

Risk Analysis
for
TIST Program in Kenya
VCS-001

for validation under
The Voluntary Carbon Standard
Template Date: 19 November 2007

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VCS Project Description
for
TIST Program in Kenya

Program Overview

The International Small Group and Tree Planting Program (TIST) empowers Small Groups of subsistence farmers in India, Kenya, Tanzania and Uganda to combat the devastating effects of deforestation, poverty and drought. Combining sustainable development with carbon sequestration, TIST already supports the reforestation and biodiversity efforts of over 63,000 subsistence farmers. Carbon credit sales generate participant income and provide project funding to address agricultural, HIV/AIDS, nutritional and fuel challenges. As TIST expands to more groups and more areas, it ensures more trees, more biodiversity, more climate change benefit and more income for more people.

Since its inception in 1999, TIST participants organized into over 8,900 TIST Small Groups have planted over 10 million trees on their own and community lands. GhG sequestration is creating a potential long-term income stream and developing sustainable environments and livelihoods. TIST in Kenya began in 2004 and has grown to nearly 50,000 TIST participants in over 6,700 Small Groups.

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

The VCS projects outlined in the Project Description and the Risk Analysis are a subset of the program. Multiple PDs are and will be submitted for the program.

Risk Analysis

The risk analysis has been conducted in accordance with the VCS Tool for AFOLU Non-Permanence Risk dated 18 November 2008 (VCS Non-Permanence Tool) and VCS Program Update 8 September 2010. General AFOLU risks were assessed qualitatively in Table 1.11.A. Project type-specific risks (Table 1.11.B) were assessed using the direct risk ratings as defined in Table 2 of the VCS Non-permanence Tool.

It should be noted that the diversified design of the project is an effective risk mitigation strategy, in that the project area represents the composite of many individual parcels spread across a large region (Exhibit 1).[1] Hence, the significance of any impact affecting a given planting site (e.g. natural disturbance, management failure) is reduced at the overall project level.

Environmental risks affecting plantings are most acute in the early stages of development when the young trees are most susceptible to drought. This risk is mitigated by selecting the appropriate time to plant, proper site preparation, and ongoing assistance in plantation management. Most importantly, project participants have committed to "raise the [planted] trees to maturity; and replant trees that die, for any reason, each year for the next 20 years" as part of the Small Group contract (See Exhibit 2 and 3, "The International Small Group and Tree Planting Program Carbon Credit Sale Agreement")[2] that each TIST participant has signed. All planted trees are monitored each year as the basis of annual payments to each TIST participant; hence, TIST participants have an ongoing financial incentive to ensure survival of the planted trees.

Based on the risk assessment detailed below, the project has a Low risk ranking. All ARR project-specific risks can be categorized as low. As a result, the project will use a default buffer withholding percentage of 10% from the Low risk class. The lower end of the buffer withholding percentage is appropriate, due to the wide geographic area and decentralized nature of the project; this geographic and management diversification uniquely limits risks associated with this AFOLU project.

[1] There are 484 distinct and discrete project areas in VCS 001; 1,051 in VCS 002; 1,483 in VCS 003; and 1,246 in VCS 004

[2] Two versions of the GhG contract are provided. The one designated 050418 was the first version used in Kenya. It was superseded in 2008 with the one designated 080428. Both remain operational.

Table 1.11.A Analysis of risks applicable to all AFOLU project types.			
Risk factor category	**Risk factor sub-category**	**Risk Rating**	**Comments**
Project risk	1. Risk of unclear land tenure and potential for disputes	Low	Control of project lands by project participants is clear and undisputed, either through a registered deed or by customary tenure. Kenyan law is in transition from customary tenure to registered deed but the process will take decades. Customary tenure is an accepted form of ownership where ownership was first established through occupancy recognized by neighbors and tribes. Since population growth and government ownership has meant there is little, if any, land available for new settlement, "title" to lands controlled by customary tenure are passed by sale and inheritance. Ownership of lands is attested by each individual project participant in their Small Group contract. Title risk is also lowered by the fact that there are numerous individual project areas. If, for some reason, title were to fail in one project area, it would have negligible impact on the overall carbon stocks.
	2. Risk of financial failure	Low	The project is implemented and financed by Clean Air Action Corporation (CAAC). CAAC has been in business since 1993 and has been operating TIST projects since 1999. CAAC funds the TIST carbon project through its profits. TIST has a not-for-profit partner that manages the sustainable development components of TIST and receives funding through donations and grants and helps defray non-carbon operating costs. CAAC's audited financial statement for the fiscal year ending 30 Sep 2009 is attached as Exhibit 4.
	3. Risk of technical failure	Low	Tree planting technologies and planting materials are common. Project personnel, along with local forestry professionals, provide ongoing training to project participants on management, protection and pest control. Because of the numerous discrete project areas and participating farmers, TIST has developed a proprietary monitoring system. Based on over-the-counter personal digital assistant and smart phone technology, GPS, custom databases, custom

