MONITORING REPORT FOR TIST PROGRAM IN KENYA

CCB-001, VERIFICATION 03

TIST
The International Small Group & Tree Planting Program

Document Prepared by Clean Air Action Corporation

Project Title	TIST Program in Kenya, CCB-001
Project ID	VCSPD594, VCSPD595, VCSPD596, VCSPD597
Version	Version 03
Report ID	KE PD-CCB-001, Verification 03
Date of Issue	22 May, 2020
Project Location	Kenya: Counties of Kirinyaga, Laikipia, Meru, Nyeri, Tharaka Nithi
Project Proponent(s)	Clean Air Action Corporation (CAAC) 4112 Timbervale Drive Evergreen CO, USA 80439 Telephone 720-394-2112 CharlieWilliams@CleanAirAction.com Tist.org
Prepared By	Charlie Williams Telephone 720-394-2112 CharlieWilliams@CleanAirAction.com
Validation/Verification Body	AENOR Internacional, S.A.U. Jose Luis Fuentes Perez Génova, 6. 28004 MADRID, SPAIN Telephone: (+34) 915 294 961 jfuentes@aenor.com www.aenor.com

GHG Accounting/Crediting Period	30 years starting 01-January-2004 and ending 31-December-2033
Monitoring Period of this Report	12-August-2015 – 22-May-2020
History of CCB Status	**Validated as UG-CCB-001 (Second Edition):** 09-March-2012 **First Verification (Second Edition):** 01-January-2004 to 31-December-2010. Verification report dated 09-March-2012 **Second Verification (Second Edition):** 01-January-2011 to 11-August-2015. Verification report dated 24-March-2016 **Third Verification (Second Edition):** This report
Gold Level Criteria	**Climate Change Adaptation Benefits** The TIST KE 001 has removed more than a million tonnes of CO2 from the atmosphere. TIST members are trained in Conservation Farming to help address climate resiliency. This PD documents 456,422 trees that help retain soil moisture, provide shade and prevent erosion. TIST provides new community organization in the form of Clusters and Small Groups. **Exceptional Community Benefits** Demonstrated to be pro-poor in a poor area and with net positive impacts on community. Farmer members generate and receive short- and long term benefits. TIST trains farmers in many sustainable development programs that, when implemented, generate benefits to well-being. They grow trees and receive a share of the carbon revenues. They determine where to grow their trees, what species to grow that will be most beneficial to their well-being and how many to plant. During this period, the average farmer has received $6,619 in monetized benefits. As separate classes, the average vulnerable and women member has received $1,365 and $6,268, respectively. **Exceptional Biodiversity Benefits** *Vitex keniensis* (Meru Oak) is endemic to the Mount Kenya region and is listed as endangered on the IUCN Red List. The population trend is assessed as decreasing. TIST farmers in this PD have planted and maintain 5,527 V*itex keniensis*, a clear, direct benefit to the species.

Table of Contents

1 Summary of Project Benefits 4
1.1 Unique Project Benefits 4
1.2 Standardized Benefit Metrics 4
2 General 8
2.1 Project Description 8
2.2 Project Implementation Status 13
2.3 Stakeholder Engagement 23
2.4 Management Capacity and Best Practices 26
2.5 Legal Status and Property Rights 29
3 Climate 32
3.1 Monitoring GHG Emission Reductions and Removals 32
3.2 Quantification of GHG Emission Reductions and Removals 40
3.3 Optional Criterion: Climate Change Adaptation Benefits 45
4 Community 46
4.1 Net Positive Community Impacts 46
4.2 Offsite Stakeholder Impacts 49
4.3 Community Impact Monitoring 50
4.4 Optional Criterion: Exceptional Community Benefits 54
5 Biodiversity 61
5.1 Net Positive Biodiversity Impacts 61
5.2 Offsite Biodiversity Impacts 65
5.3 Biodiversity Impact Monitoring 66
5.4 Optional Criterion: Exceptional Biodiversity Benefits 68
6 Additional Project Implementation Information 68
7 Additional Project Impact Information 68
8 Appendices 69

1 SUMMARY OF PROJECT BENEFITS

1.1 Unique Project Benefits

Outcome or Impact	Achievements during the Monitoring Period	Section Reference	Achievements during the Project Lifetime
1) Carbon payments to all TIST KE members.	$420,930	4.3.2	$1,037,699
2) Members in PD	7,767 people; 3,012 women; 4,653 men; remainder undifferentiated	4.3.2	7,767 people; 3,012 women; 4,653 men; remainder undifferentiated
3) Total monetized benefits to the average (generally poor) TIST member.	$6,619	4.3.2	$9,227
4) Total monetized benefits to the average vulnerable TIST member.	$1,365	4.3.2	$2,033
5) Total monetized benefits to the average female TIST member.	$6,268	4.3.2	$8,758

1.2 Standardized Benefit Metrics

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
GHG emission reductions & removals	Net estimated emission removals in the project area, measured against the without-project scenario	-4,697 loss this period	3.2.4	180,143
	Net estimated emission reductions in the project area, measured against the without-project scenario	not applicable	na	not applicable
For est[1] cov er	For REDD[2] projects: Number of hectares of reduced forest loss in the	not applicable	na	not applicable

[1] Land with woody vegetation that meets an internationally accepted definition (e.g., UNFCCC, FAO or IPCC) of what constitutes a forest, which includes threshold parameters, such as minimum forest area, tree height and level of crown cover, and may include mature, secondary, degraded and wetland forests (*VCS Program Definitions*)

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
	project area measured against the without-project scenario			
	For ARR[3] projects: Number of hectares of forest cover increased in the project area measured against the without-project scenario	306 loss	3.1.4	990 maintained
Improved land management	Number of hectares of existing production forest land in which IFM[4] practices have occurred as a result of the project's activities, measured against the without-project scenario	not applicable	na	not applicable
	Number of hectares of non-forest land in which improved land management has occurred as a result of the project's activities, measured against the without-project scenario	306 loss	3.1.4	990 maintained
Training	Total number of community members who have improved skills and/or knowledge resulting from training provided as part of project activities	7,767 have achieved this during this period.	4.1.1	8,047 original active members
	Number of female community members who have improved skills and/or knowledge resulting from training provided as part of project activities of project activities	3,012 have achieved this during this period.	4.1.1	3,125 original active women
Employment	Total number of people employed in of project activities,[5] expressed as number of full time employees[6]	2 full time 6 independent contractors (IC) in	4.3.1	2 full time 6 independent contractors (IC) in

[2] Reduced emissions from deforestation and forest degradation (REDD) - Activities that reduce GHG emissions by slowing or stopping conversion of forests to non-forest land and/or reduce the degradation of forest land where forest biomass is lost (*VCS Program Definitions*)
[3] Afforestation, reforestation and revegetation (ARR) - Activities that increase carbon stocks in woody biomass (and in some cases soils) by establishing, increasing and/or restoring vegetative cover through the planting, sowing and/or human-assisted natural regeneration of woody vegetation (*VCS Program Definitions*)
[4] Improved forest management (IFM) - Activities that change forest management practices and increase carbon stock on forest lands managed for wood products such as saw timber, pulpwood and fuelwood (VCS Program Definitions)
[5] Employed in project activities means people directly working on project activities in return for compensation (financial or otherwise), including employees, contracted workers, sub-contracted workers and community members that are paid to carry out project-related work.

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
		Leadership council 66 (IC) Cluster servants 7,767 farmers receiving benefits		Leadership council 66 (IC) Cluster servants 8,047 farmers receiving benefits
	Number of women employed in project activities, expressed as number of full time employees	0 full time women 4 independent contractors (IC) in Leadership council 39 (IC) Cluster servants 3,012 females received benefits	4.3.1	0 full time women 4 independent contractors (IC) in Leadership council 39 (IC) Cluster servants 3,125 females received benefits
Livelihoods	Total number of people with improved livelihoods[7] or income generated as a result of project activities	7,767 have achieved this during this period.	4.3.1	8,047 original active members
	Number of women with improved livelihoods or income generated as a result of project activities	3,012 have achieved this during this period.	4.3.1	3,125 original active women
Health	Total number of people for whom health services were improved as a result of project activities, measured against the without-project scenario	not applicable	na	not applicable
	Number of women for whom health services were improved as a result of project activities, measured against the without-project scenario	not applicable	na	not applicable
Education	Total number of people for whom access to, or quality of, education was improved as a result of project	not applicable	na	not applicable

[6] Full time equivalency is calculated as the total number of hours worked (by full-time, part-time, temporary and/or seasonal staff) divided by the average number of hours worked in full-time jobs within the country, region or economic territory (adapted from UN System of National Accounts (1993) paragraphs 17.14[15.102];[17.28])

[7] Livelihoods are the capabilities, assets (including material and social resources) and activities required for a means of living (Krantz, Lasse, 2001. The Sustainable Livelihood Approach to Poverty Reduction. SIDA). Livelihood benefits may include benefits reported in the Employment metrics of this table.

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
	activities, measured against the without-project scenario			
	Number of women and girls for whom access to, or quality of, education was improved as a result of project activities, measured against the without-project scenario	not applicable	na	not applicable
Water	Total number of people who experienced increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	not applicable	na	not applicable
	Number of women who experienced increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	not applicable	na	not applicable
Well-being	Total number of community members whose well-being[8] was improved as a result of project activities	7,767 have achieved this during this period.	5.3.1	8,047 original active members
	Number of women whose well-being was improved as a result of project activities	3,012 have achieved this during this period.	4.1.1	3,125 original active women
Biodiversity conservation	Change in the number of hectares significantly better managed by the project for biodiversity conservation,[9] measured against the without-project scenario	306 loss	5.1.4	990 maintained

[8] Well-being is people's experience of the quality of their lives. Well-being benefits may include benefits reported in other metrics of this table (e.g. Training, Employment, Health, Education, Water, etc.), but could also include other benefits such as empowerment of community groups, strengthened legal rights to resources, conservation of access to areas of cultural significance, etc.

[9] Biodiversity conservation in this context means areas where specific management measures are being implemented as a part of project activities with an objective of enhancing biodiversity conservation.

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
	Number of globally Critically Endangered or Endangered species[10] benefiting from reduced threats as a result of project activities,[11] measured against the without-project scenario	5,527 *vitex keniensis* planted and maintained	na	5,527 *vitex keniensis* planted and maintained

2 GENERAL

2.1 Project Description

2.1.1 Implementation Description

TIST Program in Kenya, CCB-001 is an umbrella for four separate VCS projects: TIST Program in Kenya, VCS-001, VCS-002, VCS-003 and VCS-004.[12] The four projects have been fully operational since 2004. KE-CCB-001 was validated and first verified on 11-April-2011 by Environmental Services, Inc. (ESI). The monitoring period was 01-January-2004 to 31-December-2010. The verification demonstrated 1,078 Small Groups, 8,047 members, 4,264 project areas, 1,565 ha and 1,699,076 trees.

KE-CCB-001 was verified a second time 24-March-2016 by EPIC Sustainability Services Private Limited (EPIC). The monitoring period was 01-January-2011 to 11-August-2015. The verification demonstrated 1,078 of the Small Groups, 8,047 members, 4,264 project areas 1,565 ha and 758,095 trees.

This is the third verification of KE-CCB-001 and was conducted by AENOR Internacional, S.A.U. The monitoring period was 12-August-2015 to 22-May-2020. The monitoring demonstrated 2,912 Small Groups, 7,767 members, 3,529 project areas, 990 ha and 456,422 trees. The following is the verification history, including the total GHG removals generated in this monitoring period.

Verification Number	Date	Monitoring Period	Cum Gross Reductions
Verif 01	11-Apr-11	01-Jan-04 to 31-Dec-10	80,627
Verif 02	24-Mar-16	01-Jan-11 to 11-Aug-15	184,841
Verif 03	Pending	12-Aug-15 to 22-May-20	180,144

[10] Per IUCN's Red List of Threatened Species
[11] In the absence of direct population or occupancy measures, measurement of reduced threats may be used as evidence of benefit
[12] Appendix 13 Monitoring Report: TIST KE PD-VCS-001n App13 Verif 03 Monitoring Rpt 200522.pdf, TIST KE PD-VCS-002n App13 Verif 03 Monitoring Rpt 200522.pdf, TIST KE PD-VCS-003n App13 Verif 03 Monitoring Rpt 200522.pdf and TIST KE PD-VCS-004n App13 Verif 03 Monitoring Rpt 200522.pdf at http://www.tist.org/PD-KE-VCS-001-004%20Documents.php.

As discussed more thoroughly in Section 3.2.3, no further leakage monitoring is required. Permanence is addressed through the risk buffer. A Non-Permanence Risk Report was prepared under VCS 4.0 and provided to the Verifier (Appendix 12).[13]

As discussed in Section 2.2.5 and 3.2.2 there was a loss event in KE PD VCS 001 which reduced the Cumulative Gross Reductions of the aggregated removals in CCB-001 by 4,697 tonnes.[14]

2.1.2 Project Category and Activity Type

This project is an Afforestation, Reforestation and Revegetation (ARR) project and has been developed in compliance with the VCS Standard version 4. KE-VCS-001, KE-VCS-002 KE-VCS-003 and KE-VCS-004 are small scale AR projects.

2.1.3 Project Proponent(s)

Organization name	Clean Air Action Corporation (CAAC)
Contact person	Charles E. Williams
Title	Vice President
Address	Clean Air Action Corporation (CAAC) 4112 Timbervale Drive Evergreen CO, USA 80439
Telephone	720-394-2112
Email	CharlieWilliams@CleanAirAction.com

CAAC is registered as a branch in Kenya.

2.1.4 Other Entities Involved in the Project

Organization name	Institute for Environmental Innovation (I4EI)
Role in the project	Has provided funding for sustainable development programs
Contact person	Catherine Campbell
Title	Executive Director

[13] Appendix 12 Risk Analysis: TIST KE PD-VCS-001m App12a Verif 03 Risk Analysis 200522.pdf, TIST KE PD-VCS-001m App12b Verif 03 Risk KE001-L 200522.pdf
TIST KE PD-VCS-002m App12 Verif 03 Risk Analysis 200522.pdf,
TIST KE PD-VCS-003m App12 Verif 03 Risk Analysis 200522.pdf and
TIST KE PD-VCS-004m App12 Verif 03 Risk Analysis 200522.pdf at http://www.tist.org/PD-KE-VCS-001-004%20Documents.php.

[14] Exhibit 43 Loss Event Report: TIST KE PD-VCS-Ex43 Loss Event Report 200807.pdf and Exhibit 44 Loss Event PA Plots: TIST KE PD-VCS-Ex44 Loss Event PA Plots 200804.kml at http://www.tist.org/PD-KE-VCS-001-004%20Documents.php.

Address	Institute for Environmental Innovation 250 Old Harbor Rd Vinalhaven, ME 04863
Telephone	202-309-1356
Email	catherinecampbell@tist.org

Organization name	United States Agency for International Development (USAID)
Role in the project	Provideds funding for sustainable development components. No longer active.
Contact person	Enoch Kanyanga
Title	Technical Officer
Address	USAID-Kenya c/o American Embassy United Nations Avenue, Gigiri, P. O. Box 629, Village Market-00621 Nairobi, Kenya
Telephone	+ 254-20-862-2000
Email	ekanyanya@usaid.gov

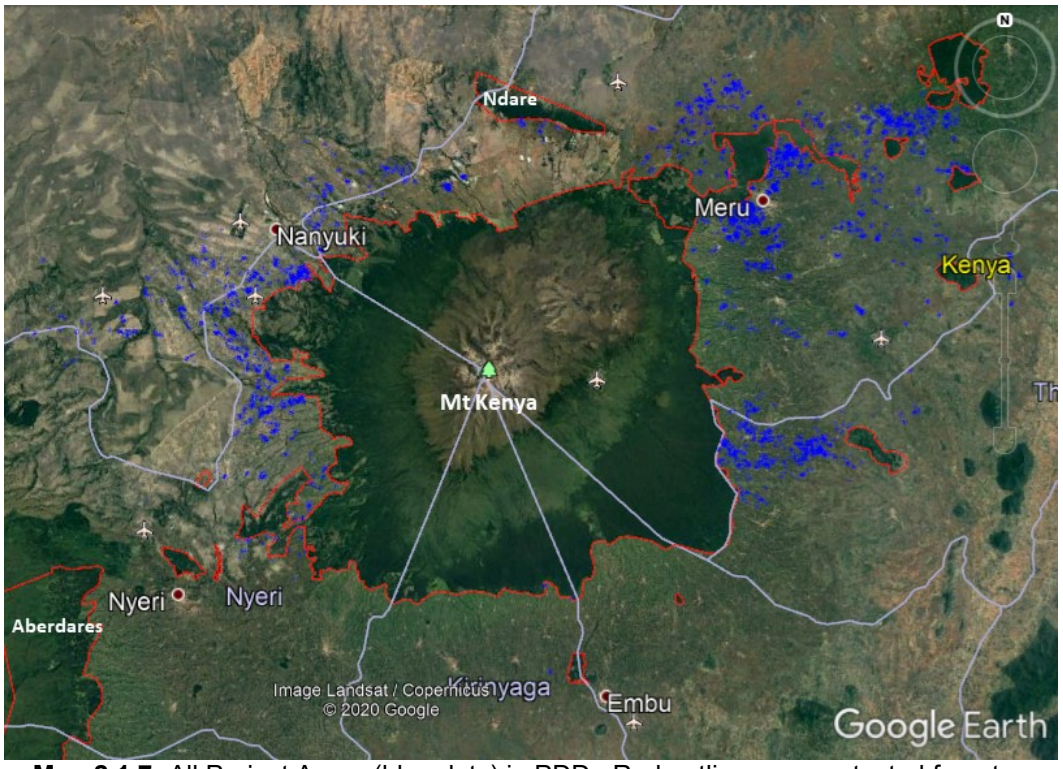
2.1.5 Project Start Date (G3.4)

01-January-2004

2.1.6 Project Crediting Period (G3.4)

30 years starting 01-January-2004 and ending 31-December-2033

2.1.7 Project Location (G3.3)



Map 2.1.7: All Project Areas (blue dots) in PDD. Red outlines are protected forests centered on Mt Kenya. See TIST KE PD-VCS-001d App03 PA Plots 200626.kml, TIST KE PD-VCS-002d App03 PA Plots 200626.kml, TIST KE PD-VCS-003d App03 PA Plots 200626.kml and TIST KE PD-VCS-004d App03 PA Plots 200626.kml.

