MONITORING REPORT FOR TIST PROGRAM IN INDIA VCS-001

Document Prepared By Clean Air Action Corporation

Project Title	The International Small Group and Tree Planting Program, India, VCS-001
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Table of Contents

Appendices

Appendix 01   Project area locations overlain on 1990 Landsat image and georeference file
Appendix 02   Project area locations overlain on 2000 Landsat image and georeference file
Appendix 03   Project area boundaries in Google Earth KML file format
Appendix 08   Excel spreadsheet of data with referenced worksheets

1   PROJECT DETAILS

1.1   Summary Description of Project

The International Small Group and Tree Planting Program (TIST) is a combined reforestation and sustainable development project, in India, carried out by subsistence farmers. The farmers plant trees on their land and retain ownership of the trees and their products. They receive training from TIST and a share of the carbon revenues from CAAC.

TIST empowers Small Groups of 6-to-12 subsistence farmers in India, Kenya, Tanzania, and Uganda to combat the devastating effects of deforestation, poverty and drought. Combining sustainable development with carbon sequestration, TIST already supports the reforestation and biodiversity efforts of over 64,000 subsistence farmers. Carbon credit sales generate participant income and provide project funding to address agricultural, HIV/AIDS, nutritional and fuel challenges. As TIST expands to more groups and more areas, it ensures more trees, more biodiversity, more climate change benefit and more income for more people.

TIST provides an administrative backbone that supplies training in building nurseries, tree planting, conservation farming, building fuel-efficient stoves and malaria and HIV/AIDS prevention. Part of the backbone is a two-way communications network that includes newsletters, weekly meetings at the Small Group level, monthly meetings where groups of Small Groups receive training, periodic seminars at the national level and an award winning monitoring system based on hand-held computers and GPS. TIST is available to everyone and all are considered equal. The rotating leadership and the Small Group rules empower women and the undereducated. Those who are the most successful, regardless of education levels or gender, become mentors and leaders.

This project description (PD) is for a subset of the TIST project in India and initially applies to452 Small Groups, 2,599 members, 924 project areas and 671.8 ha. The main species planted are *Tectona grandis*, *Gremlina arborea*, and *Mangifer indica*.

1.2   Sectoral Scope and Project Type

This project is seeking registration under the Verified Carbon Standard (VCS 3.3) as an Afforestation, Reforestation and Revegetation (ARR) project and has been developed in compliance with the VCS Guidance for Agriculture, Forestry and Other Land Use Projects (VCS Version 3.3). It is a grouped project.

1.3   Project Proponent

Project Proponents	Point of contact	Roles/ Responsibility	Contact Details
Clean Air Action Corporation (CAAC)	Charles E. Williams, Vice President	Project developer, implementer, manager	Clean Air Action Corporation 7134 South Yale Ave, Suite 310 Tulsa, Oklahoma 74136 United States of America Phone: +1-918-747-8770

1.4 Other Entities Involved in the Project

Other Entities	Point of contact	Roles/ Responsibility	Contact Details
TIST Tree Planting India (TIST India)	Joseph Rexon	Manages TIST India operations	TIST Tree Planting India Flat A, Plot No.69, 26th Street, Sankar Nagar, Pammal, Chennai 600075
Environmental Services, Inc (ESI)	Shawn McMahon	Validator/Verifier	Environmental Services, Inc. 3800 Clermont St., NW North Lawrence, OH 44666 United States of America Phone: +1-330-833-9941

1.5 Project Start Date

01-January-2004.

1.6 Project Crediting Period

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

1.7 Project Location

The individual project sites are located in villages in the three districts of Tamil Nadu State, namely Kancheepuram, Tiruvannamalai, Thiruvallur, Vellore and Villupuram. The locations of the district are shown in Figure 1.9

TIST has adopted a "grouped project" approach for this PD. As required by VCS, a KML file has been prepared that defines the extent of the geographic area of the expanded program. The KML file defines the districts listed above. See Appendix 06.

1.8 Title and Reference of Methodology

The approved baseline and monitoring methodology applied to the proposed VCS project activity is CDM AR-AMS0001 Version 06: Simplified baseline and monitoring methodologies for small-scale A/R CDM project activities implemented on grasslands or croplands with limited displacement of pre-project activities.[1] Also used were the following tools:

- o Procedures for the demonstration of land eligibility, AR-AMS0001, Appendix A.
- o Procedures for the assessment of additionality, AR-AMS0001, Appendix B.

