortilis
Acokanthera schimperi
Adansonia digitata
Albizia gummifera
Annona senegalensis
Annona spp.
Bersama abyssinica
Boscia coriacea
Brachystegia spiciformis
Brachystegia spp.
Bridelia taitensis
Burkea africana
Canarium schweinfurthii
Celtis durandii
Combretum molle
Commiphora africana
Cordia Africana
Cordia sinensis
Croton macrostachyus
Croton megalocarpus
Croton Sylvaticus
Cussonia holstii
Dalbergia lactea
Dichrostachys cinerea
Diospyros abyssinica
Diospyros mespiliformis
Dombeya rotundifolia
Dombeya spp.
Dovyalis abyssinica
Ehretia cymosa
Ensete ventricosum
Entada abyssinica
Erythrina abyssinica
Euclea divinorum
Ficus sur
Ficus sycomorus
Ficus thonningii
Hagenia abyssinica
Harungana spp.
Kigelia africana
Landolphia Petersiana
Lonchocarpus capassa
Lovoa swynnertonii
Lumnitzera racemosa

<b>Scientific Name</b>
Maesopsis eminii
Markhamia lutea
Melia volkensii
Myrianthus holstii
Newtonia buchananii
Ocotea kenyensis
Ocotea usambarensis
Olea capensis
Olea europaea
Olinia rochetiana
Ozoroa insignis
Pentas longiflora
Phoenix reclinata
Podocarpus falcatus
Polyscias fulva
Prunus africana
Rhus vulgaris
Rubus spp.
Rumex usambarensis
Sapium ellipticum
Sclerocarya birrea subsp. caffra
Solanum aculeastrum
Spathodea campanulata
Spirostachys africana
Strychnos cocculoides
Strychnos henningsii
Syzygium cordatum
Syzygium guineense
Teclea nobilis
Terminalia brownii
Toddalia asiatica
Trichilia emetica
Vangueria infausta
Vangueria spp.
Vernonia brachycalyx
Vitex keniensis
Warburgia ugandensis
Withania somnifera
Ximenia americana
Zanthoxylum chalybeum

An Environmental Impact Audit was carried out by Natural Resources Management & Development Agency (NAREDA Consultants) in Meru and Nanyuki areas of Kenya,<sup>92</sup> to assess the environmental conditions and biodiversity of the area and to assess positive and negative environmental impacts of TIST project activities. The EIA and other assessments indicate that the Project Areas themselves are not areas rich in biodiversity. However, some areas border Mt Kenya and conserved forest, areas rich in biodiversity. By providing fuel wood from sustainable wood lots and improving livelihoods, the project should have a positive effect on biodiversity.

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<sup>92</sup> TIST KE PD-CCB-Spt 04 EIA Report NAREDA 100506.doc at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

Promotion of Conservation Farming will further reduce pressure on forestland by increasing food productivity by, and consequently decreasing pressure for, land clearing for agriculture. Biodiversity is also enhanced directly through the planting of indigenous trees, both in specific riparian 'biodiversity' groves, and through dispersed interplanting, homestead planting and woodlots. Increases in tree biodiversity should also enhance diversity of associated species, including pollinators, and other beneficial species, while protection of riparian areas will improve water quality and provide other important ecosystem services.

## **B2.2 Demonstrate that the Project's Net Impacts on Biodiversity are Positive**

As noted in B1.3, the without-project scenario is rather bleak for biodiversity. Generations of human occupation and farming have made the Project Area biodiversity-poor. With TIST it has improved. We have already planted 410,389 indigenous trees covering 1,858 ha and contained in 15,955 Project Areas. These are islands of biodiversity in a degraded landscape matrix that provide connectivity among the three aforementioned HCV areas and other natural forests. There are over 21,000 total Project Areas operated by farmers that are receiving ongoing training in biodiversity and natural resource management. Those of these that do not have indigenous trees still provide forest cover. In addition, there are 259,582 fruit and nut trees covering 1,177 ha. These provide a source of food and nectar for bees, birds, small animals living on, or around, the farms and larger animals when present.