There are 3,529 Project Areas, covering 990 active ha. The PAs of this PDD are located in central Kenya in the vicinity of Meru and Nanyuki. The individual Project Areas, their location and their boundaries are presented in Appendix 03, the KML files.[15] In addition, a latitude and longitude for each project area is indicated on the monitoring spreadsheets, Appendix 14.[16]

2.1.8 Title and Reference of Methodology

The monitoring methodology used by the Project is CDM AR-AMS0001 Version 05: "Simplified baseline and monitoring methodologies for small-scale afforestation and reforestation project activities under the clean development mechanism implemented on grasslands or croplands" and

[15] Appendix 03 PA Plots: TIST KE PD-VCS-001d App03 PA Plots 200626.kml,
TIST KE PD-VCS-002d App03 PA Plots 200626.kml,
TIST KE PD-VCS-003d App03 PA Plots 200626.kml, and
TIST KE PD-VCS-004d App03 PA Plots 200626.kml,at http://www.tist.org/PD-KE-VCS-001-004%20Documents.php.

[16] Appendix 14 Monitoring Data V3: TIST KE PD-VCS-001o App14 Verif 03 Monitor Data 200522.xlsx,
TIST KE PD-VCS-002o App14 Verif 03 Monitor Data 200522.xlsx,
TIST KE PD-VCS-003o App14 Verif 03 Monitor Data 200522.xlsx and
TIST KE PD-VCS-004o App14 Verif 03 Monitor Data 200522.xlsx at http://www.tist.org/PD-KE-VCS-001-004%20Documents.php.

the associated tools. AFOLU Non-Permanence Risk Report version 4.0 was also used. No other tools or methodologies were used for this verification report.

2.1.9 Other Programs (CL1.5)

"TIST Program in Kenya CCB-001" is an umbrella certification for four VCS projects, KE-VCS-001, KE-VCS-002, KE-VCS-003 and KE-VCS-004. The Project does not participate in any emission trading programs, other binding limits, other forms of social or environmental credit or any other GHG program.

2.1.10 Sustainable Development

The following are the sustainable development goals that TIST addresses.

- No Poverty: TIST has provided cash income from carbon credits and sustainable development benefits monetized at over KES 988,219 ($9,227) from the start of the project.
- Zero Hunger: TIST promotes Conservation Farming to improve crop yields and planting fruit and nut trees as part of the tree planting program. TIST counts all TIST trees by species and surveys adoption of Conservation Farming.
- Good Health and Well-being: TIST provides training in many health topics including HIV/AIDS, malaria, clean water, hygiene and indoor air pollution. TIST has regular Cluster meetings where training is held and uses the Mazingira Bora newsletter to help communicate issues.
- Gender Equality: TIST creates an environment for gender equality whereby women are given the same opportunities as men. It is enforced by ensuring there is a gender balance in employment, leadership and representation. TIST monitors the gender of participants, employees and Quantifiers.
- Clean Water and Sanitation: TIST provides training in clean water and hygiene. TIST also trains and encourages tree planting along water courses to reduce run-off and erosion. TIST has regular Cluster meetings where training is held and uses the Mazingira Bora newsletter to help communicate issues.
- Affordable and Clean Energy: TIST trains in the building and use of more energy efficient cook stoves. TIST surveys the benefits of energy efficient stoves.
- Climate Action: TIST is a climate mitigation program. This PD demonstrates its effectiveness.
- Life on Land: TIST provides biodiversity benefits by adding indigenous tree, fruit trees, nut trees and canopy. TIST farmers are trained in biodiversity. TIST project areas provide linkage and buffers with high conservation value areas.

Kenya is developing their SGD program and TIST will participate as required. Verra's has developed the SDVista program for validating and verify SDG goals. TIST was one of pilot program but at this time, we are not seeking SDVista certification.

2.2 Project Implementation Status

2.2.1 Implementation Schedule (G3.4)

Date	Milestone(s) in the project's development and implementation
2004	Initial field visit, consultation with local stakeholders, hold initial seminars, registration of initial Small Group members, deploy monitoring system, hire local staff, hire and train Quantifiers, begin training trainers.
2004-2010	Planting of first trees. 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.
2010	VCS and CCB validation and first verification.
2010-2033	Periodic verifications to be held in accordance with the minimums required by the CCB and VCS standards. 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.

Contacting and contracting with farmers: TIST Kenya has continued to expand since inception. After year 15 it expected that new expansion will go into a new PD.

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

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 and due to expansion.

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.

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 frequently 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

2.2.2 Methodology Deviations

PD KE VCS 001-004, Section 2.1 Methodology applied to the project activity

Two methodology deviations were addressed in the VCS PDs. The first was what we are including PAs below the minimum area of 0.1 hectares defined by Kenya's definition of a forest. The second deviation relates to the 30% crown cover at maturity that is part of Kenya's definition of a forest. The PD explains that our monitoring program is capable of handling both these situations and the PD was validated with these deviations.

2.2.3 Minor Changes to Project Description (*Rules* 3.5.6)

PD KE CCB 001, Section CM3.1 Initial monitoring plan of community variable

Minor changes to the project description have been made regarding the Community Impact Monitoring.

In CM3.1, items 13, 14 and 15 stated we would monitor the number of trees, fruit or nut trees and eucalyptus trees in Kenya. Instead we are reporting the trees, fruit or nut trees and eucalyptus trees in the PD. See Sections 4.3.2.

In CM3.1, item 16 states we will report the number of fuel efficient stoves that have been used in TIST Kenya. No stoves were counted during the monitoring period. We were not seeing a significant uptake of new stoves during the last monitoring period and focused more on quantifying trees. During this monitoring period, we gave some of our top Cluster Servants (Quantifiers) stove kits to use with the hope that this will inspire training so that we can reinvigorate the program. See Sections 4.3.2.

2.2.4 Project Description Deviations (*Rules* 3.5.7 – 3.5.10)

PD KE VCS 001-004, Section 3.2 Monitoring Approach

Section 3.2 of the VCS PD states "the operational processes for monitoring the actual GHG removal by the sinks are for TIST Quantifiers to visit each grove once per year and, at minimum, once every five years to count trees and collect circumference, GPS and other data". TIST Quantifiers are not visiting each PA (grove) once per year and not all PAs are visited with in the five year period.

Quantification Every Year: While counting trees and collecting circumference every five years is a requirement of the methodology (and followed by the Project), visiting every PA every year was simply an operational goal. Not making annual visits does not impact the applicability of the methodology, additionality or the appropriateness of the baseline scenario. That it was an operational goal was clearly stated in Section 3.2. of the VCS PD, "Multiple Quantifications: TIST's internal goal is to quantify each project area once per year."

There are tens of thousands of PAs in Kenya. Unfortunately, visiting every PA, every year, proved to be too costly to maintain. TIST program in Kenya is centered on a "Cluster" administrative structure. A Cluster is a group of Small Groups within walking distance that has their own local leadership. It is where Small Groups receive training, voucher payment, share "best practices," share news and newsletters and discuss quantification issues. A Quantifier is assigned to each Cluster and their scope has been broadened to include training and assisting Cluster leaders as they rotate into new positions. The Cluster provides an alternate method of gathering intelligence about what is happening at the Small Group level and to individual groves, including information that might assist in monitoring the actual GHG removal.[17] This allows us to get the same information that a Quantifier might get on a non-quantification visit (i.e. the annual visit) by asking members and their neighbors about changes, at a more sustainable cost. The ideal schedule for Cluster meetings is one per month, increasing the frequency of opportunity to learn about changes at the grove level.

Quantification Every Five Years: During preparation of the monitoring report, all PAs that have not been monitored within five years are identified. Because they are outside the time frame stated in the PD, they are not eligible for carbon credits. This deviation does not impact the methodology applicability, additionality or the baseline scenario. The outcome of the deviation is that the PAs remain in the PD but, until they are monitored within five years of the next verification, their removals will be considered zero. This means that remaining PAs must first make up the carbon loss before any new credits can be issued.

PD KE VCS 001-004, Section 3.3 Data and parameters monitored

Table 3.3, Data to be Monitored: Included in the table is the monitoring of Area displaced, Grazing animals displaced, and Roaming animals displaced. The comment column states, "Monitoring only in first crediting period". It should have stated "Monitoring only in first verification period." No further monitoring of these items was required or done.

[17] This includes examples such as if an SG or an SG member has quit, or if there has been a major loss from fire, pest, harvest, etc. The type of information collected is reflected in the monitoring spreadsheets where we have indicated an issue with the project area (removed or pending) and zeroed out the carbon for this verification.

This deviation does not impact the methodology applicability, additionality or the baseline scenario. The outcome is that the loss of a PA is acknowledged and its accrued GHG removals are considered zero.

PD KE VCS 001-004, 3.4 (Beneficial "leakage" from project activities)

Removing Project Activity Instances: While it was expected that there would be a loss of trees from the PD due to harvest, etc.,[18] the loss of PAs was not addressed. When a member or Small Group quits or harvests their trees, or if a PA is found to fall within one of the "remove" categories m through y in Section 5.4 of the VCS MRs, they are no longer active in the PD. The name of the grove is kept on the monitoring spreadsheet (Appendix 14), the reason for the removal is given in the "Status V3" column of the "PA Summary" worksheet of Appendix 14, and the carbon sequestered from the PA is zeroed out. Included in the "Status V3" column are PAs that were identified as overlapping with other PAs. These were considered double registration and have been removed. By zeroing the carbon, all of the carbon credits previously issued from the PA are replaced by carbon demonstrated by this verification.

This deviation does not impact the methodology applicability, additionality or the baseline scenario. The outcome is that the loss of a PA is acknowledged and its accrued GHG removals are considered zero.

PD KE CCB 001, 3.5 Optional Criterion: Climate Change Adaptation Benefits

This Project Description Deviation is to apply for the optional gold level for Climate Change Adaption Benefits. The PD was written prior to the current CCB Template for CCB Version 3 and Section 3.5 refers to the CCB PD Template 3.0 Issued: 21 June 2017. This deviation does not impact the methodology applicability, additionality or the baseline scenario. The outcome is that PD is applying for the CCB Climate Change Adaption Benefit.

3.5.1 Regional Climate Change Scenarios

The likely regional climate change scenarios are identified as changes in rainfall and increasing temperatures.

Changes in Rainfall: As noted by the Government of Kenya's National Climate Change Response Strategy (NCCRS):[19]

> The evidence of climate change in Kenya is unmistakable. Temperatures have risen throughout the country. Rainfalls have become irregular and unpredictable, and when it rains, downpour is more intense. Extreme and harsh weather is now a norm in Kenya.
>
> As regards rainfalls, the most visible feature is the increased variability year to year, and during the year. There is a general decline of rainfall in the main rainfall season of March-May (the "Long Rains"). In other words, drought in the Long Rains Season is more frequent and prolonged. On the other hand, there is a general positive trend (more rains) during September to February. This suggests that the "Short Rains" (October-December) season is extending into what is normally hot and dry period of January and February.

[18] See section 3.4 of the PD: "since ex-post carbon calculations are based on current tree counts, any trees lost to harvest, etc., are automatically excluded from the calculation"
[19] http://www.environment.go.ke/wp-content/documents/complete%20nccrs%20executive%20brief.pdf

As described by Reliefweb:[20]

> The first rains are sometimes insufficient to support a harvest or even livestock rearing.
>
> While the average number of rainy days during the short-wet season has reduced from 60 to 30, rainfall has become more intense and the season is being prolonged into January and February, leading to higher total rainfall for this season. Rainfall intensity has increased all over the country, but especially in the coastal area. The area of west-central Kenya receiving 500 mm of rain or more has shrunk since 1960 and is likely to keep shrinking over the next 30 years. Mean annual temperatures have increased significantly, at a rate of 0.34ºC per decade over the last 30 years. These trends are accompanied by an increase in extreme events such as droughts and floods.

The Kenya National Adaptation Plan 2015-2030 provides long term rainfall predictions:[21]

> Global Climate Modelling (GCM) predicts an increase in average rainfall by the 2060s especially for the short rains from October to December. However, it further predicts the numbers of heavy events will increase. The range of increase varies from 2 to 11 per cent by the 2060s and 2 to 12 per cent by the end of the century.

Increasing Temperatures: NCCRS discusses the increasing temperatures in Kenya:

> Since the early 1960s, both minimum (night time) and maximum (daytime) temperatures have been on an increasing (warming) trend. The minimum temperature has risen generally by 0.7–2.0^{o} C and the maximum by 0.2–1.3^{o} C, depending on the season and the region.

Reliefweb provides another summary of temperature changes:

> Temperature projections are more consistent across climate change models. An average increase of 0-2.5º C is expected for the country between 2000 and 2050, with 1-2º C as the most likely range. For 2100 a warming ranging between 1.3º C and 3.9º C is likely, with some models suggesting an increase of 4ºC by 2100. Highest increases are expected for the far northeast, and smallest increases for the southeast. In general, the plateaus, mountain ranges and coastal area will remain cooler than inland lowlands. Temperature increases will be seasonal, with the smallest increase expected for the start of the long wet season (March – May).

The Kenya National Adaptation Plan 2015-2030 present the results of long term temperature modelling:

> Global Climate Modelling (GCM) data indicates that the mean annual temperature is projected to increase by between 0.8 and 1.5°C by the 2030s and 1.6°C to 2.7°C by the 2060s … There is good model agreement of temperature increases of up to 3°C by 2100.

[20] https://reliefweb.int/sites/reliefweb.int/files/resources/Kenya_2.pdf
[21] https://www4.unfccc.int/sites/NAPC/Documents%20NAP/Kenya_NAP_Final.pdf

3.5.2 Climate Change Impacts

Current and anticipated climate changes are having an impact on the well-being of communities and/or the conservation status of biodiversity in the project zone and surrounding regions.

Drought: From 2014-Present, Kenya has been experiencing severe drought.[22] The impact of drought is felt acutely in certain regions where this project is active. These include Nanyuki, Mara, and Machakos. The reader is referred to the reference for more detail, but the impacts include:

- "Food insecurity had more than doubled - from 600,000 (Aug 2015 - March 2016) to 1.25 million people (August 2016 – Feb 2017)."
- "Drought conditions that were expected to persist into 2018 left 3.4 million people severely food insecure and an estimated 500,000 people without access to water."
- "In marginal agricultural areas, the October to December [2017] short rains season were significantly below average and short rains crop production were expected to be 70 percent of average. "

Irregular Rainfall: In addition to acute drought, irregular rainfall dramatically impacts farmers' ability to grow food. The success of Kenya subsistence farmers has been to plant in time for seasonal rains so that their crops take advantage of the two rainy seasons. Early rains means they don't get the seeds in the ground in time. Late rains mean the seed lie dormant and become food for bird and rodents. The lack of a consistent rainy season can mean the crops may get a strong start, only to dry out before they are ready to harvest.

Floods: The increased intensity of the short rains has led to flooding. In 2020, 237 people were killed and 100,000 displaced.[23] Combined with drought, heavy rains cause significant erosion. A healthy ecosystem is can reduce erosion by absorbing the rain and providing a strong root system to stabilize the soil. The drought weakens the biosphere and reduces its ability to protect the soil. When the heavy rains come, high rates of erosion are likely to ensue. The down-stream effect is mud clogged streams, poor water quality and possibly physical damage to infrastructure.