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[1] UNFCCC, "AR-AMS0001, Version 6: Simplified baseline and monitoring methodologies for small-scale A/R CDM project activities implemented on grasslands or croplands with limited displacement of pre-project activities," CDM Executive Board Meeting 56, 2010. ("AR-AMS0001"). Accessed 20 October 2011 at http://cdm.unfccc.int/methodologies/DB/91OLF4XK2MEDIRIWUQ22X3ZQAOPBWY. See Exhibit 08.

2   IMPLEMENTATION STATUS

2.1   Implementation Status of the Project Activity

The project has been fully operational since 2004. The project was implemented in accordance with the PD and the validation report. The Project Description (PD) was written after the project had been in operation in the project areas for several years. As such, the PD was written reflecting the way the project had been implemented. In addition, this monitoring report is being written within weeks of issuing the final version of the PD. No events were identified during this monitoring period that were not already reflected in the PD.

As discussed more thoroughly in Section 4.3, no further leakage monitoring is required.

Permanence is addressed through the risk buffer. A Non-Permanence Risk Report was prepared and provided to the Verifier as Appendix 05.

2.2   Deviations from the Monitoring Plan

There are no deviations from the monitoring plan.

2.3   Grouped Project

This is the first group of projects under the TIST Program in India VCS-001. The instances in the PD are the same instances as in this verification report.

In addition to the eligibility requirements of the methodology, there are two criteria for inclusion of new instances of each project activity. The first is that it must be in the geographic area defined in Section 1.9. This is demonstrated by comparing the KML file of the project areas (Appendix 3) with the KML file of the geographic areas of the grouped projects (Appendix 6).

The second is that the ex ante carbon estimates for each project area (i.e. instance) must be below the pertinent capacity limits. The CDM small scale AR methodology has a 16,000 tonne per year average limit on a project that equates to 480,000 tonnes CO_2e for a 30-year project life. VCS places a one percent limit on each instance and requires instances that exceed this limit to be divided into clusters. To be eligible for this PD, each project area shall either be at or below the one percent level (4,800 tonnes CO_2e), or will meet the requirements for inclusion as a cluster.

For the subset of TIST project areas that are in this PD, all of the instances are less than the one percent threshold. This is documented in Appendix 08 ("Proj Life Ex ante CO2e" column of the "PA Summary" worksheet). The calculations are based on the ex ante estimates for each strata in the "Ex Post Strata" worksheet. The results were further modified to adjust for project areas that, because of the area (ha), exceeded the ex ante estimates, but, because of the stem density, does not. All of the documentation is presented in a transparent and verifiable manner in the worksheets.

3   DATA AND PARAMETERS

3.1   Data and Parameters Available at Validation

Data Unit / 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 "PA Summary" worksheet, Appendix 08, for each result
Purpose of the data:	Baseline
Any comment:	None

Data Unit / 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:	GPS
Value applied:	See KML file, Appendix 3, for all results
Purpose of the data:	Baseline
Any comment:	None

Data Unit / 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 "PA Summary" worksheet, Appendix 08, for each result
Purpose of the data:	Baseline
Any comment:	None

Data Unit / 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 "PA Summary" worksheet, Appendix 08, for each result
Purpose of the data:	Baseline
Any comment:	None

Data Unit / Parameter:	**Baseline trees**
Data unit:	Baseline Trees
Description:	The number of trees existing in a project area, before the planting of project trees, is counted
Source of data:	Trees are physically counted in the field
Value applied:	See "Baseline Strata" worksheet, Appendix 4, for each result
Purpose of the data:	Baseline
Any comment:	None

Data Unit / 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 4, for each result
Purpose of the data:	Baseline
Any comment:	None

Data Unit / 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 4, for each result
Purpose of the data:	Baseline
Any comment:	None

Data Unit / 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 4, for each result
Purpose of the data:	The tree count by strata is used to extrapolate the ex ante GhG removals
Any comment:	None

3.2   Data and Parameters Monitored

Data Unit / 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.
Value monitored:	See "Ex-post Strata" worksheet of Appendix 08
Monitoring equipment:	Customized handheld computer
QA/QC procedures to be applied:	Part of overall QA/QC procedures discussed in Section 3.3
Calculation method:	Not applicable
Any comment:	None