Comparing the without-project scenario and with-project conditions, it has been demonstrated that the project has a net positive impact on biodiversity.

## **B2.3 Measures to Mitigate Impacts on Biodiversity**

Given the without-project scenario, the negative impacts on biodiversity are di minimis. It might be said that the project could do more by planting more indigenous trees, but TIST needs to balance that with the needs of the farm. A project that supplies long term resources for the farmer has a greater likelihood of being sustainable than a project that delivers greater biodiversity, at the cost of community benefits. As such, the only negative impacts we have identified are species selection, which is addressed below.

## **B2.4 No HCVs are Negatively Affected by the Project**

TIST does not have a negative effect on the Lower Imenti Forest. In fact, Kenya Forest Service recognized the benefit of using TIST farmers to clear the invasive vegetation and plant indigenous trees. In exchange, the farmers can interplant crop for three to five years, until the canopy cover inhibits farming.

TIST does not have a negative effect on the three HCVs near the TIST Project Areas (Mt Kenya, Aberdare and Meru National Parks). TIST activities do not take place inside those areas. TIST trees are being planted where deforestation has taken place. The addition of indigenous trees, tree cover and fruit trees enhance biodiversity by providing an expanded range for some of the animals that rely on the HCV area. In addition, the many discrete Project Areas help improve the wildlife corridors, between HCV areas, needed for healthy animal populations.

## **B2.5 Species used by the Project**

Because TIST does not provide seeds or seedlings, TIST farmers collect seeds from locally existing trees that have a history of being grown in the country and regionally. Farmers are trained on how to harvest seeds from local trees, for their nurseries and tree planting, and on benefits of varied species. Because the farmers own the trees that they plant, the species are selected by the Small Groups based on their needs and the benefits, which they desire to obtain. As a result, numerous species and varieties have been selected. Table B2.5 lists the species present in the Project Areas and indicates whether they are indigenous to Kenya. Additional species may be added over the life of the project as additional planting takes place.

**Table B2.5**

<b>Scientific Name</b>	<b>Indigenous</b>
Acacia abyssinica	yes
Acacia albida	yes
Acacia mearnsii	no
Acacia mellifera	yes
Acacia nilotica	yes
Acacia seyal	yes
Acacia spp.	yes
Acacia tanganyikensis	yes
Acokanthera schimperi	yes
Adansonia digitata	yes
Albizia gummifera	yes
Anacardium occidentale	no
Aniba rosaeodora	no
Annona muricata	no
Annona senegalensis	yes
Annona spp.	yes
Artocarpus heterophyllus	no
Azadirachta indica	no
Bersama abyssinica	yes
Blighia unijugata	no
Bombax ceiba	no
Brachychiton acerifolium	no
Brachystegia spiciformis	yes
Brachystegia spp.	yes
Bridelia taitensis	yes
Burkea africana	yes
Callistemon spp.	no
Canarium schweinfurthii	yes
Casimiroa edulis	no
Casuarina equisetifolia	no
Cedrela Odorata	no
Celtis durandii	yes
Citrus aurantifolia	no
Citrus limonum	no
Citrus reticulata	no
Citrus sinensis	no
Cocos nucifera	no
Combretum molle	yes
Cordia Africana	yes
Cordia monoica	no
Croton macrostachyus	yes
Croton megalocarpus	yes