Fire: Drought in turn has led to the prevalence of wildfires in Kenya. This has impacted various regions, including widespread fires in and around Mount Kenya National Park in 2019 where over 20,000 hectares were burned. Because of sub-average short rains in 2018 (October-December), the vegetation was very dry going into 2019. The fires release carbon dioxide, methane, carbon monoxide, and nitrous oxide, all greenhouse gases, so beside having a negative impact on the biodiversity of Mt Kenya, it acerbates climate change.[24]

High Wind: Climate change is contributing to unpredictable wind patterns in Kenya. They can take off roofs, blow down trees and cause sand storms. Two major event occurred around October 1, 2019 and July 15, 2020.[25]

Effects on Wildlife: Changes in weather negatively impact HCVs and many of the flora and fauna in Kenya.[26]

[22] "Kenya: Drought - 2014-2020." *ReliefWeb*, reliefweb.int/disaster/dr-2014-000131-ken, accessed February 10, 2020
[23] https://en.wikipedia.org/wiki/2020_East_Africa_floods
[24] https://theconversation.com/why-mount-kenya-is-burning-and-what-can-be-done-to-stop-the-fires-112842 accesses March 25, 2021.
[25] https://www.youtube.com/watch?v=BIrjn2aDEoc accesses March 25, 2021.

> The KWS says climate change and ecological disturbances could have caused a recent increase in deaths in wildlife populations from infectious diseases. Birds and mammals have been the worst affected, with climate change blamed for the sudden mass death of flamingos around Lake Nakuru in central Kenya last year.
>
> According to the report, Kenya's 66 animal parks are all experiencing changes in animal disease patterns.

Impact on TIST members: The climate change impacts, in turn, have a significant impact on the well-being of TIST project participants. They are the same people affected by the food security issues caused by drought and irregular rainfall. They live in proximity of the Mt Kenya fires. They were affected by the high winds, sand storms and floods.

Drought, fire, and unpredictable rainfall could potentially render agricultural land less productive. It can impact TIST participants' ability to grow food and in the worst cases, this can lead to widespread famine. More mild cases lead to food shortages and diminished economic prospects.

In seminars, farmers have provided stories about how they are being impacted.

- Loss of crop from drought has led to the death elderly parents. When there is a food shortage, the elderly may forgo their meals so that the younger can eat.
- Some farmers have reported having to move their crops up the hillsides to seek cooler temperatures.
- TIST has received anecdotal reports of flooding and landslides caused by irregular but intense, rainfall.

Fires are less pervasive on the farms but can have a more dramatic impact on affected communities and ecosystems. As climate change accelerates, it is likely that fires will become more widespread, causing health, economic, and environmental challenges to TIST farmers. As an A/R project, fire has the potential of destroying a PA's carbon stock.

Through TIST, farmers are able to identify, share, and implement strategies to mitigate these risks.

3.5.3 Measures Needed and Designed for Adaptation

Project design helps to mitigate the impacts of climate change in several ways:

Drawdown of CO2: Ultimately, climate change must be addressed through the removal of CO2 from the atmosphere. Thus far, TIST farmers in Kenya have removed more than 5M tonnes of CO2 by planting and maintaining trees. TIST will monitor the amount of carbon it has sequester in the PD from the start date to end of the monitoring period.

Conservation Farming: Erratic rainfall and higher temperatures have a negative impact on food security. TIST trains farmers on climate resilient agricultural techniques to directly address that. Education of FAO Conservation Farming techniques allows farmers to gather minimal rainfall in

[26] https://www.scidev.net/global/news/climate-change-devastating-wildlife-in-east-africa/#:~:text=told%20SciDev.Net.-,The%20KWS%20says%20climate%20change%20and%20ecological%20disturbances%20could%20have,in%20central%20Kenya%20last%20year.

specially dug and spaced holes. Even in times of drought or limited rainfall, this technique allows crops to grow. TIST will monitor the training (person-session) in improved farming methods (predominantly Conservation Farming) provided during the monitoring period and provide an estimate of the benefits.

Trees: By planting fruit and nut trees, members can help mitigate food security. Trees can help retain soil moisture during droughts and reduced the erosion that can occur from heavy rains. Increasing temperature are mitigated by tree canopies that can create microclimates on TIST farms by providing cooling shade and introduce new organic matter to restore soil health. This makes farms more productive in adverse conditions. Trees prevent erosion and can serve as windbreaks when planted near structures. TIST will monitor the number of living trees as of the end of the monitoring period. Information about tree species, including fruit and nut trees, are reported in the community and biodiversity sections of the monitoring report.

Community Organization: TIST farmers organize themselves in local and regional groups that share knowledge in monthly meetings. These meetings provide an opportunity for farmers to share experiences and find locally appropriate solutions to local issues. This organization makes TIST farmers better able to navigate the challenges posed by climate change. TIST will report on the number of Clusters and Cluster meetings held during the monitoring period. The training by subject (person-session) is provided in the community section of the monitoring report.

PD KE CCB 001, 5.5 Optional Criterion: Exceptional Biodiversity Benefits

This Project Description Deviation is to apply for the optional gold level for Exceptional Biodiversity Benefits. The PD was written prior to the current CCB Template for CCB Version 3 and Section 5.5 refers to the CCB PD Template 3.0 Issued: 21 June 2017. This deviation does not impact the methodology applicability, additionality or the baseline scenario. The outcome is that PD is applying for the CCB Exceptional Biodiversity Benefit.

5.5.1 High Biodiversity Conservation Priority Status

TIST has a direct impact on the Vitex keniensis (Meru Oak), an endangered species in the Mount Kenya region.

5.5.2 Trigger Species Population Trends

Trigger Species	*Vitex keniensis* (Meru Oak)
Population Trend at Start of Project	The IUCN is not able to provide population estimates. However, the IUCN Red List assesses a continuing decline in the habitat and ecology of *Vitex keniensis*; they further report a continuing decline of mature individuals and a decreasing population. The species was listed as vulnerable in 1998, and in 2018 (the most recent reporting year) was listed as endangered.
Without-project Scenario	Without the project, farmers would not be planting thousands of *Vitex keniensis.* Furthermore, farmers in the Mount Kenya region would have increased needs to harvest forest products from within Mount Kenya National Park. The IUCN reports potential exploitation of the species within the park.

With-project Scenario	Farmers are choosing to plant thousands of *Vitex keniensis* on their farms through TIST.

2.2.5 Risks to the Project (G3.5)

The risks to the expected climate, community and biodiversity benefits are basically dependent on the continued participation in the program of the members. 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 has been mitigated by the fact that there are thousands of individuals involved and the fact that the individual trees grow and sequester more carbon. However, an exceptional event occurred in KE 001 during this monitoring period. During the preparation of this monitoring report, it was learned that there was a significant loss of carbon removals in KE 001, due to the harvesting of trees by a large land owner and his family. Although the land owner was under contract to maintain the trees for 60 years, the family violated the contract and cut down the trees. There were 168,169 trees in 12 PAs present during the second verification that covered the monitoring period 01-January-11 to 11-August-2015. This represented 68,342 VCUs that were issued and subsequently sold (less the buffer). While preparing the monitoring reports for the third verification, this loss was first recognized and triggered further investigation on the ground. The loss of the 68,342 tonnes of removal has been confirmed and has caused a 48,837 tonne loss for the third monitoring period, 12-August-2015 to 22-May-2020. Although there was a net increase in the other 3 PDs (KE 002, KE003, KE004), the loss in KE001 has resulted in a loss of 4,697 tonnes in this umbrella CCB PDD. A Loss Event Report was submitted.[27]

[27] Exhibit 43 Loss Event Report and Exhibit 44 Loss Event PA Plots at http://www.tist.org/PD-KE-VCS-001-004%20Documents.php.

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

As part of the VCS requirements, a risk analysis was conducted.[28] Based on the tool, the project risk for KE002, KE003 and KE004 was 1.0. Because the loss in KE001 was the result of 12 specific PAs, two risk reports were prepared under Section 2.1.3 of the AFOLU Non-Permanence Risk Tool, v4.0. The first one, KE001, encompasses all of the PAs except the 12 with unauthorized harvest. Without the 12 there would have been a net gain of 19,505 tonnes over the monitoring period. The risk tool indicated a risk of 1.0.

The risk report for the 12 PAs with unauthorized harvest is KE001-L. Because the harvest truncated the project life at about 13 years, the Project Longevity caused the risk report to fail. Since PD KE VCS 001 lost 48,837 tonnes during the monitoring period, no credits will be issued.

2.2.6 Enhancement of High Conservation Values (G3.6)

Ongoing deforestation in Kenya is a fact. The project areas have been settled for generations and little, if any, of the natural biodiversity exists. The continued need for wood and the expanding population has carried the deforestation into the protected forest, having a negative effect on biodiversity there, too. TIST is reversing this trend by planting millions of new trees, many of them indigenous. While some parties have raised barriers to prevent AR credits from participating in a global carbon market, TIST has recognized that nearly 20% of deforestation is a result of the need for wood for cooking and heating. This type of program is one of the few ways to provide the resources needed by this vast population of subsistence farmers, as well as make a positive impact on biodiversity.

TIST trees were planted on the lands of small hold farmers, so the maintenance of HCV areas is indirect. The proximity of the Project Areas to the HCV forests will reduce the pressure of illegal wood harvesting during the monitoring period. The maintenance during the monitoring period of the indigenous trees, tree cover and fruit trees planted by the farmers continues to enhance biodiversity by providing an expanded range for some of the animals that rely on the HCV area. TIST trees were being planted where deforestation has taken place and the addition of many discrete project areas continues to help improve the wild life corridors between HCV areas needed for healthy animal populations.

2.2.7 Benefit Permanence (G3.7)

TIST is a comprehensive program that includes training in climate change, sustainable development practices and biodiversity. The expectation is that training, followed by years of implementation, will demonstrate that the economic and environmental teachings learned from TIST can be practiced without cost to the farmers and will continue to improve their lives. 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. Planting fruit, nut and fodder trees will have financial and food security benefit well beyond the financial benefits of the carbon market and will continue to sequester carbon.

[28] Appendix 12 Risk Analysis at http://www.tist.org/PD-KE-VCS-001-004%20Documents.php..

- 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).

2.3 Stakeholder Engagement

2.3.1 Community Consultation (G3.8)

The stakeholders are primarily the individual members that comprise the Small Groups of this project and TIST Kenya. 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 at various levels (Small Groups, Cluster and Leadership Council) to maintain communications among the members.

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. In addition to the meetings, information about TIST is disseminated by word of mouth; using “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 were asked to spread the word about the program and if there was grassroots 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.[29] 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.[30] TIST also has a collection of written stakeholder comments (see PDD).

At the Cluster 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. The following section will summarize written comments.

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 (including these four) and four CCB PDDs (including this one). TIST had held numerous public meetings that we announced in several Kenya national newspapers.[31] We have collected the names of interested stakeholders.

2.3.2 Public Comment Period Publicity (G3.9)

TIST announced the intent to verify this project in an email to stakeholders[32] and in the TIST newsletter, Mazingira Bora, October 2020. (For previous verifications we also conducted public meetings. Due to the coronavirus pandemic, a public meeting was not be held). We solicited comments on behalf of CCB. In addition, TIST maintains a publicly accessible webpage that lists and contains all of the documents associated with this and the associated VCS project.[33] It includes the PDDs, PIRs, maps, KML files, risk reports, spreadsheets, monitoring reports, verification reports and appendices. The web link to this page was be made available as part of the public notification.

2.3.3 Distribution of Project Information (G3.9)

Because of the way TIST is designed (e.g. the farmers plant the trees on their own land) much of the monitoring results for an individual are apparent to that farmer. They planted the trees and are there to watch them grow. From an official perspective, each grove is visited periodically by a TIST Quantifier. If the farmer or his representative is available, they can join the Quantifier as the trees are counted and DBH are taken and see the results on the spot. The next step is for the Quantifier to synchronize the data on their smartphone to the TIST server database where within

[29] Exhibit 19 Mazingira Bora: TIST KE PD-VCS-Ex19 Mazingira Bora 050201.pdf at http://www.tist.org/PD-KE-VCS-001-004%20Documents.php.
[30] http://www.tist.org/moreinfo.php
[31] Exhibit 14 Public Comments: TIST KE PD-VCS-Ex14a Public Comments CCB-001 V01.doc and TIST KE PD-VCS-Ex14f Public Comments CCB-001 V02.doc at http://www.tist.org/PD-KE-VCS-001-004%20Documents.php.
[32] Exhibit 14 Public Comments: TIST KE PD-VCS-Ex14i Public Comments CCB-001 V03.docx at http://www.tist.org/PD-KE-VCS-001-004%20Documents.php.
[33] http://www.tist.org/PD-KE-VCS-001-004%20Documents.php.

hours it populates and updates the TIST web site. A record of each quantification (monitoring) visit is available to the farmer, Small Group and anyone else in the world, 24/7. As shown on this example page (http://www.tist.org/i2/detgroup.php?groupid=6946), the web site has the tree counts by age and species, circumferences (proxy for DBH), outlines of the project areas (both on a lat/long grid and satellite image) and photos. Data for every project area is available in this manner. Access is available to anyone with a smartphone, pad or computer by going to TIST.org and working down the layers of "Project Areas".

In addition, the farmers are paid an advance on their carbon based on tree count. The TIST data server generates vouchers based on the information in the database. These are presented to the farmers at Cluster meetings and contain the relevant monitoring results for their Small Group. The farmers can take these home to compare them with what they believe the tree counts are and if they are in agreement, sign the vouchers and receive their money. If they don't agree, they can work with the Quantifier at the next Cluster meeting to reconcile the difference.

The results of each verification are also available on line at http://www.tist.org/PD-KE-VCS-001-004%20Documents.php. The CCB and VCS PDs and monitoring reports, all the monitoring spreadsheets and PD documents are kept there. This is not a password protected page and all the data is available. This link is provided in the emails to stakeholders. The newsletter notice (Section 2.3.2) provides a link to the VCS Project Database.

The summaries are provided in the monitoring reports. Section 1 of this report is, indeed, such a summary. Access to this report is via a link to the CCB project database in the Public Notice for the CCB application and the emails.[34]

2.3.4 Conflicts and Grievances (G3.10)

All grievances will be guided by the TIST Grievance Procedure.[35] Grievances will first be brought to the attention of the Kenya Staff, where the issues can be compared to standard TIST policy, TIST values[36] and/or the Greenhouse Gas agreement among the Small Group members and CAAC. The policies and values are the subject of training at seminars, in the field and are published in the newsletter. Unresolved issues will be presented to TIST Management. Where precedence or policy exists, they will be used in final decision-making. Where new issues arise that are outside the existing precedence, or policy, decisions will be made by Kenya Staff and TIST Management. If conflicts or grievances cannot be resolved internally, CAAC will submit to arbitration in accordance with the Kenya Arbitration and Conciliation Act, 2000 within 30 days of notice by the aggrieved party indicating they wish to appeal the internal process.

TIST has not received any formal grievances during this monitoring period.

[34] Exhibit 14 Public Comments at http://www.tist.org/PD-KE-VCS-001-004%20Documents.php.
[35] Exhibit 33 Grievance Policy: TIST KE PD-VCS-Ex33 Grievance Policy 170120.doc at http://www.tist.org/PD-KE-VCS-001-004%20Documents.php.
[36] Exhibit 39 TIST Values: TIST KE PD-VCS-Ex39 TIST Values 160726.doc at http://www.tist.org/PD-KE-VCS-001-004%20Documents.php. We are Honest. We are Accurate. We are Mutually Accountable. We are Transparent. We are Servants to each other.

2.4 Management Capacity and Best Practices

2.4.1 Required Technical Skills and Expertise (G4.2)

The required technical skills are community engagement, biodiversity assessment and carbon measurement and monitoring skills. These were brought to TIST Kenya under the leadership of the two founders of CAAC. Together they have over 90 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. There is an international staff that supports the program including operating and maintaining the TIST Data System. All personnel and systems have been operational during the monitoring period.

TIST has been operating successfully for over 20 years and has expanded to four countries, over 95,000 farmers and planted over 19 million documented trees. The monitoring system they developed won a Computerworld Honors Laureate in 2007. TIST has 14 VCS PDs, all of which have gone through two or three verifications. TIST has validated and verified seven CCB PDs under the 2nd edition, two under the third edition, and all 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 management team has chosen to train local TIST members and build local capacity rather than use expat specialist. TIST management has a Leadership Council comprised of trained TIST farmers that handle the day to day in-country management. There is a staff of Quantifiers that do the monitoring, auditors that review the work of the Quantifiers, trainers and desk auditors that do preliminary quality control. All have been active during the monitoring period.

2.4.2 Worker Training (G4.3)

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 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. Training is passed on to new workers through the seminars and working with an experienced TIST member.

Quantifiers receive ongoing training as needed and attend training seminars. They are given access to the Quantifier Manual.[37] 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.

[37] Exhibit 40 Quantifier Manual: TIST KE PD-VCS-Ex40 Quantifier Manual 101221.doc at http://www.tist.org/PD-KE-VCS-001-004%20Documents.php.

Small Groups training is ongoing. The Small Groups are all assigned to "Clusters", an administrative unit within walking distance of a central meeting place. The Clusters meetings are supposed to be held monthly. While attendance is voluntary, Small Groups are encouraged to send one man and one woman representative to every meeting. Training includes biodiversity, the GHG contract, climate change, selecting tree species, the benefits of different species, preparing nurseries, tree management, HIV/AIDS and other subjects of interest to the members.

2.4.3 Community Employment Opportunities (G4.4)

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. The 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 (Leadership Council) are from Kenya. 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 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 also have teams of specialists, all of whom are TIST members. The tech support and QAQC is led by TIST members that rose through the program based on their abilities. They are 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 about 74 people that serve as leaders, Quantifiers, trainers and liaison for one or more Clusters. The team is 58% women.