Data Unit / Parameter:	**DBH**
Data unit:	cm
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
Frequency of monitoring/recording:	Ongoing measurement taken by Quantifiers as they visit project areas
Value monitored:	See "Circ" worksheet of Appendix 08
Monitoring equipment:	Measuring tape and customized handheld computer

QA/QC procedures to be applied:	Part of overall QA/QC procedures discussed in Section 3.3
Calculation method:	Not applicable
Any comment:	None

Data Unit / 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 08
Monitoring equipment:	Computer and database
QA/QC procedures to be applied:	Part of overall QA/QC procedures discussed in Section 3.3
Calculation method:	Not applicable
Any comment:	None

3.3   Description of the Monitoring Plan

3.3.1   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 handheld computer 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 everyday. As each PA is revisited, the old data is achieved and the results of the new quantification is 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 following provides the step-by-step procedure used to determine the Project GhG removals:

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 was monitored. They are documented in the

"PA Summary" worksheet of Appendix 08.[2] The location of each area was obtained with a GPS and provided in PD Appendices 01 and 02.[3] The boundary of each project area was obtained using a GPS and provided in PD Appendix 03.[4] The area was calculated and is listed with each project area in the "PA Summary" worksheet of Appendix 08.

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 08.[5]

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 08, there are four major strata: *Tectona grandis*, *Gremlina arborea*, *Mangifer indica* 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 *Mangifer indica,* those trees were assigned to the "other" equation. The following are the assignments.

Tectona grandis[6]: $Y = 0.153 \cdot DBH^{2.382}$
Gremlina arborea[7]: $Y = 0.153 \cdot DBH^{2.217}$
Mangifer indica: no species specific equations, will use "Other" equation
Other (default)[8]: $Y = \exp[-2.289 + 2.649 \cdot \ln(DBH) - 0.021 \cdot (\ln(DBH))^2]$

Where:

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[2] "PA Summary" worksheet of Appendix 08 is an abbreviated version of the "Grove Summary" worksheet of PD Appendix 04. It contains the same list of Project Areas but omits the baseline information.
[3] The locations of the PAs presented in the PD have not changed. The reader is referred to the original Appendices.
[4] The boundaries of the PAs presented in the PD have not changed. The reader is referred to the original Appendix.
[5] "Ex-post Strata" worksheet of Appendix 08 is similar to the "Strata" worksheet of PD Appendix 04. It contains the same list of strata but includes carbon calculation information.
[6] GPG-LULUCF Annex 4A.2 Examples of allometric equations for estimating aboveground biomass and belowground biomass of trees, Table 4.A.3. Examples of Allometric Equations for Estimating Above Ground Biomass (kg of dry matter per tree) of some Individual Species Commonly Used in the Tropics, *Tectona grandis*. See Exhibit 18.
[7] Regina N. Banaticla, Renezita F. Sales and Rodel D. Lasco, Biomass Equations for Tropical Tree Plantation Species Using Secondary Data from the Philippines, Australian Centre for International Agricultural Research (ACIAR) Smallholder Forestry Project, ASEM 200/008 redevelopment of a timber industry following extensive land clearing: Proceedings from the end-of project workshop, Ormoc City, Philippines 19-21 August 2004, Table 5, page 122. See Exhibit 19.
[8] GPG-LULUCF Annex 4A.2 Examples of allometric equations for estimating aboveground biomass and belowground biomass of trees, Table 4.A.1. Allometric Equations for Estimating Aboveground Biomass (kgdry matter per tree) of Tropical and Temperate Hrdwood and Pine Species, Tropical moist hardwoods. See Exhibit 18.

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 three Allometric Strata: *Tectona grandis*, *Gremlina arborea* and other. See "Circ" worksheet, Appendix 08.

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 "Circ" worksheet of Appendix 08. 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.[9]

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 (see Section 3.3.2, below). The "Statistics" worksheet has a row ("Mean, t BM"), which used the Excel "Average" function to derive the average biomass for each strata.

 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 "tons 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.