Scientific Name	Indigenous
Croton Sylvaticus	yes
Cupressus spp.	no
Cussonia holstii	yes
Dalbergia lactea	yes
Dendrocalamus giganteus	no
Dichrostachys cinerea	yes
Diospyros mespiliformis	yes
Dombeya rotundifolia	yes
Dombeya spp.	yes
Dovyalis abyssinica	yes
Ehretia cymosa	yes
Endiandra glauca	no
Ensete ventricosum	yes
Entada abyssinica	yes
Eriobotrya japonica	no
Erythrina abyssinica	yes
Eucalyptus grandis	no
Euclea divinorum	yes
Ficus elastica	no
Ficus sycomorus	yes
Ficus thonningii	yes
Fraxinus berlandieriana	no
Fraxinus pennsylvanica	no
Gmelina Arborea	no
Grevillea robusta	no
Hagenia abyssinica	yes
Harungana spp.	yes
Jacaranda mimosifolia	no
Khaya nyasica	no
Kigelia africana	yes
Landolphia Petersiana	yes
Leucaena leucocephala	no
Lonchocarpus capassa	yes
Lovoa swynnertonii	yes
Macadamia spp.	no
Maesopsis eminii	yes
Mangifera indica	no
Markhamia lutea	yes
Melia volkensii	yes
Moringa oleifera	no
Morus alba	no
N/A	no
Newtonia buchananii	yes

Scientific Name	Indigenous
Ocotea usambarensis	yes
Olea europaea	yes
Ozoroa insignis	yes
Pentas longiflora	yes
Persea americana	no
Phoenix reclinata	yes
Pinus Patula	no
Pinus spp.	no
Piptadeniastrum africanum	no
Pithecelobium dulce	no
Podocarpus falcatus	yes
Polyscias fulva	yes
Pouteria sapota	no
Prunus africana	yes
Prunus persica	no
Prunus spp.	no
Psidium guajava	no
Pterocarpus spp.	no
Rapanea melanophloeos	no
Rhamnus spp.	no
Rhus vulgaris	yes
Rubus spp.	yes
Rumex usambarensis	yes
Sapium ellipticum	yes
Schinus molle	no
Senna spectabilis	no
Sesbania grandiflora	no
Solanum aculeastrum	yes
Spathodea campanulata	yes
Spirostachys africana	yes
Strychnos henningsii	yes
Strychnos madagascariensis	no
Swietenia mahagoni	no
Syzygium cordatum	yes
Syzygium guineense	yes
Tamarindus indica	no
Teclea nobilis	yes
Terminalia brownii	yes
Toddalia asiatica	yes
Toona ciliata	no
Trichilia emetica	yes
unknown	na
Vangueria spp.	yes



Scientific Name	Indigenous
Vernonia brachycalyx	yes
Vitex keniensis	yes
Warburgia ugandensis	yes
Zanthoxylum chalybeum	yes

**Invasive Species.** All listed species have been screened against the global database of invasive species.<sup>93</sup> While two on the above list are included for Kenya, they are high value trees in Kenya, and, according to the Kenya Forest Service, are not invasive.<sup>94</sup>

The first is the guava tree, *Psidium guajava*. It is a mainstay of the Kenyan diet and provides one of the most popular fruits. According to one study in western Kenya, over 25% of the households surveyed consumed guava in a seven-day period and 87.5% gathered guava.<sup>95</sup> Believed to be from Central America, it was brought to Africa in the 1800s, where it has become an important fruit that adds to the economic well-being and food security of Kenyans. It is being planted on agricultural lands and not in the natural forest. There are 6,449 guava trees, or 0.26%.

The second, *Leucaena leucocephala*, is widely planted for forage production and reforestation. It was introduced generations ago, probably from Central America, and while it may be invasive in the natural forest, it is very popular and useful in agriculture. It benefits the soil, is a better fodder than alfalfa, has year-round blooms to foster honeybees, has seeds that can be used for biofuels and is excellent for firewood.<sup>96</sup> It is being planted on agricultural lands and not in the natural forest. There are 209 leucaena trees, or 0.01%.