2.4.4 Relevant Laws and Regulations Related to Worker's Rights (G4.5)

The employment laws are listed below. CAAC uses Kenya counsel to advise on issues relating to employment. CAAC is not in violation of these laws.

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

2.4.5 Occupational Safety Assessment (G4.6)

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 and mitigation factors are:

- Matatus and Boda-bodas. Do not take rides if the driver appears to be intoxicated or drives in a reckless manner. If the driver is driving too fast or unsafe tell the driver to drive slower and safer. If it persist, ask to be let out or off the vehicle. In case of a robbery, do not resist and surrender the TIST equipment if it is demanded. Report the incident to the UG Team within 24 hours.

- Snakes. Be aware when moving through areas where you cannot see where you are placing your foot. If unsure, uses a long stick to prod the bushes or grass to identify the presences of snakes. If a poisonous snake is seen, leave the area and notify the farmer. There are NO first aid treatments for poisonous snake bites. If you are bitten by a poisonous snake you must go to the nearest hospital for anti-venom. The bite may be fatal if not treated. You could lose a limb or suffer permanent injury if bitten. You, your partner or the farmer should try to identify the type of snake so that the correct anti-venom can be selected. Even if the snake is killed it can still bite!
- Elephants. Elephants are extremely dangerous. The best way to avoid an elephant attack is to not get in that situation. If an elephant is present in a project area, back away trying not to disturb it. If it attacked, your choices are:
  i) stand your ground, it may be a bluff charge.
  ii) if you are close enough to shelter (house, vehicle, fence, large tree), try to back away slowly (keep facing the elephant) and move to the shelter. Elephants run much faster than humans so if you cannot reach shelter, running may just trigger an aggressive response.
- Encountering dangerous people. Should you encounter hostile or dangerous TIST or community members, leave the area and try to get to a place where there are other people present. Do not engage in arguments or physical confrontation. If you are with a partner, stay together and support each other. In case of a robbery, do not resist and surrender the TIST equipment if it is demanded.
- Sexual Assaults. Females should work with a partner in new areas to avoid sexual assaults. If you end up in a situation where you fear an assault, leave the area and try to get to a place where there are other people present. If attacked, yell for help. Report any assault to the police and to the UG Team.
- Dogs. If a hostile dog is present or you are concerned about a dog that is present, ask the farmer to secure it until you finish quantifying. If the farmer refuses, leave the area and notify the TIST Team. If bitten by a dog, go to the doctor. Since dogs can carry rabies, try to determine who owns the dog for in case it needs to be tested. Rabies are fatal without treatment and treatment is necessary within days.
- Bees. The effects of bees stings can range from annoying and painful to fatal, depending on whether you are allergic to the venom. Avoid being stung by avoiding swarming bees and try to remain calm if they are present. Do not agitate the bees. Avoid wearing perfume or scents. If stung, remove the stinger as soon as possible because the longer it stays in the body, the more severe the reaction. If you know you are allergic to bee stings; get stung in the mouth, nose or throat; have shortness of breath; or have severe swelling or swelling away from the site of the sting; get medical help immediately. If you know you have severe allergic actions to bees stings, you should carry an epi-pen (ask a doctor about this).
- Crossing rivers. Do not attempt to cross rivers with high, fast flowing water. You could drowned.
- Working on Steep Slopes. Take extra care when working on steep slope. Do not put yourself in a situation where a fall could hurt or kill you.

TIST has a Standard Operating Procedure to address safety. To ensure that safety policy and safety issues are understood, each Quantifier are briefed on the safety policy annually.[38]

[38] Exhibit 15 Quantifier Safety: TIST KE PD-VCS-Ex15 Quantifier Safety 110110.doc at http://www.tist.org/PD-KE-VCS-005%20Documents.php.

To date there has only been one reported accident. In September 2015, a quantifier slipped in a steep area of a PA and broke her leg. She was treated at a hospital and released.

2.4.6 Financial Health of Implementing Organization(s) (G4.7)

CAAC has been in business since 1993 and has operated TIST for over 20 years. CAAC is profitable after all TIST expenses and is currently sharing 70% of the profits with the Small Group members. Financial statements and a financial plan (confidential) have been made available to the Verifier.

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 (Kenya and Tanzania) and private donors. The fact that TIST is in its 20th 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. It's 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 Kenya in 2016 and found no evidence that these have occurred.

2.5 Legal Status and Property Rights

2.5.1 National and Local Laws (G5.1)

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 herein (Section 2.4.4).
- 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.[39] In conformance with the Act, TIST submitted an EIA to the National Environmental Management Authority (NEMA) and

[39] Exhibit 01: NEMA PIN and Exhibit 02: NEMA EA. 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

because it received no further communication from NEMA, completed all of its obligations under the Act.

- Kenya Forest Act of 2005. Establishes that all forest in Kenya other than private and local authority forests are vested in the state, and gives the duty of oversight to Kenya Forest Service.

As a recipient of a USAID award, I4EI was subject to:

1. Applicability of 22 CFR Part 226 (MAY 2005)
2. Ineligible Countries (MAY 1986)
3. Nondiscrimination (MAY 1986)
4. Nonliability (NOV 1985)
5. Amendment (NOV 1985)
6. Notices (NOV 1985)
7. Subagreements (JUN 1999)
8. OMB Approval Under the Paperwork Reduction Act (DEC 2003)
9. USAID Eligibility Rules for Goods and Services (APR 1998)
10. Debarment, Suspension, and Other Responsibility Matters (JAN 2004)
11. Drug-Free Workplace (JAN 2004)
12. Equal Protection of the Laws for Faith-Based and Community Organizations (FEB 2004)
13. Implementation of E.O. 13224 -- Executive Order on Terrorist Financing (MAR 2002)
14. Marking Under USAID-Funded Assistance Instruments (DEC 2005)
15. Regulations Governing Employees (AUG 1992)
16. Conversion of United States Dollars to Local Currency (NOV 1985)
17. Use of Pouch Facilities (AUG 1992)
18. International Air Travel and Transportation (JUN 1999)
19. Ocean Shipment of Goods (JUN 1999)
20. Local Procurement (APR 1998)
21. Voluntary Population Planning Activities – Mandatory Requirements (MAY 2006)

I4EI was subject to audit by the US government.

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 within 3 months of the issuance date (by June 2011). At this time, almost 10 years after the deadline, no TIST project areas have been designated riparian lands and no TIST farmers have been told to remove any eucalyptus trees. In addition, a review of the PA boundaries with the WRI Kenya wetland database indicated no PAs are within the wetlands.[40]

2.5.2 Free, Prior and Informed Consent (G5.3)

The following demonstrations are provided:

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.

[40] https://datasets.wri.org/dataset/wetlands-in-kenya

- 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[41], they maintain ownership of the land and trees.
- 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 this report, TIST has a series of trainings for the farmers, about the project, before they register and sign the GHG contract. The contract was vetted by DLA Piper as a pro bono action on behalf of the farmers. The farmers only sign the contract and join if they choose 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, 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.

2.5.3 Property Rights Protection (G5.4)

Land tenure is by registered deed to the individual members participating in TIST. The Project Proponent has no rights to the land; all land is owned by the farmers.

A few land disputes have been identified. They were among other farmers or family members, not TIST. As part of the GHG contract agreement Small Group members attest their ownership and/or right to use the land where they plant trees. Additionally, TIST meetings and seminars are open to the public. Where there is a dispute over grove ownership that can't be resolved, the farmers are released from their GHG contract and removed from TIST.

The demonstration that all Property Rights are recognized, respected, and supported is based on the fact that TIST does not interfere with the farmer's tenure.

2.5.4 Identification of Illegal Activity (G5.5)

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.

[41] Exhibit 03 and Exhibit 04, GHG contracts: TIST KE PD-VCS-Ex03 GHG Contract 050418.doc and TIST KE PD-VCS-Ex04 GHG Contract 080428.doc at http://www.tist.org/PD-KE-VCS-001-004%20Documents.php.

3 CLIMATE

3.1 Monitoring GHG Emission Reductions and Removals

3.1.1 Data and Parameters Available at Validation

Data / Parameter	***Location of project area***
Data unit	Latitude and longitude
Description	Single point location of the area where project activity has been implemented
Source of data	GPS
Value applied	See "Grove Summary" worksheet, Appendix 04,[42] for each result
Justification of choice of data or description of measurement methods and procedures applied	GPS is the modern standard for determining geographic coordinates.
Purpose of the data	Calculation of baseline emissions
Comments	None

Data / Parameter	***Boundary of project area***
Data unit	Latitude and longitude
Description	Multiple points of latitude and longitude that describe the boundary of a discrete project area
Source of data	See KML file, Appendix 03[43], for all results
Value applied	See KML file, Appendix 03
Justification of choice of data or description of measurement methods and procedures applied	GPS is the modern standard for determining geographic coordinates.
Purpose of the data	Calculation of baseline emissions

[42] Appendix 4 Validation Data: TIST KE PD-VCS-001e App04 Data 100826 Chugu.xls,
TIST KE PD-VCS-002e App04 Data 100826 Kin-Ntu.xls,
TIST KE PD-VCS-003e App04 Data 100826 Kma-Wen.xls and
TIST KE PD-VCS-004e App04 Data 100826 Nar-Lum.xls at http://www.tist.org/PD-KE-VCS-001-004%20Documents.php

[43] Appendix 03 PA Plots: TIST KE PD-VCS-001d App03 PA Plots.kml (at validation)
TIST KE PD-VCS-002d App03 PA Plots.kml,
TIST KE PD-VCS-003d App03 PA Plots.kml, and
TIST KE PD-VCS-004d App03 PA Plots.kml at http://www.tist.org/PD-KE-VCS-001-004%20Documents.php.

Comments	None

Data / Parameter	**Area of project area**
Data unit	Hectares
Description	Size of the area where the project activity has been implemented
Source of data	GPS
Value applied	See "Grove Summary" worksheet, Appendix 04, for each result
Justification of choice of data or description of measurement methods and procedures applied	GPS is the modern standard for determining geographic coordinates.
Purpose of the data	Calculation of baseline emissions
Comments	None

Data / Parameter	**Ownership of project area**
Data unit	Name
Description	Ownership of land of project area
Source of data	“Carbon Credit Sale Agreement”
Value applied	See "Grove Summary" worksheet, Appendix 04, for each result
Justification of choice of data or description of measurement methods and procedures applied	TIST representatives ask if there is a change in ownership when they visit the PA.
Purpose of the data	Calculation of baseline emissions
Comments	None

Data / Parameter	**Baseline trees**
Data unit	Baseline Trees
Description	The number of trees existing in a project area is counted, before the planting of project trees.
Source of data	Trees are physically counted in the field
Value applied	See "Baseline Strata" worksheet, Appendix 04, for each result
Justification of choice of data or description of measurement methods and procedures applied	A physical count provides the most accurate information possible.

Purpose of the data	Calculation of baseline emissions
Comments	None

Data / Parameter	**Baseline tree circumference**
Data unit	Centimeters
Description	The circumference of trees existing in a project area, before the planting of project trees, is counted
Source of data	Trees are physically measured in the field
Value applied	See "Baseline Strata" worksheet, Appendix 04, for each result
Justification of choice of data or description of measurement methods and procedures applied	The circumferences of a sample of trees are measured with a tape. The results are used to put the tree size in a bin for estimating mass.
Purpose of the data	Calculation of baseline emissions
Comments	None

Data / Parameter	**Baseline strata**
Data unit	Hectares
Description	The area of cropland or grassland at baseline
Source of data	Estimate based on visual field observations
Value applied	See "Grove Summary" worksheet, Appendix 04, for each result
Justification of choice of data or description of measurement methods and procedures applied	The area of the PA was measured using a GPS. The percent cropland and grass land was estimated by an experienced TIST Quantifier.
Purpose of the data	Calculation of baseline emissions
Comments	None

Data / Parameter	**Project trees**
Data unit	Count of tree
Description	The number of trees per age and species strata in each project area
Source of data	Trees are physically counted in the field.
Value applied	See "Grove Summary" and "Strata" worksheets, Appendix 04, for each result

Justification of choice of data or description of measurement methods and procedures applied	The trees were all counted by an experienced TIST Quantifier.
Purpose of the data	The tree count by strata is used to extrapolate the ex-ante GHG removals
Comments	None

Table 1 of the methodology (CDM AR-AMS0001) also lists “height of tree”, "location of the permanent sample plots” and "basic wood density" as data variables. The project does not collect “height of tree” data or "basic wood density." As noted in paragraph 42, Step 2 of the methodology, the option is given to "measure the diameter at breast height (DBH) or DBH and tree height, as appropriate." The validated PD stated "height will not be used in the allometric equations" because project monitoring relies solely on allometric equations that only require DBH. "Basic wood densities" are not used because they are assumed in the allometric equations. This approach was implicit in the validated PD. Because all the trees are counted in each project area, each project area is a "permanent sample plot.”

The above table also includes a parameter not found in the methodology, "ownership of project area." This was added at the request of the first verifier, ESI, to acknowledge the fact that virtually every PA is owned by a different farmer.

3.1.2 Data and Parameters Monitored

Data / Parameter	**Number of trees**
Data unit	Trees
Description	Number of trees in a project area by strata
Source of data	Physical counts
Description of measurement methods and procedures to be applied	Physical count of the trees in each stratum by Quantifiers with each visit
Frequency of monitoring/recording	Ongoing measurement taken by Quantifiers as they visit project areas. Each PA could be visited as much as once per year and as little as every five years, the minimum allowed by the methodology.
Value monitored	See "Ex-post Strata" worksheet of Appendix 14[44]
Monitoring equipment	Customized smartphone

[44] Appendix 14 Monitoring Data V3: TIST KE PD-VCS-001o App14 Verif 03 Monitor Data 200522.xlsx, TIST KE PD-VCS-002o App14 Verif 03 Monitor Data 200522.xlsx, TIST KE PD-VCS-003o App14 Verif 03 Monitor Data 200522.xlsx, and TIST KE PD-VCS-004o App14 Verif 03 Monitor Data 200522.xlsx at http://www.tist.org/PD-KE-VCS-001-004%20Documents.php.

QA/QC procedures to be applied	Part of overall QA/QC procedures discussed in Section 3.1.3
Purpose of the data	Calculation of baseline emissions.
Calculation method	Not applicable
Comments	None

Data / Parameter	**DBH**
Data unit	Centimeter
Description	Diameter of tree at breast height (1.30 m)
Source of data	Physical measurements
Description of measurement methods and procedures to be applied	TIST measures DBH of up to 20 representative trees of each age/species stratum in different project area using circumference as a proxy for diameter.
Frequency of monitoring/recording	Ongoing measurement taken by Quantifiers as they visit project areas
Value monitored	See "Circ" worksheet of Appendix 14
Monitoring equipment	Measuring tape and customized smartphone
QA/QC procedures to be applied	Part of overall QA/QC procedures discussed in Section 3.3
Purpose of the data	Calculation of project emissions
Calculation method	Not applicable
Comments	None

Data / Parameter	**Total CO2**
Data unit	Tonnes
Description	Total CO2 sequestered by the trees
Source of data	Calculation
Description of measurement methods and procedures to be applied	Allometric equations are assigned to each stratum. DBH values are applied to the allometric. Average biomass of a tree in each stratum is calculated and multiplied by number of trees in each stratum. Biomass is converted to CO_2e and the CO_2e of the stratum are totaled.
Frequency of monitoring/recording	Calculation takes place with each monitoring report
Value monitored	See "Ex-post Strata" worksheet of Appendix 14
Monitoring equipment	Computer and database
QA/QC procedures to be applied	Part of overall QA/QC procedures discussed in Section 3.1.3
Purpose of the data	Calculation of project emissions
Calculation method	See Section 3.1.3

Comments	None

3.1.3 Monitoring Plan

Organization and Responsibilities

The Small Groups manage themselves based on a covenant among the members of each Small Group. They manage and oversee their own trees. They contract with Clean Air Action Corporation (CAAC) to sell their carbon, receive payments, and receive training. The GHG component of TIST is managed by CAAC, who developed the database, web site, and procedures for monitoring the GHG. CAAC is responsible for the PD, monitoring plan and for selling any GHG that becomes available.

The operational processes for monitoring the actual GHG removal by the sinks are for TIST Quantifiers to visit each grove, at minimum, once every five years, to count trees and collect circumference, GPS, and other data. Quantifiers are audited by the TIST Kenya staff. Quantifiers transmit the monitoring data via the Internet to the TIST website, where it is managed by CAAC. CAAC oversees the data and conducts QA/QC reviews. Feedback is provided to the TIST's Quantifiers and office staff. CAAC is responsible for tabulating carbon stocks.

The TIST Data System stores all of the current and archived data. CAAC managers use customized reports to analyze the data and look for trends, missing data or obvious errors. TIST managers visit selected project areas and observe quantifications and audits.