Above Ground Biomass in Stratum (t/ha) = $\underline{\text{Above Ground Biomass in Stratum (t)}}$
 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

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[9] The "AG Biomass (kg)" column is the result of this operation. The "Code" function in the formula is looking for an "T" (ASCII 84) or "G" (ASCII 71) in the first letter of the entry in the "Allometric Strata" column to indicate Tectona. If the "Code" is T, then the first (Tectona grandis) equation applies. If not it looks for a "G" (Gmelina). If it is not there, it defaults to "Other."

roots to shoot ratio and by 0.5, the carbon fraction of the biomass. A root to shoot factor of 0.27 will be used.[10]

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:

> $P_{(t)}$ = 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).

3.3.2 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 08.

The lower portion of the worksheet contains all of the circumference readings from the "Circ" worksheets. This was accomplished by filtering the "Circ" worksheets by the "Allometric Strata" and "Age" columns and cutting and pasting the "AG Biomass (kg)" data into the appropriate column of the "Statistics" worksheet (hereinafter, the "Sample Data"). In the upper portion of the worksheet, a series of statistical measurements were applied to the Sample Data. The Project

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[10] GPG-LULUCF, Table 3.A.1.8

Level column was developed using the general procedure recommended by Avery and Burkhart.[11]

The results are that when the strata are combined to the project level, the data has a 95% confidence level of 4.4% of the mean. 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. To make sure this did not bias the results, the circumference of all one-year-old trees was set at zero. If we determine in subsequent monitoring reports that some one year old trees are over breast height and that our sampling is not biased (such as applying the circumferences of the measured trees to all one year old trees), we may change this approach.

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.

3.3.3 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 TIST Tree Planting India (a subsidiary of Clean Air Action Corporation, CAAC) that intern is under contract to turn the carbon right over to CAAC. CAAC funds the project, funds the tree payment (through TIST India) sell the carbon and receive payments. The GhG component of TIST is managed by CAAC, who developed the database, web site, and procedures for monitoring the GhG. CAAC was 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 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. Quantifiers are trained and audited by the TIST India staff and by CAAC personnel. 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.

3.3.4 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, so that quantifications are performed in a standard and regular

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[11] Avery, T.E. and Burkhart, H.E., "Forest Measurements", Fifth Edition, McGraw-Hill Book Company, New York. 2001, pp 42-43.

fashion. Quantifiers meet monthly to discuss questions or problems that they may have and receive training and software updates when necessary. Quantifiers are not dedicated to a grove for the life of that grove and may be rotated to other groves.

- **Staff Audits:** TIST staff members are trained to quantify groves and conduct audits periodically. A requirement of their job is to periodically audit Quantifiers, including an independent sampling of tree counts and circumference measurement.

- **US Team Audits:** Staff members from the US headquarters audit the TIST audit staff periodically.

- **Multiple Quantifications:** TIST's internal goal is to quantify each project area once per year. In accurate 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.

- **Multiple Tracks:** In order to ensure that the location and perimeter of each discrete project area is accurate, each GPS track of the parcel was measured at least twice, or until two tracks that reliably define the project area, are obtained. Quantifiers re-trace the tract with each quantification to verify that they are at the correct project area and that they are counting the correct trees.

- **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 counted every tree in each discrete project area. Counting each tree is 100% sampling and provides greater than 10% precision at the 95% confidence level. Up to 20 circumference readings for each strata in a project area were taken and archived, to develop a localized database of growth data by strata. This data provided the circumference data for each stratum. 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 handheld devices 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. However, CAAC could, in the future, change hosts or choose to host the server at its offices.

4   QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

4.1   Baseline Emissions

No monitoring of the baseline is required. As demonstrated in Section 4.2 of the PD, 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.

4.2   Project Emissions

Project emissions 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 removals are as calculated in the "Project Total" row (bottom of worksheet), "CO2 in Stratum (t)" column, "Ex-Post Strata" worksheet of Appendix 7. The total is provided in Section 4.4, below.

4.3   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 crediting 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.

4.4   Summary of GHG Emission Reductions and Removals

Project emissions:	-0-	t CO2 equivalents
Emissions due to leakage:	-0-	t CO2 equivalents
Baseline emissions:	-0-	t CO2 equivalents
Project emission reductions:	16,961	t CO2 equivalents
Net emission reductions:	16,961	t CO2 equivalents

5   ADDITIONAL INFORMATION

See Appendix 08, Excel spreadsheet of data with referenced worksheets