## B2.6 Adverse effects of non-native species

TIST does not provide seeds or seedlings, so the trees planted by TIST farmers are locally sourced from existing trees with a history of being grown in the country and region. They choose both indigenous and non-native species for their varied benefits. Some species, notably eucalyptus, may have negative impacts if not managed with care. Eucalyptus, popular in Kenya since its introduction in 1902, for its fast growth,<sup>97</sup> is known to set deep roots that may deplete water resources, without sustainable management.

TIST farmers agree, as part of their contract, that trees that damage the environment will not be counted as TIST trees. Groups are trained on the benefits of alternative indigenous trees and how to grow these trees, and develop group forest plans to decrease eucalyptus on their farms to less than 30% of total trees planted. Farmers are also trained on governmental policies on eucalyptus. Indigenous trees, including water conserving species such as *Bridelia* and *Syzygium* spp, are encouraged in riparian areas, both through training on best species, and through an additional PES, per indigenous tree, planted in groves within 100 meters of a waterway.

<sup>93</sup> International Union of Concerned Scientists, Global Invasive Species Database, Accessed 11 January, 2011 at <http://www.issg.org/database>.

<sup>94</sup> Anampiu G.M., Kenya Forest Service, letter to Charles Ibeere, Clean Air Action Corporation, October 28, 2010. TIST KE PD-CCB-Spt 05 KFS Invasive Species 101028.jpg at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

<sup>95</sup> Ekesa BN, Walingo MK, and MO Abukutsa-Onyango, " Accessibility to and consumption of indigenous vegetables and fruits by rural households in Matungu division, Western Kenya. 2009. <http://www.thefreelibrary.com/Accessability+to+and+consumption+of+indigenous+vegetables+and+fruits...-a0214999629>, accessed January 1. 2017.

<sup>96</sup> World Agroforestry Centre, AgroForestryTree Database, "Leucaena leucocephala." Accessed at <http://www.worldagroforestrycentre.org/sea/Products/AFDbases/af/asp/SpeciesInfo.asp?SpID=1069>, on October 26, 2010.

<sup>97</sup> The Big Debate Over Eucalyptus, *Daily Nation*, Daniel Wesangula, <http://www.greenbeltmovement.org/a.php?id=446>

Small Group members are trained to follow TIST best practices in riparian areas. They should not cut down or clear existing indigenous trees, plants or ground cover; not till soil within 30 meters of the waterway, and not plant eucalyptus within 100 meters of a waterway.

Training, monitoring, and incentives are all structured to encourage farmers to plant diverse trees with diverse benefits. Because of all of these active steps taken to safeguard against deleterious environmental effects, negative impacts are not expected.

The use of non-native species is justified in a number of ways. Farmers choose species that provide them with needed products and services. Project activities are on lands already impacted by long-term human habitation and agriculture. Many species, like mango and avocado, while not indigenous, have been naturalized over an extended period of time and provide much needed food. Others, like eucalyptus, cypress and grevillea, are chosen for their fast growth. In a country with a high need for forest products, including fuel wood for cooking and timber for construction, sources of sustainable wood products must be developed to substitute natural forest being lost through deforestation. The Kenya Forest Service continues to promote eucalyptus to conserve biodiversity, since cultivated eucalyptus wood can replace indigenous species otherwise harvested for fuel-wood degrading natural forests.<sup>98</sup> No fast growing indigenous alternatives have been identified.

### **B2.7 No GMOs will be used for GhG removals**

The Project Proponent guarantees no GMOs will be used by the project to generate GHG emissions reductions or removals.

### **B2.8 Fertilizers, Chemical Pesticides, Biological Control Agents**

It is TIST's policy to not use chemical fertilizers and pesticides. Farmers are trained to make and use their own compost and to use dung. In addition, the cost of chemical fertilizers and pesticides is prohibitive.

### **B2.9 Managing Waste Products from Project Activities**

Because of the nature of TIST, there are no waste products. Fallen leaves are left to decay back into the soil. Fallen woody material, from twigs to trees, are consumed as fuelwood, or used as construction material.