Monitoring and Carbon Calculations

The overall plan employs TIST Quantifiers going to each PA, counting each tree by stratum and taking circumference measurements of up to 20 trees in a stratum. The data is recorded on a smartphone using a custom database. The data is uploaded to the TIST database via the Internet where it is incorporated with all the other monitoring data and displayed on the TIST website (tist.org). This is an ongoing process that takes place almost every day. As each PA is revisited, the old data is archived, and the results of the new quantification are displayed on the website. The data used in this monitoring report is the most current information from each PA. It was accessed from the database by the proponent and used in the carbon calculations.

The steps used to calculate the carbon removals are in section 3.2.2.

Data Management and QA/QC

TIST uses the following QA/QC procedures:

- **Quantifier Training:** Quantifiers receive explicit training in regard to TIST's Standard Operating Procedures,[45] so that quantifications are performed in a standard and regular fashion. Quantifiers generally meet monthly to discuss questions or problems that they may have and receive training and software updates when necessary. Quantifiers are not

[45] Exhibit 40 Quantifier Manual: TIST KE PD-VCS-Ex40 Quantifier Manual 101221.doc at http://www.tist.org/PD-KE-VCS-001-004%20Documents.php.

dedicated to a grove for the life of that grove and may be rotated to other groves. They use smartphones with a custom app to record data and transmit it to the TIST server.

- **Staff Audits:** TIST staff members are trained to quantify groves and have smartphones that are programmed to conduct audits. A requirement of their job is to periodically audit Quantifiers, including an independent sampling of tree counts and circumference measurement.
- **Multiple Quantifications:** TIST's internal goal is to quantify each project area at least once every five years. Inaccurate data and errors are self-correcting with the subsequent visits. If trees have died or have been removed, a new count will reflect the current population. The growth of the trees, as indicated by increased DBH, is monitored with these subsequent visits. If a species is mislabeled, it will arise as a conflict when different Quantifiers attempt to perform tree counts for that grove that do not match the previous one. Comparisons are made over time, to determine whether a particular quantification, or tree count, appears unrealistic.
- **Cluster Meeting Updates:** The Cluster provides an alternate method of gathering intelligence about what is happening at the Small Group level and to individual groves, including information that might assist in monitoring the actual GhG removal.
- **Multiple Tracks:** In order to ensure that the location and perimeter of each PA is accurate, two GPS tracks are taken at baseline. Tracks are also taken during subsequent quantifications.
- **Double Counting:** To ensure that the same project area is not counted more than once, an overlap script was used that compares the outline of all project areas. If an overlap was detected, the project areas were visually compared. If an overlap was determined, the overlapping project areas were removed from the PD.
- **Data Quality:** TIST Quantifiers count every tree in each PA. Counting each tree is 100% sampling and provides greater than 10% precision at the 95% confidence level. Up to 20 circumference readings for each stratum in a PA are taken and archived, to develop a localized database of growth data by strata. This sampling exceeds the 10% precision at the 95% confidence level required by the methodology.
- **TIST Data System:** The data system is an integral part of TIST's quality assurance and quality control plan. The smartphones are programmed in a manner that requires the data to be collected in a step-by-step manner, increasing the likelihood that all the data will be collected. Data field characteristics are defined to force the use of numbers, text or special formats. Drop down menus are used to restrict answers to certain subsets (e.g. a TIST Small Group name comes from a drop down menu). Some data fields are restricted to a range of data (e.g. negative numbers are not allowed). The data is uploaded within a few days to the main database, providing timely reporting and secure storage of the data.
- **Desk Audit:** TIST has developed analytical tools for reviewing data as it comes in from the field to look at track data, tree counts, and completeness of data.
- **Transparency:** By providing the quantification data online and available to anyone with an Internet connection, TIST is open to audit by anyone at any time. By providing the location, boundaries, tree count by species and circumference, any interested party can field check TIST data. This transparency and the actual visits that have already taken place provide a further motive to make sure the field data is correct.
- **Data Storage:** The data is being stored in an electronic format on the TIST server. Currently, the server hardware is operated by a third party company that specializes in web

and data hosting. The Amazon Cloud was used during this verification period. However, CAAC could, in the future, change hosts or choose to host the server at its offices.

Accuracy

Precision at 95% confidence level: The methodology required showing that the stratification approach could achieve a targeted precision level of ±10% of the mean at a 95% confidence level. This demonstration was made in the "Statistics" worksheet of Appendix 14.

The "Statistics" worksheet reads all of the circumference readings from the "Circ" worksheets. This was accomplished by using the database functions of Excel (DSUM, DCOUNT, etc.). Columns G through M are the results based on all of the Circ data. A modification has been added to identify circumference outliers. We revised the Statistics and Circ worksheets to enable us to identify the circumference measurements of every stratum that is in the 4th standard deviation above the mean. The 4th SD is identified in column M of the Statistics worksheet. Column O of the Circ worksheet compares these thresholds with each circumference measurement. If the value is in the 4th SD, it is excluded. Columns O through U of the Statistics worksheet are the statistics for this subset. The new mean is calculated in Column P.

The results are that the confidence level at 95% ranges between 1.05% and 4.74% of the mean in the four VCS MRs. The data meets the precision requirement of the methodology.

No zero values for trees less than breast height: The project counts all trees, but no circumference measurements are taken if the trees are less than breast height. We learned during the early stages of the program, that instead of entering a zero in the circumference field, Quantifiers sometimes left it null. To make sure this did not bias the results, a conservative approach was adopted, and the circumference of all one-year-old trees was set at zero.

No circumference sample if less than 20 trees in PA: In spite of the thousands of circumference readings taken for the project, there are cases where the circumference readings were not taken in project areas where the tree count was less than twenty. There was concern this could have a material effect on the total carbon calculated. This was tested by looking at the total number of trees that are affected by this issue. As shown in the "Misc Calc" worksheet of Appendix 14, only about 1% of the groves have less than 20 trees. Therefore, this issue is well below the 5% materiality threshold.

Conclusion: In conclusion, the Project meets the precision required by the methodology. In addition, the issue regarding one-year-old trees was addressed by assuming one-year-olds had zero biomass. The remaining issues of concern were shown to be both individually and cumulatively below the 5% materiality threshold.

3.1.4 Dissemination of Climate Monitoring Plan and Results (CL3.2)

All of the CCB and VCS documents including the results of the monitoring plan are available on the respective CCB and VCS project web sites. CAAC also makes all of the documentation available to the public on a dedicated web page.[46] Stakeholders are informed of this when they

[46] http://www.tist.org/PD-KE-VCS-001-004%20Documents.php.

receive the email[47] advising them of the CCB project, through reading this report that will be made public on the CCB project page and through reading the VCS registry posting.

A full monitoring plan was developed prior to the first verification. The following provides the monitoring results as of the end of the monitoring period. Worksheet references are to Appendix 14, the monitoring data spreadsheets used for the VCS verifications that apply to the PIR Period.

1. Total hectares of the project. 990 hectares PAs (active/pending, "PA Summary" worksheets).
2. Number of discrete project areas (PA): 3,529 total active project areas (active/pending, "PA Summary" worksheets).
3. Location and boundary of project areas:
   i. See Appendix 03 to PDDs, track files of each PA in KML format (Google Earth).
   ii. See "PA Summary" worksheet, "Latitude" and "Longitude" columns.
4. List of PAs including administrative information, tree counts, area and last monitoring date: See "PA Summary" worksheets.
5. Circumference Data: See "Circ" worksheets.
6. Tree data including count and species: Tree count is 456,422. See "Ex-post Strata" worksheets for species detail.
7. Carbon sequestration data by Strata: See "Ex-post Strata" worksheets.
8. Total Carbon Sequestered. Total: 180,144 (gross). PIR Period: -4,697 loss.

3.2 Quantification of GHG Emission Reductions and Removals

3.2.1 Baseline Emissions

No monitoring of the baseline is required. As demonstrated in Section 3.4 of the VCS PDs (001-004),[48] the change in baseline carbons stocks is below the threshold that would require monitoring. Because only the trees planted as part of the project are counted in the estimation of project removals, the baseline carbon stocks are fixed at zero.

3.2.2 Project Emissions

Emissions Caused by the Project

The emissions caused by the Project are considered zero. As addressed in the PD, this is due to the manner in which the Project is operated, such as: no vehicles, manual labor conducted by the small-hold farmers on their own land, restrictions on chemical fertilizers, no clearing of baseline trees and minimal disturbance of the ground for planting.

Project Removal Calculations

The following provides the step-by-step procedure used to determine the Project GHG removals:

[47] Exhibit 14: Public Comments
[48] Project Documents: TIST KE PD-VCS-001a PD Text 110215.pdf,
TIST KE PD-VCS-002a PD Text 110215.pdf,
TIST KE PD-VCS-003a PD Text 110215.pdf, and
TIST KE PD-VCS-004a PD Text 110215.pdf at http://www.tist.org/PD-KE-VCS-001-004%20Documents.php.

Step 1. Because of the difference in species and age of the trees and location, ownership and management of the project areas, each project area is monitored. They are documented in the "PA Summary" worksheet of Appendix 14. The location of each PA was obtained with a GPS and is also provided in the "PA Summary" worksheet of Appendix 14. The boundary of each project area was obtained using a GPS and provided in PD Appendix 03. The area was calculated and is listed with each project area in the "PA Summary" worksheet of Appendix 14.

Step 2. The strata for the ex-post estimation of the actual net greenhouse gas removals was done by species and year similar to the ex-ante estimate as described in PD Section 3.2. Stratification was done within each individual project areas. The area of a stratum in a project area ("Area of a Stratum (ha)") was determined by multiplying the area of project area (see Step 1) by the percentage of trees of that stratum in the respective project area. The results are provided in the "Ex-post Strata" worksheet of Appendix 14.

Step 3. Where a tree species exceeded 10% of the total tree inventory, it was assigned to a Major Strata. All other tree species were assigned to an "Other" strata. Based on the tabulations in Appendix 14, there are four major strata: eucalyptus, grevillea, cypress and other.

Step 4. Allometric equations were used to convert DBH values to biomass. An allometric equation for each Major Strata was identified. If a species specific equation for a Major Strata was unavailable, it used the "Other" equation as a default. Allometric equations were researched and the most appropriate ones identified by the Proponent were assigned to the major strata. Because no better allometric equation could be found for grevillea and cypress, they were assigned to the "Other" equation. The following is the assignment.

Eucalyptus[49]: $Log\ Y = -2.43 + 2.58\ Log\ C$
Grevillea: no species specific equations, will use "Other" equation
Cupressus: no species specific equations, will use "Other" equation
Other (default)[50]: $Y = (0.2035 \times DBH^{2.3196}) \times 1.2$

Where:

Y= aboveground dry matter, kg (tree)-1
DBH = diameter at breast height, cm
C = circumference at breast height, cm
ln = natural logarithm
exp = e raised to the power of
1.2 = expansion factor to go from bole biomass to tree biomass

The result is that there are only two Allometric Strata: eucalyptus and other. See "Circ" worksheet, Appendix 14.

Step 5. The DBH of up to 20 trees per stratum, per project area, were measured. The results of these measurements are presented in the "Circ (cm)" column of the "Circ" worksheet of Appendix

[49] DH Ashton, "The Development of Even-aged Stands in Eucalyptus regnans F. Muell. in Central Victoria," Australian Journal of Botany, 24 (1976): 397-414, cited by Tim Pearson, Sandra Brown and David Shoch, in "Assessment of Methods and Background for Carbon Sequestration in the TIST Project in Tanzania," Report to Clean Air Action Corporation, (December 2004). https://www.publish.csiro.au/bt/BT9760397

[50] Exhibit 05 Winrock Report: Tim Pearson, Sandra Brown and David Shoch, in "Assessment of Methods and Background for Carbon Sequestration in the TIST Project in Tanzania," Report to Clean Air Action Corporation, (December 2004) at http://www.tist.org/PD-KE-VCS-009%20Documents.php.

14. Each DBH value for each tree measured was applied to the appropriate allometric equation and the above ground biomass ("AG Biomass, kg") of each per tree in the stratum was obtained.[51]

The "Average Above Ground Biomass per Tree (kg)" of the "Ex-post Strata" worksheet was created by processing the "AG Biomass (kg)" values in the "Statistics" worksheet. The individual "AG Biomass" values were transferred by strata to the "Sample Data" section of the "Statistics" worksheet. To be conservative, where the strata age was one year, a zero was entered in the column. The "Statistics" worksheet has a row ("Mean, t BM"), which used the Excel "Average" function to derive the average biomass for each stratum.

The values from "Mean, t BM" of each allometric/age strata were transferred to the "Biomass/ Tree, kg" column of the "Circ" worksheet using an Excel "Lookup" function.

Step 6. For each stratum in each project area, the average above ground biomass per tree ("Biomass/ Tree, kg" column "Ex-post Strata" worksheet) was multiplied times the number of trees, to yield the above ground biomass in stratum (kg), and divided by 1,000 to obtain above ground biomass in stratum ("AG Biomass in Stratum, t").

Step 7. The methodology requires the use of "tonnes of biomass per hectare" as a factor, in a subsequent step. It was determined by dividing the above ground biomass, in stratum (t), from Step 6, by the area of the stratum, from Step 2.

$$\text{Above Ground Biomass in Stratum (t/ha)} = \frac{\text{Above Ground Biomass in Stratum (t)}}{\text{Area of the Stratum (ha)}}$$

Step 8. The above ground biomass in stratum ("AG Biomass in Stratum, t/ha") was multiplied by 0.5 to convert biomass to carbon. The result is above ground carbon in stratum ("AG Carbon in Stratum, t/ha").

Step 9. The carbon stocks of the below ground biomass of each stratum ("BG Carbon in Stratum, t/ha") were calculated by multiplying "AG Biomass in Stratum, t/ha" by the appropriate roots to shoot ratio and by 0.5, the carbon fraction of the biomass. A root to shoot factor of 0.27 is used.[52]

Step 10. The total carbon stocks (CO_2e) are determined by adding the above and below ground carbon (C) of each stratum in each project area, multiplying each sum by the respective area of that stratum, converting the result to CO2e and summing the products. The following is the general equation required by the methodology.

$$P(t) = \sum_{i-I}^{I} (PA(t)\ i + PB(t)\ i) * Ai*(44/12)$$

Where:

[51] The "AG Biomass (kg)" column is the result of this operation. The "Code" function in the formula is looking for an "E" (ASCII 69) in the first letter of the entry in the "Allometric Strata" column to indicate eucalyptus. If the "Code" is E, then the first (eucalyptus) equation applies. If not, the "other" equation applies.

[52] Exhibit 10 GPG-LULUCF: TIST KE PD-VCS-Ex10 GPG-LULUCF 2003 Root-Shoot.pdf, Table 3.A.1.8, at http://www.tist.org/PD-KE-VCS-009%20Documents.php.

$P_{(t)}$ = carbon stocks within the project boundary at time *t* achieved by the project activity (t CO_2e)
$PA_{(t)}I$ = carbon stocks in above-ground biomass at time *t* of stratum *i* achieved by the project activity during the monitoring interval (t C/ha) from Step 8.
PB(t)I = carbon stocks in below-ground biomass at time *t* of stratum *i* achieved by the project activity during the monitoring interval (t C/ha) from Step 9.
Ai = project activity area of stratum *i* (ha) from Step 2.
I = stratum *i* (*I* = total number of strata)

The first part of this equation required adding the "AG Biomass in Stratum, t/ha" and "BG Carbon in Stratum, t/ha" and multiplying the sum by the area of each stratum and by 44/12 to convert carbon to CO_2. This is accomplished in the "CO2 in Stratum (t)" column.

The second part of this formula required summing the values in the "CO2 in Stratum (t)" column. The result is in the "CO2 in Stratum (t)" column of the "Ex-Post Strata" worksheet on the "Project Total" row (bottom of worksheet).

The Steps 1 through 10 result in the cumulative removal from the trees as of the end of the current monitoring period. To obtain the Net GHG Emission Reductions and Removals for Section 3.2.4, the removals from the previous monitoring periods must be subtracted.

Change in PA Status

During the monitoring period, some PAs were removed from the VCS PDs. The reader is referred to the monitoring reports for the four VCS PDs, KE PD VCS 001-004.

Loss Event Calculation

As noted in Section 2.2.3 of this MR, VCS PD KE 001 suffered a loss during this monitoring periods due to the actions harvesting of trees by a large land owner and his family. The calculation of the loss is based on the Project Removal Calculations, above, and uses the exact same equations and methods.

The results during this monitoring period is a gross removal of 24,291 tonnes (See Appendix 14 (TIST KE PD-VCS-001o App14 Verif 03 Monitor Data 200522.xlsx at http://www.tist.org/PD-KE-VCS-001-004%20Documents.php). The final step in Project Removal Calculations is “the removals from the previous monitoring periods must be subtracted”.

KE PD VCS 001 History	Tonnes
Total Removals to Date	24,291
Less: Removals Monitoring Period 01	**39,094**
Less: Removals Monitoring Period 02	**34,033**
Net Removals Monitoring Period 03	-48,837

3.2.3 Leakage

For ex-post leakage, the methodology requires the monitoring of cropland, domesticated grazing animals and domesticated roaming animals displaced by the project activity during the first monitoring period. If the indicators were less than 10%, leakage is set to zero. The monitoring results provided in the PD indicated cropland and grazing leakage is below the thresholds that require further monitoring and that the ex-post leakage can be set at zero.

3.2.4 Net GHG Emission Reductions and Removals

The equation for calculating the Net GHG Removals is:

Project removals – Baseline emissions – Leakage = Net Removals
-4,697 – 0 – 0 = -4,697

Table 3.2.4a: Removals by Vintage

Monitoring Report	Baseline emissions (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
KE VCS-001	0	-48,837	0	-48,837
KE VCS-002	0	6,762	0	6,762
KE VCS-003	0	33,231	0	33,231
KE VCS-004	0	4,146	0	4,146
Total	**0**	**-4,697**	**0**	**-4,697**

As part of the VCS requirements, a risk analysis was conducted.[53] Based on the tool, the risk ratings are as follows for each PD:

KE VCS-001: 1.0
KE VCS-001-L: Fail (see section 2.2.5)
KE VCS-002: 1.0
KE VCS-003: 1.0
KE VCS-004: 1.0

Table 3.2.4b reflects the eligible issuance for KE VCS-002, KE VCS-003 and KE VCS-004, only. KE VCS is a loss and will not issue credits.

[53] Appendix 12 Risk Analysis

Table 3.2.4b: Buffer by Vintage

Year	Net GHG removals (tCO2e)	Buffer pool allocation	VCUs eligible for issuance
2015	3,592	359	3,233
2016	9,258	926	8,332
2017	9,233	923	8,309
2018	9,233	923	8,309
2019	9,233	923	8,309
2020	3,592	359	3,233
Total	44,139	4,414	39,725

3.3 Optional Criterion: Climate Change Adaptation Benefits

3.3.1 Activities and/or processes implemented for Adaptation (GL1.3)

Over the course of the project, several activities have been implemented to assist farmers in adapting to climate change. Below are those activities and how they assisted communities to adapt to the probable impacts of climate change.

Drawdown of CO2: Ultimately, climate change must be addressed through the removal of CO2 from the atmosphere. Thus far and project wide, TIST farmers have removed more than 5M tonnes of CO2. This CCB PD encompasses 262,000 tonnes on removals since project start.

Conservation Farming: TIST trains farmers on climate resilient agricultural techniques. Education of FAO Conservation Farming techniques allows farmers to gather minimal rainfall in specially dug and spaced holes. Even in times of drought or limited rainfall, this technique allows crops to grow. More than 121,449 person-training sessions were conducted in Conservation Farming during the monitoring period. In TIST seminars, TIST farmers have reported over double the yield when using conservation farming and still having a crop in dry years when their traditional plots failed. We estimate that over the monitoring period the average TIST farmer's monetized benefit from these enhanced farming techniques to be 36,170 KES

Trees: Trees retain moisture and create microclimates on TIST participants farms. Trees provide shade to cool farms and introduce new organic matter to restore soil health. This makes farms more productive in adverse conditions. Trees prevent erosion and can serve as windbreaks when planted near structures. There are 456,422 trees in this PD.

Community Organization: TIST farmers organize themselves in local and regional groups that share knowledge in monthly Cluster meetings. These meetings provide an opportunity for farmers to share experiences and find locally appropriate solutions to local issues. This organization makes TIST farmers better able to navigate the challenges posed by climate change. There are 304 active Clusters in TIST Kenya that held 14,712 meetings during the monitoring period. The topics address many of the climate change scenarios, such as "Heavy rains experienced in East Africa. Some of the ideas to control Flooding and Landslides",[54]

[54] Mazingira Bora, January 2020, page 3 at http://www.tist.org/i2/moreinfo.php.

"Salama Cluster: Partnership to combat effects of Climate Change",[55] "Time to prepare your shamba for Conservation Farming (CF)",[56] "TIST Farmers Combat Global Warming and Climate Change",[57] "The Importance of Trees.", [58]and "Planting Trees in Dry Areas".[59]

4 COMMUNITY

4.1 Net Positive Community Impacts

4.1.1 Community Impacts (CM1.1)

The project creates a positive socio-economic impact. Some of the benefits that have been realized by the Small Group members and their families:

- **New job opportunities:** TIST requires a Host Country staff to operate. There are currently 74 employees and contractors. TIST personnel travel by public transportation and buy food and supplies from local merchants, bolstering the local economy.
- **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. The project is self-funding from the sale of carbon credits and Starting this monitoring period, the Small Groups are receiving 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 provide 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 ex-ante estimated carbon stocks. In addition, the farmers may thin their trees as part of the on-going management of the Project Area and sell or use the harvested stems as timber.
- **Natural medicines, insecticides and other benefits from trees:** Small groups are maintaining medicinal tree such as Azadirachta indica and those with other non-wood benefits such as Leucaena leucocephala and moringa.
- **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 and Clusters, 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,

[55] Mazingira Bora, March 2020, page 3 at http://www.tist.org/i2/moreinfo.php
[56] Mazingira Bora, March 2017, page 3 at http://www.tist.org/i2/moreinfo.php
[57] Mazingira Bora, March 2017, page 4 at http://www.tist.org/i2/moreinfo.php
[58] Mazingira Bora, April 2019, page 5 at http://www.tist.org/i2/moreinfo.php
[59] Mazingira Bora, March 2018, page 4 at http://www.tist.org/i2/moreinfo.php

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.

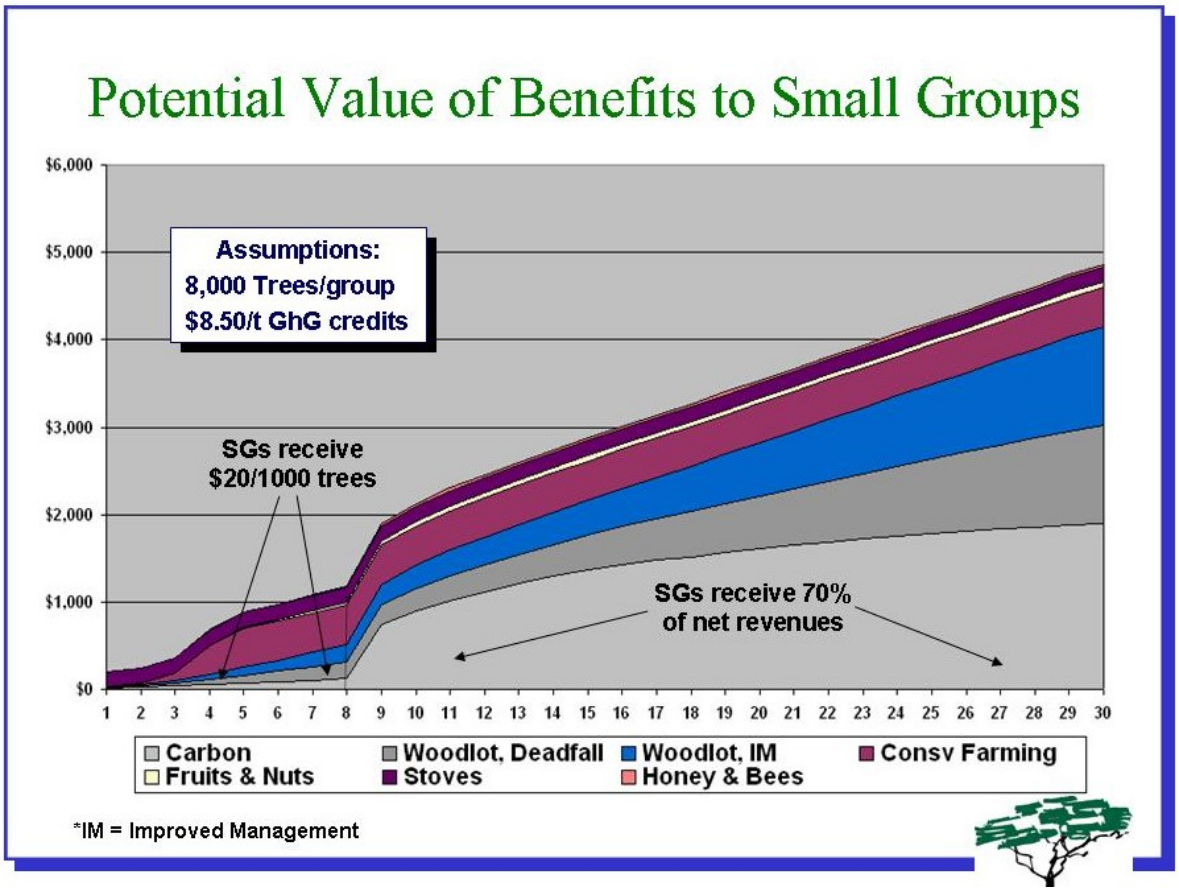


Figure 4.1.1.A: Potential Value of Benefits to Small Groups

The economic value to each member is dependent on which program elements they choose to adopt. The Figure 4.1.1.A 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. Figure 4.1.1.B 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.

Another benefit that the program provides is the potential for a sustainable fuel wood supply. Figure 4.1.1.B 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.

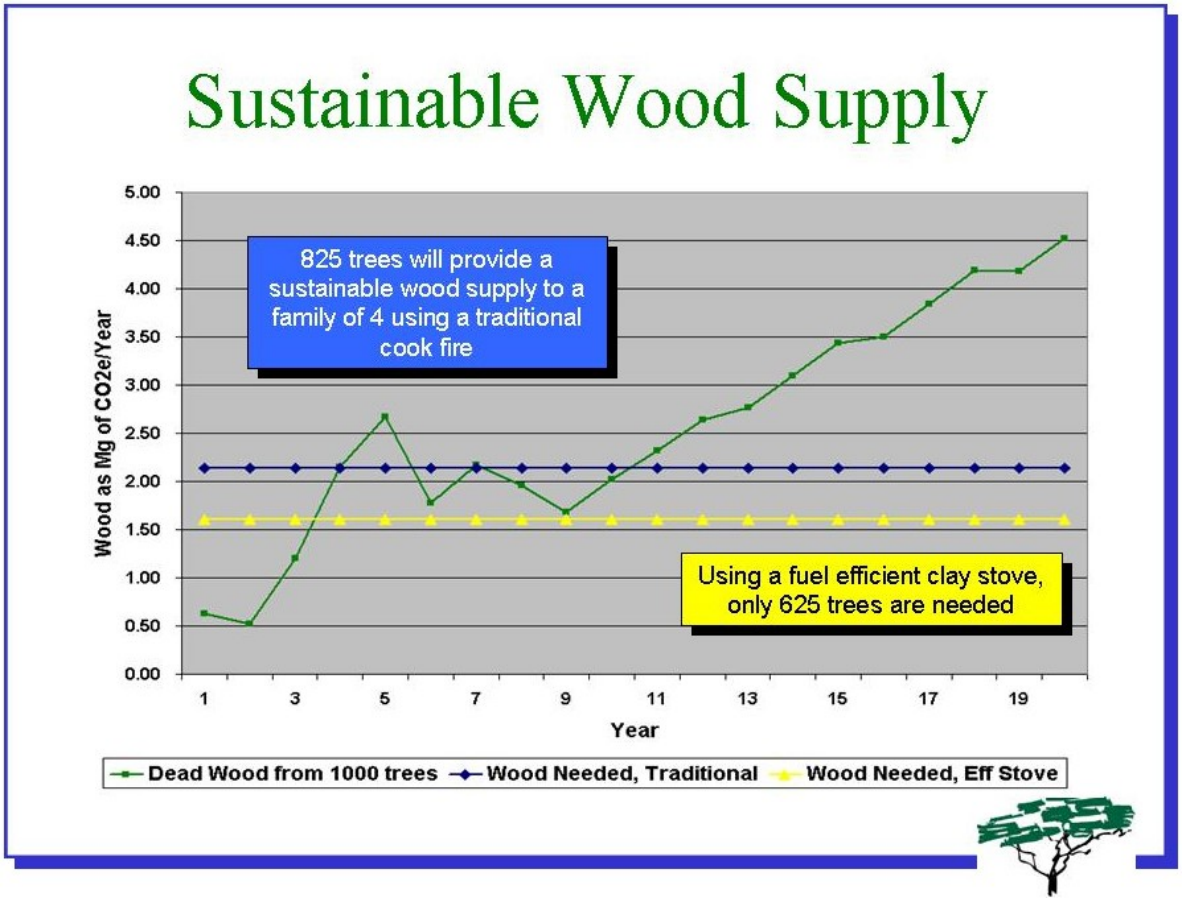


Figure 4.1.1.B: Sustainable Wood Supply

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.

4.1.2 Net Positive Community Well-Being Impacts (CM1.1)

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 4.1.1 itemizes the positive benefits our different programs and trainings. Each one is available to the members at zero cost.

Many of these programs are also covered in the Gold Level community survey (Section 4.4) and monetized. It demonstrates that the program has a net financial benefit to each farmer and that virtually all the members have received some training.

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. Training has reduced the number of eucalyptus trees.

4.1.3 Protection of High Conservation Values (CM1.2)

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.

4.2 Offsite Stakeholder Impacts

4.2.1 Mitigation of Negative Impacts on Other Stakeholders (CM2.2)

The CM2.1 of the CCB PD mentions one possible negative impacts of TIST:

- Planting eucalyptus trees could have a negative effect on ground water and water courses.

There have been no reports of this happening. Though it is up to the farmers to select which species to plant, TIST does not encourage the planting of eucalyptus trees.

4.2.2 Net Impacts on Other Stakeholders (CM2.3)

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 nut 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 of 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.

4.3 Community Impact Monitoring

4.3.1 Community Monitoring Plan Development (CM3.3)

TIST has met the challenge of obtaining accurate information from a multitude of small discrete project areas in remote areas, where roads are poor and infrastructure is minimal, by combining high-tech equipment and low-tech transportation within its administrative structure. The TIST Data System is an integrated monitoring and evaluation system currently deployed in Kenya and TIST projects around the globe. On the front end is a handheld computer-based platform supported by GPS technology that is utilized by field personnel (quantifiers, auditors, trainers and host country staff) to collect project information. This includes data relating to registration, accounting, training, tree planting, baseline data, conservation farming, stoves, GPS plots, and photographs. The data is transferred to TIST's main database server via the internet and a synchronization process where it is incorporated with historical project data. The server provides information about each tree grove on a publicly available website, www.tist.org. In addition, the other data is available to TIST staff through a password-protected portal.

The handheld computers have been programmed with a series of custom databases that can temporarily store GPS data, photographs, and project data. The interface is designed to be a simple to use, checklist format that ensures collection of all of the necessary data. It is simple enough for those unskilled in computers and high-tech equipment to be able to operate after a short period of training. The interface can also be programmed for data collection not specific to the project. The handhelds are "off the shelf," keeping their costs relatively low.

The synchronization process takes place using a computer internet connection. While office computers are used where available, field personnel commonly use cyber cafes, reducing travel time and improving data flow. Where available, cell phones using GPRS technology are now allowing synchronization from remote tree groves and project areas, providing near real-time data.

The TIST Data Server consists of a public side, accessible by anyone over the internet and a private side only accessible through a password-protected portal. On the public side, a dynamic database is used to constantly update the displayed data. Changes can be seen daily as new synchronizations come in. By mapping the project data with photos and GPS data, the results of each Small Group can be seen on a single page. The GPS data has been programmed with Google Maps to locate project activities anywhere in the world on satellite imagery.

On the private side, confidential accounting data, archive data and data not currently displayed is available. This is the source data for the custom reports and tables necessary for project managers. It is also the source of much of the date used in the CCB monitoring reports.

Monitoring was done as part of the overall monitoring of TIST. Data was be collected by TIST quantifiers as they visited each Small Group to count trees by species, count and measure Conservation Farming plots and count fuel-efficient stoves. Trainers collected training information at cluster meeting, seminars and training meetings, which included the subjects covered and the numbers and gender of people attending. The metric for training is person-sessions, meaning the numbers reported are expected to exceed the number of members. Contracts were 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 is obtained from administrative records.

Data collection is ongoing. Field data is 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.

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

1. **Number of Small Group members in PD (male and female).** Number of active members associated with the Small Groups that are listed in the CCB PD.
2. **Number of Small Groups in PD.** The Small Groups that are listed in the CCB PD.
3. **Number of community members in TIST Kenya (male and female).** This is for all of TIST Kenya and extends beyond the Small Groups listed in the CCB PD.
4. **Number of Small Groups in TIST Kenya.** This is for all of TIST Kenya and extends beyond the Small Groups listed in the CCB PD.
5. **Number of community members active in TIST Kenya.** Active member means they participate in any of the following TIST programs: tree planting, nurseries, conservation farming, stoves, riparian buffer, erosion control, etc. This is for all of TIST Kenya and extends beyond the Small Groups listed in the CCB PD.
6. **Number of members adopting natural resource management (NRM) practices.** This is expected to be the same as the number of community members active in TIST Kenya. However, if TIST adds new programs that are not NRM related, they will differ. This is for all of TIST Kenya and extends beyond the Small Groups listed in the CCB PD.
7. **Number of community members with greenhouse gas agreements with TIST.** Cumulative number of TIST members who have GhG contracts. This is for all of TIST Kenya and extends beyond the Small Groups listed in the CCB PD.
8. **Total payments to community.** Accumulated cash payments including carbon stipend, carbon revenue share and any other payment for environmental service paid to the Small Groups that are in TIST Kenya. This extends beyond the Small Groups listed in the CCB PD.
9. **Number of community members adopting Conservation Farming.** Cumulative number of members in TIST Kenya who have used Conservation Farming. This extends beyond the Small Groups listed in the CCB PD.
10. **Number of person-training session in climate change (male and female).** Cumulative number of attendees to a TIST Kenya training session. Invitees extend beyond Small Group members associated with the CCB PD. Person-training session metric.
11. **Number of person-training session in HIV/AIDS and heath (male and female).** Cumulative number of attendees to a TIST Kenya training session. Invitees extend beyond Small Group members associated with the CCB PD. Person-training session metric.
12. **Number of person-training session in biodiversity (male and female).** Cumulative number of attendees to a TIST Kenya training session. Invitees extend beyond Small Group members associated with the CCB PD. Includes indigenous trees, erosion and riparian buffers. Person-training session metric.
13. **Number of live trees in PD .** This is the total trees alive at the last quantification visit by a TIST quantifier. This was originally for the entire TIST program but has been changed to just reflect what is in the PD.