## **B3. Offsite Biodiversity Impacts**

### **B3.1 Potential Negative Impacts on Biodiversity Outside the Project Zone**

There should not be any negative impacts on biodiversity outside the Project Zone. TIST activity should actually help it by:

- Increasing the on-farm firewood inventory and therefore reducing pressure to take fuelwood from the natural forest.
- Increasing crop yields reducing pressure to clear natural forest for more farm land.
- Reduce fuelwood consumption from more fuel-efficient wood stoves, reducing pressure for fuelwood that might be taken illegally from the natural forests.
- Providing thousands of islands of biodiversity that help connect the natural forests that are separated by active farms.

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<sup>98</sup> Kenya Forest Service. A guide to on-farm eucalyptus growing in Kenya. 2009.  
[http://www.wrm.org.uy/countries/Kenya/Eucalyptus\\_guidelines.pdf](http://www.wrm.org.uy/countries/Kenya/Eucalyptus_guidelines.pdf)

### **B3.2 Mitigation of Negative Impacts on Biodiversity Outside the Project Zone**

No negative impacts have been identified and therefore no mitigation is needed.

### **B3.3 Unmitigated Negative Impacts on Biodiversity Outside the Project Zone**

Not applicable, since no negative offsite biodiversity impacts are expected.

## **B4. Biodiversity Impact Monitoring**

### **B4.1 Develop Monitoring Plan**

TIST has been operating in Kenya since 2004 and has deployed an award-winning monitoring system that collects data for, among other things, biodiversity. The monitoring plan described, herein, is the full monitoring plan.

The plan uses TIST's strength in gathering, verifying, and analyzing field data to measure critical biodiversity metrics in the farms and groves where TIST farmers work and live. Trees will be the main focus of biodiversity impact monitoring since they provide important habitat diversity and structural features for biodiversity. Tree biodiversity is expected to increase as a result of awareness raising, training and incentives. We will monitor and report on the TIST website the species planted, number of trees of each species planted in each area, and, as the trees grow, the age and circumference of these trees. Quantification is a constant process and as a Project Area is monitored, new data will populate the website. Annual monitoring of each site is expected and a minimum of every two years will be achieved.

Trends in landscape connectivity and forest fragmentation have been addressed, using the track data collected by the Quantifiers. The location, extent and area of each Project Area have been obtained. The location and perimeter of each Project Area will be presented.

The following is the monitoring Plan:

- Number of trees
- Total hectares of the project
- Number of Project Area
- Number of trees and hectares by species
- Number of indigenous trees
- Hectares of indigenous trees
- Number of Project Areas with indigenous trees
- Number of indigenous trees and hectares by species
- The area and location of each Project Area
- A KML file that displays the name, location and boundary of each Project Area on Google Earth:
- The tree inventory of each Project Area

### **B4.2 Develop Monitoring Plan to Assess HCV Areas**

The monitoring plan in B4.1 will include the HCV area in the Lower Imenti Forest.

- Number of indigenous trees
- Hectares of indigenous trees
- Number of Project Areas with indigenous trees

- Number of Project Areas with indigenous trees
- Number of indigenous trees and hectares by species
- A KML file that displays the name, location and boundary of each Lower Imenti Project Area on Google Earth

### **B4.3 Disseminate the Monitoring Plan**

All of the CCB and VCS documents including the monitoring data are available to the public on a dedicated web page.<sup>99</sup> Stakeholders are informed of this when they receive the email<sup>100</sup> advising them of the public meeting (section G3.3, above), at the public meeting, through reading this report that will be made public on the CCB project page and through reading the VCS registry posting.

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<sup>99</sup> <http://www.tist.org/PD-KE-VCS-005%20Documents.php>

<sup>100</sup> TIST KE PD-CCB-Spt 14h Public Comments PD-005 V02.docx at <http://www.tist.org/PD-KE-VCS-005%20Documents.php>