14. **Number of fruit or nut trees in PD.** Total number of fruit and nut trees planted by TIST Kenya and alive at the last quantification visit at each project area. This was originally for the entire TIST program but has been changed to just reflect what is in the PD.
15. **Number of eucalyptus trees in PD.** Total number of eucalyptus trees planted by TIST Kenya and alive at the last quantification visit at each project area. This was originally for the entire TIST program but has been changed to just reflect what is in the PD.
16. **Number of fuel efficient stoves used in TIST Kenya.** Cumulative number of fuel-efficient stoves used by a TIST Kenya member or group. It extends beyond the Small Groups in the CCB PD and includes all of TIST in Kenya.
17. **Number of people employed by TIST or under contract to deliver services.** Number utilized at the time of the monitoring report preparation. It extends beyond the Small Groups in the CCB PD and includes all of TIST in Kenya.

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

The TIST database is off-site and has an off-site backup. The information collected and used for this monitoring program will be archived for at least two years, following the last monitoring period of the carbon credits associated with this CCB project.

The community monitoring plan was developed in the first monitoring period. Section 4.3.2 lists all the items to be monitored and provides the source of the data for each. Appendix 14 and all the other documents and exhibits referenced in this MR are available at http://www.tist.org/PD-KE-VCS-001-004%20Documents.php).

Data in 4.3.2 denoted as “Source: custom database query” are pulled from the TIST Database. The database is very extensive and complicated. Due to internet security issues, it is protected and access is limited to a hand full of people. Accessing the data is only by password and requires custom programming to pull the data.

4.3.2 Community Monitoring Plan Results (CM3.1, CM3.2, GL2.5)

The monitoring is of the TIST members, both within this PD (7,767 people) and of TIST Kenya as a whole (77,813 people).

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

1. Number of Small Group members in PD (male and female): 7,767 people; 3,012 women; 4,653 men; remainder undifferentiated. (Source: custom database query)
2. Number of Small Groups in PD: 2,912. (Source: Tabulation from PA Summary, Appendix 14)
3. Number of community members in TIST Kenya (male and female): PD people; 31,364 women; 45,828 men; remainder undifferentiated. (Source: custom database query)
4. Number of Small Groups in TIST Kenya: 10,838. (Source: custom database query)
5. Number of community members active in TIST Kenya: 76,319 people (Source: custom database query)
6. Number of community members adopting natural resource management practices in TIST Kenya: 61,024 people; 25,006 women; 36,018 men. (Source: custom database query)

7. Number of community members with greenhouse gas agreements in TIST Kenya: 58,208 people; 23,797 women; 34,411 men. (Source: custom database query)
8. Total payments to community in TIST Kenya: US$1,037,699 since Project start. US$420,930 this monitoring period. (Source: custom database query)
9. Number of community members adopting Conservation Farming in TIST Kenya: 11,073 people. (Source: custom database query)
10. Number of person-training sessions on climate change in TIST Kenya: Project Lifetime 125,730 people; 52,604 women; 73,126 men. Monitoring Period 86,429 people; 35,923 women; 50,506 men. (Source: custom database query)
11. Number of person-training sessions on HIV/AIDS and health in TIST Kenya: Project Lifetime 132,878 people; 69,088 women; 63,790 men. Monitoring Period 6,306 people; 2,662 women; 3,644 men. (Source: custom database query)
12. Number of person-training sessions on biodiversity in TIST Kenya: total people; Project Lifetime 276,032 people; 163,590 women; 112,442 men. Monitoring Period 93,853 people; 41,782 women; 52,071 men. (Source: custom database query)
13. Number of live trees planted by Small Groups in PD (see Section 2.2.3): 456,422 trees. (Source: Tabulation from PA Summary, Appendix 14)
14. Number of fruit or nut trees in PD: 34,318 trees. (Source: Tabulation from Ex Post Strata, Appendix 14)
15. Number of eucalyptus trees in PD: 112,075 trees. (Source: Tabulation from Ex Post Strata, Appendix 14)
16. Number of fuel efficient stoves that have been used in TIST Kenya: 21,949 stoves. See Section 2.2.3.
17. Number of people employed by TIST or under contract to deliver services: 74 people. (Source: administrative records)

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

Data is collected by TIST Quantifiers as they visit each Small Group to count trees by species and age. The data reported is collected periodically and at different times for each PA. Only the most recent data is used. The monitoring date is can be found in Column N, PA Summary worksheet, Appendix 14 Monitoring Data V3 at http://www.tist.org/PD-KE-VCS-001-004%20Documents.php).

Training data is based on data collected at the Cluster meetings and uploaded to the TIST server. The metric for training is person-sessions, meaning the numbers reported are expected to exceed the number of members. The frequency of the meetings and monitoring are about once per month per Cluster. The dates and monitoring data are in Exhibit 42.[60]

Contracts are 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 is obtained from administrative records.

[60] Exhibit 42 Training Master: TIST KE PD-VCS-Ex42 Training Master.xlsx at http://www.tist.org/PD-KE-VCS-001-004%20Documents.php).

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

4.3.3 Dissemination of Monitoring Plan and Results (CM3.3)

All of the CCB and VCS documents, including the results of the monitoring plan, are available on the respective CCB and VCS project web sites. CAAC also makes all of the documentation available to the public on a dedicated web page.[61] Stakeholders were informed of this when they received the email[62] advising them of the effort to recertify this PD.

For those TIST members without internet, the project has developed its Mobile TIST website that is low bandwidth and designed to work with a mobile phone.[63] For those without a smartphone, they can see the results of their Small Group's quantification on their vouchers or discuss the results when the Quantifier is monitoring their PAs or come to the monthly cluster meetings and ask. For those with no other access, they can also go to a local cyber café and see the full reports on-line. The monitoring results have also been published in the TIST Kenya newsletter.[64]

4.4 Optional Criterion: Exceptional Community Benefits

For the purpose of demonstrating Gold Level for exceptional community benefits, TIST members were surveyed to identifying some of the positive and negative impacts they experienced from participating in TIST. The survey has been conducted twice in Kenya. The first was of 124 random TIST members between June and August 2011. The interview tool consisted of 39 questions. The instructions for the survey[65], the survey form[66] and survey results are available[67] on the PD web page. The four main topic areas of the survey were:

1. demographic/basic information (including literacy, income);
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 questionnaire[68] and results[69] are on the PD web page.

Project Explicitly Pro-Poor: The original survey indicates that 35.5% of the respondents make less than KES 12,000 (US$112) per year and a cumulative total of 85% make less than 60,000

[61] http://www.tist.org/PD-KE-VCS-001-004%20Documents.php).
[62] Exhibit 14 Public Comments
[63] TIST Mobile: https://www.tist.org/mobile/secure/login.php?ses=gea0rj8ej2odmk314l6difd7q3
[64] Mazingira Bora October 2020 at http://www.tist.org/i2/moreinfo.php
[65] Exhibit 21 Survey 01 Overview: TIST KE PD-VCS-Ex21 GL2 Survey Overview.doc
[66] Exhibit 22 Survey 01 Questionnaire: TIST KE PD-VCS-Ex22 GL2 Community Benefits Survey.doc
[67] Exhibit 23 Survey 01 Results: TIST KE PD-VCS-Ex 21 GL2 Community Survey Template.doc
[68] Exhibit 24 Survey 02 Questionnaire: TIST KE PD-VCS-Ex24 YaleNEC Benefits Survey.doc
[69] Exhibit 23 Survey 02 Results: TIST KE PD-VCS-Ex25 YaleNEC Benefits Results.xls

Ksh (US$560) per year. The Yale/NEC survey indicates 16% of the respondents make less than KES 12,857 per year (US$120) and more than 72% make less than KES 64,286 (US$600) per year. Since income level for abject poverty varies between US$365 per year ($1/day) and US$730 per year ($2/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 (6 animals or less);
- their land ownership is in the lowest quartile (2 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.

Table 4.4a: Survey Results, Average KES Per Member

Benefit	Original Survey	Yale/NEC Survey
Carbon stipend	479	1,069
Incentive for work	465	454
Fruits/nuts	14,080	20,470
Firewood and Stove	758	24,174
Harvest fodder	6,034	10,805
Animal products	6,048	67,482
Improved Crops	1,960	7,483
Produce compost/manure	3,756	6,366
Honey/Bees	780	1,134
Produce seedlings	2,596	7,241
Total	**36,956**	**146,678**

The original survey was the cumulative benefits through 2011. The Yale/NEC benefits were for the year 2014. We believe these results remain valid. TIST has not changed its approach to continually train and incent members to adopt these core programs. We also know that the implementing farmers are continuing to receive some of these benefits: for example, we are paying the stipend, we are paying some of the farmers for TIST work, and quantification shows an inventory of fruit and nut trees. Extrapolating the lifetime benefits to date gives a total approximate cumulative value of TIST membership of KES 988,219 ($9,227). Extrapolating the 2014 benefits, total approximate cumulative value of TIST membership during the monitoring period is KES 708,942 ($6,619).

In addition to the above, FY 2018 and 2019 marked the first time the farmers were able to receive a profit share from carbon sale profit. In 2018, Kenya farmers with carbon in PDs shared $142,284. In 2019, all of the farmers with carbon (in and out of a PD) will share $280,017.

The surveys also collected data on the beneficial sustainable development training. The metric in the following table is the average training sessions per person.

Table 4.4b: Average TIST Training Sessions Per Person

Health topic	First Survey (n=46) Cum 2003-2011	Second Survey (n=120) 2014 only
HIV/AIDS	5.2	1.6
Malaria	5.0	1.4
Fuel efficient stoves	3.7	1.2
Hygiene	5.9	1.2
Clean drinking water	7.3	1.3
Nutrition	3.3	1.1
Other	2.1	0.6
Total	32.5	8.4

We have tabulated the person-session training since the beginning of TIST in Kenya. The following table includes the monitoring period.

Table 4.4c: TIST Cluster Person-Training Sessions, Project Lifetime

Training Topic	Total	Female	Male
Climate Change	126,323	52,868	73,455
HIV/AIDS	132,878	69,088	63,790
Biodiversity	276,568	163,797	112,771
Natural Resource Management	621,935	264,492	357,443
TIST Practices	426,870	183,033	243,837
Other Sustainable Development	160,105	77,869	82,236
Total Training	1,744,679	811,147	933,532

The following table represents the person-training session from the Cluster meetings during the monitoring period.

Table 4.4d: TIST Cluster Person-Training Sessions, Monitoring Period

Training Topic	Total	Female	Male
Climate Change	87,022	36,187	50,835
HIV/AIDS	6,306	2,662	3,644
Biodiversity	94,389	41,989	52,400
Natural Resource Management	332,484	150,637	181,847
TIST Practices	290,633	124,722	165,911
Other Sustainable Development	122,959	62,022	60,937
Total Training	933,793	418,219	515,574

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:

Table 4.4e: Negative Impact, lose money

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:

Table 4.4f: Negative Impact, use too much land

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:

Table 4.4g: Negative Impact, less food

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:

Table 4.4h: Negative Impact, families unhappy with TIST membership

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:

Table 4.4i: Negative Impact, too busy

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%

Since TIST is voluntary and the amount of participation by the farmers is up to them, many of the “Very True” responses that appear to be negative, are actually in the hands of the farmers

themselves. Unquestionably, TIST has set up structures like Small Group and Cluster meetings that take time to attend and encourages adoption of many sustainable development practices that require effort. These are voluntary and we believe the time and effort are well worth it. What is adopted and how much time is put in is up to the farmer. We have had farmers leave the program, which is certainly their prerogative. However, we still have over 70,000 farmers in Kenya, so appears they believe they are receiving a net benefit.

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 the time of the survey, the farmers only received a small tree stipend as an advance payment on the carbon. As noted above, the farmers are now sharing 70% of the profits from carbon sales. The profits share distributions will continue as long as the carbon market is robust. The market has been thin and the price low for many years, but we have seen a steady improvement since mid-2019, which means more future profits for the farmers.

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 76,436 farmers on a timely basis remains a challenge. We are always looking for ways to improve the payment system.

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. A comparison of the monetized benefits and sustainable development training to the negative benefits discussed above confirms that TIST has a positive net benefit to the participant. They receive cash money, training that they can monetize into financial benefits, they improve their food security, re-green their farms, enrichen their soil and learn about health issues. On the negative side, they have to put in some time and effort to gain these. We believe the net benefit is positive. Since most of the members are poor, it can be further concluded that TIST has a net positive impact on poor subsistence farmers.

Marginalized and/or Vulnerable People. 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:

Table 4.4j: Benefits to Vulnerable People (Avg. KES/Person)

Benefit	Original Survey	Yale NEC Vulnerable 1	Yale NEC Vulnerable 2
Carbon stipend	154	4,000	1,292
Incentive for work	5,014	0	233
Fruits/nuts	4,417	2,050	2,525
Firewood and Stove	With above	2,500	2,583
Harvest fodder	1,325	4,000	1,067
Animal products	Not collected	56,160	18,057
Improved Crops	1,350	2,500	3,177
Produce compost/manure	306	1,350	725
Honey/Bees	476	0	167
Produce seedlings	6,850	0	425
Total	**19,895**	**72,560**	**30,251**

Results show that these vulnerable households experienced a range of benefits. 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 surveys 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.

As previously stated in the Benefits to the Poor section, TIST has not changed its approach to continually train and incent members to adopt these core programs. The original survey was the cumulative benefits through 2011. The Yale/NEC benefits were for the year 2014. Extrapolating the lifetime benefits to date gives a total approximate cumulative value of KES 217,735 ($2,033) to Vulnerable TIST members. Extrapolating the 2014 benefits, the total approximate cumulative value to Vulnerable TIST members during the monitoring period is KES 146,208 ($1,365). They, too, are eligible for the profit share payments in proportion of their sequestered carbon.

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 2014 year and three Small Group meetings per month. The meeting attendance of the single Vulnerable 2 respondents was 9.8 Cluster meetings for 2014 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.

The Marginalized and Vulnerable members of TIST are eligible for all the training shown in Table 4.4c. Based on the surveys, it appears that they would have attended and received multiple trainings in most or all of the topics during the monitoring period.

Impacts on Women. In the Original Survey, 61 out of 124 members were female. The economic benefits were tabulated separately (though not shown in the final report) and were essentially the same as that of all the respondents; KES 36,749 for women and KES 36,958 for

all members. There were 20 women respondents out of 61 total in the Yale/NEC Survey. The survey results are shown by topics:

Table 4.4k: Benefits to Women (Avg. KES/Person)

Benefit	Original Survey[70]	Yale/NEC Survey
Carbon stipend	476	995
Incentive for work	462	240
Fruits/nuts	14,000	12,148
Firewood and Stove	754	5,300
Harvest fodder	6,000	11,008
Animal products	6,014	100,137
Improved Crops	1,949	5,036
Produce compost/manure	3,735	-90
Honey/Bees	776	648
Produce seedlings	2,582	3,473
Total	**36,748**	**138,895**

As previously stated in the Benefits to the Poor section, TIST has not changed its approach to continually train and incent members to adopt these core programs. The original survey was the cumulative benefits through 2011. The Yale/NEC benefits were for the year 2014. Extrapolating the lifetime benefits to date gives a total approximate cumulative value of KES 938,005 ($8,758) to Women TIST members. Extrapolating the 2014 benefits, the total approximate cumulative value to Women TIST members during the monitoring period is KES 671,319 ($6,268). They, too, are eligible for the profit share payments in proportion of their sequestered carbon.

The Original Survey showed that was no significant difference between male and female members who have held leadership positions and that there was no significant difference in Cluster meeting attendance by gender. It showed that females attended more Small Group meetings per week than males.

The Yale NEC Survey similarly showed that women and men attended meetings and received training at similar frequencies.

Table 4.4l: Training Attendance by Gender

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

Based on the two surveys, it is thought that women continue to attend meetings and receive training at the same level as men. It appears that half the training in Table 4.4c was received by women.

No negative impacts were cited by women. Therefore, it has been demonstrated that TIST provides a net positive impact on women.

[70] Itemizes topics of Women's survey is based on a ratio of Original Survey from Table 4.3.2a.

4.4.1 Barriers to Benefits (GL2.3)

The barriers that might prevent benefits going to poorer households have been identified and addressed in the project design. As demonstrated by the benefits to vulnerable farmers and women members, they have been removed to the greatest extent possible.

4.4.2 Protections for Poorer and More Vulnerable Households and Individuals (GL2.4)

Potential negative impact	Farmers negatively affect their food security by converting needed cropland to forest.
Households or individuals affected	Any individual or household that takes this action.
Impact aversion and mitigation	TIST does training to address this and advises against it. The farmers join voluntarily so nothing in the programs "forces" them to make such a choice. The farmers are also aware of their food needs and, as far as we know, have not over committed their tree planting to the detriment of their food security.

5 BIODIVERSITY

5.1 Net Positive Biodiversity Impacts

5.1.1 Biodiversity Changes (B1.1)

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 planting 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:

- 50,795 indigenous trees
- 151.97 ha of indigenous trees

The Table 5.1.1a lists the indigenous species in the PDD.

Table 5.5.1a: Indigenous Trees

Scientific Name	TreeCount	Hectares
Acacia albida	1	0.00
Acacia seyal	210	1.00
Acacia spp.	5,123	22.99
Acokanthera schimperi	49	0.11
Albizia gummifera	214	0.43
Annona senegalensis	65	0.11
Annona spp.	281	1.58

Scientific Name	TreeCount	Hectares
Azanza garckeana	1	0.00
Bersama abyssinica	76	0.25
Boscia coriacea	1	0.00
Brachystegia spiciformis	17	0.05
Brachystegia spp.	100	1.00
Bridelia taitensis	6,307	14.58
Burkea africana	217	0.42
Celtis durandii	10	0.06
Combretum molle	964	3.47
Cordia Africana	5,304	20.35
Cordia monoica	77	0.35
Croton macrostachyus	1,795	4.86
Croton megalocarpus	5,371	18.44
Croton Sylvaticus	204	0.61
Cussonia holstii	12	0.02
Dalbergia lactea	1	0.00
Diospyros mespiliformis	4	0.00
Dombeya rotundifolia	772	3.21
Dombeya spp.	13	0.11
Dovyalis abyssinica	7	0.01
Ehretia cymosa	288	0.81
Erythrina abyssinica	2,934	5.27
Euclea divinorum	305	0.97
Ficus sycomorus	180	0.76
Ficus thonningii	1,283	4.23
Hagenia abyssinica	2	0.01
Harungana spp.	1,066	2.42
Khaya nyasica	73	0.14
Kigelia africana	9	0.17
Lovoa swynnertonii	17	0.04
Maesopsis eminii	195	0.74
Markhamia lutea	4,761	13.24
Melia volkensii	41	0.30
Newtonia buchananii	78	0.17
Ocotea usambarensis	9	0.01
Olea europaea	1,241	2.98
Pentas longiflora	7	0.02
Phoenix reclinata	70	0.09
Podocarpus falcatus	568	1.29
Polyscias fulva	479	1.21
Prunus africana	1,909	4.19
Pterocarpus angolensis	10	0.01
Rhus vulgaris	7	0.01
Rubus spp.	261	0.73
Sapium ellipticum	692	1.50
Sesbania sesban	1	0.00
Spathodea campanulata	123	0.31
Spirostachys africana	1	0.00
Strychnos henningsii	18	0.03
Strychnos madagascariensis	29	0.05
Syzygium cordatum	42	0.12
Syzygium guineense	298	0.57

Scientific Name	TreeCount	Hectares
Tamarindus indica	22	0.31
Teclea nobilis	15	0.07
Terminalia brownii	4	0.00
Toddalia asiatica	288	0.28
Trichilia emetica	71	0.18
Vangueria spp.	545	1.90
Vitex keniensis	5,527	12.57
Warburgia ugandensis	100	0.23
Withania somnifera	18	0.01
Ximenia americana	2	0.01
Zanthoxylum chalybeum	10	0.03
Grand Total	**50,795**	**151.97**

Additionally, increasing the forested area in the project area improves biodiversity indirectly, by providing a sustainable supply of wood that reduces pressure on the natural forest.

An Environmental Impact Audit was carried out by Natural Resources Management & Development Agency (NAREDA Consultants) in Meru and Nanyuki areas of Kenya,[71] 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 were 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.

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 inter-planting, 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.

5.1.2 High Conservation Value Protection (B1.2)

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

[71] Exhibit 06 EIA Report: TIST KE PD-VCS-Ex06 KE EIA Report NAREDA 100506.doc at http://www.tist.org/PD-KE-VCS-005%20Documents.php

wildlife corridors and act as "stepping stones" between HCV areas, needed for healthy animal populations.

5.1.3 Invasive Species (B1.3)

All listed species have been screened against the global database of invasive species.[72] None of the species above are included as invasive species in Kenya.

5.1.4 Impacts of Non-native Species (B1.4)

As noted, TIST farmers have the final say in the species of trees that they plant. TIST encourages the planting of indigenous trees and those with an economic benefit (fruit, nut, fodder, etc.). They also plant trees for firewood and while that is not ideal for an A/R project, the fact remains that firewood is the primary fuel for cooking and heat. TIST tries to balance the need for fuel with ongoing sequestration.

In the species selection training, we try to make sure the farmers understand the adverse effect that some species have. In the table below, unless indicated, none have any adverse effect.

Table 5.1.4: Non Native Species

Species	Sum of Trees	Sum of Strata Ha	Justification
Acacia mearnsii	3,157	6.82	wood products
Anacardium occidentale	49	0.44	fruit tree
Artocarpus heterophyllus	43	0.68	fruit tree
Azadirachta indica	326	3.28	medicinal tree
Bixa orellana	7	0.06	annatto seeds
Blighia unijugata	28	0.14	shade tree
Brachychiton acerifolium	161	0.73	ornamental
Callistemon spp.	8,648	19.32	ornamental
Camellia sinensis	1	0.00	tea
Casimiroa edulis	458	1.69	fruit tree
Casuarina equisetifolia	5,960	11.59	firewood
Citrus aurantifolia	19	0.07	fruit tree
Citrus limonum	615	2.23	fruit tree
Citrus reticulata	3	0.01	fruit tree
Citrus sinensis	3,830	9.36	fruit tree
Coffea arabica	2	0.00	fruit tree
Cupressus spp.	57,174	88.61	well established
Dendrocalamus giganteus	60	0.10	fast growing
Eucalyptus grandis	112,154	118.50	fast growing
	This tree has a reputation of using more water than others. In part, this is due to its rapid growth. It is widely planted and promoted in Kenya		
Eugenia caffra	2	0.03	medicinal tree
Fraxinus berlandieriana	1,192	2.47	fast growing long living

[72] International Union of Concerned Scientists, Global Invasive Species Database, Accessed 11 January, 2011 at http://www.iucngisd.org/gisd/. Accessed April 09, 2017.

Fraxinus pennsylvanica	67	0.28	fast growing long living
Gmelina Arborea	1	0.01	drought tolerant
Grevillea robusta	173,850	456.14	resistant to wood rot
Jacaranda mimosifolia	1,035	3.25	ornamental
Leucaena leucocephala	85	0.21	soil fertility, fodder
	While considered by some to be invasive, KFS does not, in the context of planting on farms where the benefits to soil fertility are well known.		
Macadamia spp.	11,984	31.37	fruit tree
Mangifera indica	5,316	24.65	fruit tree
Moringa oleifera	14	0.06	herbal and edible seeds
Morus alba	34	0.07	fruit tree
N/A	4,729	16.93	na
Persea americana	7,310	20.53	fruit tree
Pinus Patula	154	0.33	popular tree
Pinus spp.	2,731	4.67	popular tree
Pouteria sapota	60	0.21	fruit tree
Prunus persica	40	0.06	fruit tree
Prunus spp.	126	0.31	fruit tree
Psidium guajava	2,641	8.40	fruit tree
	While considered by some to be invasive, KFS does not, in the context of planting on farms, where its fruit is a mainstay of the Kenyan diet.		
Rapanea melanophloeos	1	0.00	bird eat the berries
Schinus molle	46	0.56	fruit tree
Senna spectabilis	25	0.08	ornamental
Sesbania grandiflora	2	0.01	medicinal, edible leaves
Swietenia mahagoni	1	0.00	exotic wood
Tectona grandis	35	0.12	valuable hardwood
Toona ciliata	1,463	3.97	fast growing shade tree
unknown	312	0.67	na
Grand Total	**405,951**	**839.02**	

5.1.5 GMO Exclusion (B1.5)

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

5.2 Offsite Biodiversity Impacts

5.2.1 Negative Offsite Biodiversity Impact Mitigation (B2.2)

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

5.2.2 Net Offsite Biodiversity Benefits (B2.3)

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.

5.3 Biodiversity Impact Monitoring

5.3.1 Biodiversity Monitoring Plan Development (B3.3)

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.

TIST Quantification is a constant process. Trained Quantifiers will visit each discrete project area as part of their normal duties and collect the data required by this monitoring plan. Using the TIST Data System, key observations and measurements will be recorded in a digital format on hand held computers and sent to the TIST database. As new data comes in, it will populate the TIST.org website. Annual monitoring of each site is expected and a minimum of every five years will be achieved to conform with CCBA monitoring reports. Reports for CCBA will be at minimum every five years.

The biodiversity monitoring will be:

1) **Total hectares of the project.** This was presented in the project description and is based on the sum of each individual project area.
2) **The area and location of each project area.** The original area and location of each project area was determined as part of the project description and presented in the PD and will be updated with each monitoring report.
   a) A Landsat image of central Kenya showing the location of the individual project areas as dot. Due to the superior format of the KML file, this image is no longer updated.
   b) A KML file that displays the name, location and boundary of each project area on Google Earth. This will be updated for each monitoring report.
3) **Number of tree by species.** This is a list of trees by species with a count for all the CCBA project areas. Data is collected from each project area using a physical count of the trees by species.
4) **Number of indigenous trees by species.** This is a subset of the number of trees by species listing only the indigenous trees.
5) **Hectares of indigenous trees.** This is based on the proportion of indigenous trees to all trees in a project area times total hectares of the project area.
6) **The tree inventory of each project area.** This is a list of each stratum (species and age) for each project area.
7) **Hectares of improved riparian areas.** These are project areas in TIST KE that meet the following criteria:
   a) Land within 100 meters of a selected (selection expected to change over time) water course, or land where runoff flows directly into those rivers
   b) No eucalyptus planted within 100 meters of the waterway, and no more then 5% of the

trees in the grove can be eucalyptus
c) Over 30% of the grove must be planted with indigenous trees

5.3.2 Biodiversity Monitoring Results (B3.1, B3.2)

TIST monitors and reports 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 populates the website.

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 are the results of the Monitoring Plan:

1. Total hectares of the project: 990.36 (PA Summary, App 14)
2. Area and location of each Project Area. See Appendix 03 PA Plots[73]
3. Number of trees by species: See Tables 5.1.1 and 5.1.4
4. Number of indigenous trees by species: See Table 5.1.1
5. Hectares of indigenous trees: 151.97 (Ex-Post Strata, App 14)
6. The tree inventory of each Project Area: See "Ex-Post Strata" worksheet, Appendix 14
7. Hectares of improved riparian areas: 66.6 (TIST KE)

As noted in Section 5.5.2, TIST activities do not take place inside HCV 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. This is presented in the aforementioned monitoring plan results

Data is collected by TIST Quantifiers as they visit each Small Group, to count and measure trees by species. The data reported is collected periodically and at different times for each PA. Only the most recent data is used. The monitoring date is can be found in Column N, PA Summary worksheet, Appendix 14 Monitoring Data V3.

5.3.3 Monitoring Plan and Results Dissemination (B3.3)

All of the CCB and VCS documents, including the results of the monitoring plan, are available on the respective CCB and VCS project web sites. CAAC also makes all of the documentation available to the public on a dedicated web page.[74] Stakeholders were informed of this when they received the email[75] advising them of the effort to recertify this PD.

For those TIST members without internet, the project has developed its Mobile TIST website that is low bandwidth and designed to work with a mobile phone.[76] For those without a smartphone, they can see the results of their Small Group's quantification on their vouchers or discuss the

[73] Appendix 03 PA Plots.
[74] http://www.tist.org/PD-KE-VCS-009%20Documents.php.
[75] Exhibit 14 Public Comments
[76] TIST Mobile: https://www.tist.org/mobile/secure/login.php?ses=gea0rj8ej2odmk314l6difd7q3

results when the Quantifier is monitoring their PAs or come to the monthly cluster meetings and ask. For those with no other access, they can also go to a local cyber café and see the full reports on-line. The monitoring results have also been published in the TIST Kenya newsletter.[77]

5.4 Optional Criterion: Exceptional Biodiversity Benefits

5.4.1 Trigger Species Population Trends (GL3.3)

Trigger Species	Vitex keniensis (Meru Oak)
With-project Scenario	The Meru Oak is endemic to the Mount Kenya region and is listed as endangered on the IUCN Red List. The population trend is assessed as decreasing. TIST farmers have planted and maintain 5,527 *vitex keniensis*, a clear, direct benefit to the species. As discussed, TIST operations also mitigate some of the pressures of deforestation.

Vulnerable: The Meru Oak is a deciduous tree found only in Kenya. It is threatened by loss of habitat and is listed as endangered on the IUCN Red List.

Population Trend: As identified by the IUCN, the population is decreasing. It has been over exploited for charcoal and timber and is facing a loss of habitat.

Enhancing the Population: TIST farmers are planting Vitex keniensis on their farms. In the PD, 6,568 trees were planted. Approximately 45,000 Meru Oaks have been planted by TIST farmers in the entire program.

Effectiveness of Measures: The direct planting and counting of Vitex keniensis is an effective measure because it ensures the new project-related trees are present. The Meru Oak has been included in the biodiversity monitoring plan.

6 ADDITIONAL PROJECT IMPLEMENTATION INFORMATION

Not applicable.

7 ADDITIONAL PROJECT IMPACT INFORMATION

Not applicable.

[77] Mazingira Bora, October 2020

8 APPENDICES

All Appendices are available at http://www.tist.org/PD-KE-VCS-001-004%20Documents.php.

Project Documents:
TIST KE PD-VCS-001a PD Text 110215.pdf
TIST KE PD-VCS-002a PD Text 110215.pdf
TIST KE PD-VCS-003a PD Text 110215.pdf
TIST KE PD-VCS-004a PD Text 110215.pdf

Appendix 03, KML Plots of the Project Areas:
TIST KE PD-VCS-001d App03 PA Plots.kml (at validation)
TIST KE PD-VCS-002d App03 PA Plots.kml (at validation)
TIST KE PD-VCS-003d App03 PA Plots.kml (at validation)
TIST KE PD-VCS-004d App03 PA Plots.kml (at validation)

TIST KE PD-VCS-001d App03 PA Plots 200626.kml (at V3 monitoring)
TIST KE PD-VCS-002d App03 PA Plots 200626.kml (at V3 monitoring)
TIST KE PD-VCS-003d App03 PA Plots 200626.kml (at V3 monitoring)
TIST KE PD-VCS-004d App03 PA Plots 200626.kml (at V3 monitoring)

Appendix 4, Validation Spreadsheets:
TIST KE PD-VCS-001e App04 Data 100826 Chugu.xls
TIST KE PD-VCS-002e App04 Data 100826 Kin-Ntu.xls
TIST KE PD-VCS-003e App04 Data 100826 Kma-Wen.xls
TIST KE PD-VCS-004e App04 Data 100826 Nar-Lum.xls

Appendix 12, Non Permanence Risk Reports:
TIST KE PD-VCS-001m App12a Verif 03 Risk Analysis 200522.pdf
TIST KE PD-VCS-001m App12b Verif 03 Risk KE001-L 200522.pdf
TIST KE PD-VCS-002m App12 Verif 03 Risk Analysis 200522.pdf
TIST KE PD-VCS-003m App12 Verif 03 Risk Analysis 200522.pdf
TIST KE PD-VCS-004m App12 Verif 03 Risk Analysis 200522.pdf

Appendix 13, Monitoring Reports:
TIST KE PD-VCS-001n App13 Verif 03 Monitoring Rpt 200522.pdf
TIST KE PD-VCS-002n App13 Verif 03 Monitoring Rpt 200522.pdf
TIST KE PD-VCS-003n App13 Verif 03 Monitoring Rpt 200522.pdf
TIST KE PD-VCS-004n App13 Verif 03 Monitoring Rpt 200522.pdf

Appendix 14, Monitoring Spreadsheet V3:
TIST KE PD-VCS-001o App14 Verif 03 Monitor Data 200522.xlsx
TIST KE PD-VCS-002o App14 Verif 03 Monitor Data 200522.xlsx
TIST KE PD-VCS-003o App14 Verif 03 Monitor Data 200522.xlsx
TIST KE PD-VCS-004o App14 Verif 03 Monitor Data 200522.xlsx

Exhibit 14, Public Comments:
TIST KE PD-VCS-Ex14i Public Comments CCB-001 V03.docx.