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			programming and the Internet, it allows farmers to be trained to become field quantifiers, collect field data, and upload the data to an internet-based database that displays the data on a publicly accessible website (tist.org, navigate to the Project Area section). The website shows every project area (PA) and the strata in that PA (species and age). It has pictures of the PAs and maps of the PA that can be overlain on Google Earth images. The system updates whenever new data is uploaded, which can be several times per day. CAAC has many tools, programs and reports to analyze the data to look for trends in the field. The data system is a major tool in identifying problems and issues that could lead to a technical failure, making a technical failure unlikely. The data system earned CAAC a Computerworld Honors Laureate.
	4. Risk of management failure	Low	CAAC created TIST in 1999 and began tree planting in 2000. TIST was designed from the inception to be a carbon project that would provide cash income to subsistence farmers and meet the rigors of the international carbon markets. It was designed using the experience garnered since 1993 creating emission trading systems and managing emission reductions projects. CAAC's management team has been working together since 1976 managing numerous ventures, including the construction and operation of a $30 million biofuels plant. Management resumes are found in Exhibit 5. Additional information about specific management experience regarding carbon projects is in Exhibit 6. In addition to sound and experienced project management, project lands are all directly managed by project members that live on or nearby the lands where they plant the trees. These are their trees, on their lands and they receive a cash incentive to maintain them. They have a vested interest in maintaining them and are on-site. TIST also has a team of quantifiers that visit each

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			project area as much as once per year. The data they collect with the data system provides regular feedback to the TIST staff and project managers. The TIST staff is on the ground in the general project area. They coordinate the activities in the field including training, quantification, auditing and special programs such as conservation farming and improved cooking stoves. They are in regular contact with project managers, quantifiers and farmers. They provide ongoing management support to foster increasing self reliance on the part of project participants. In addition, it should be noted that TIST has been operational in Kenya for six years and has expanded to over 50,000 farmers. It should also be noted that the periods with the highest level of management risk (project start-up, during planting and immediately post planting) have already passed. The project requires minimal ongoing management post-planting and what is necessary is in place and is operational. The ongoing per tree cash incentives provided to project participants minimize need for external management (i.e. project participants oversee project implementation in their own self-interest).
Economic risk	5. Risk of rising land opportunity costs that cause reversal of sequestration and/or protection	Low	The project areas are lands owned by the farmers that voluntarily chose to participate in TIST. The expected scenario without the project is for the land to be used for subsistence agriculture. As such, when the subsistence farmers made the decision to put part of their lands into reforestation, they made the decision that TIST tree planting offered a superior opportunity. This opportunity goes beyond carbon; it includes all of the training and value offered by the project and trees as listed in this PD. These on-going benefits will continue to provide incentives not to reverse sequestration. Also, with the many different landowners and project areas, having a few individual farmers withdraw from the program would not have a

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			significant impact on overall carbon stocks. Furthermore, as per TIST's contract, project participants have formally committed not to "cut down the trees, except when implementing best practices [to improve growth] for agro-forestry developed by TIST or recommended in writing from their local government authority." The farmers are receiving tree payments in advance of their carbon revenues and are legally bound to maintain the trees. Also see Table 1,11.B, Sub Category 1 of Risk Analysis.
Regulatory and social risk	6. Risk of political instability	Low	The project is operated by thousands of independent Kenyan farmers dispersed over thousands of square kilometers, so that chance of political instability having an affect on the project is quite small. Although World Bank Governance indicators (2009)[3] place Kenya in the 10-25% of countries in terms of political instability, the rank is affected by an episode of violence that followed the December 2007 election. The violence was related to land taken away from one faction and given to another decades ago. This violence did not affect the Mt Kenya area because it has had a stable population for generations. TIST was in existence during this period and TIST PAs were not affected. The violence did not affect carbon sequestered by TIST trees. Kenya has had a stable government since independence in 1963. They have not had any over throws, revolts or rebellions. They have had a constitution and set of laws since independence. In August 2010, a nationwide vote for a new constitution was held with no reports of violence. The new constitution is expected help heal the ethnic divisions that caused the 2007 violence. The risk that political instability would have a detrimental effect on carbon stocks is low, especially when the numbers of diverse participants and

[3] Accessed 22 September 2010 at http://info.worldbank.org/governance/wgi/sc_chart.asp.

Table 1.11.A Analysis of risks applicable to all AFOLU project types.			
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			distinct PAs are factored in.
	7. Risk of social instability	Low	The project is run by thousands of independent Kenyan farmers dispersed over thousands of square kilometers, so that chance of social instability having an affect on the project is quite small. Although, the US State Department[4] advised caution and awareness of potential terrorist attacks, cross border kidnappings and crime, there have been no specific incidents of violence in the immediate project region in recent years. Subsistence farmers are not typically the subjects of these types of crimes. The main tribe on the west side of Mt Kenya is Kikuyu. Kikuyus also make up 22% of the national population. The Meru tribe dominates in the Meru area and Embu are found in the Embu area. All three tribes are in the Bantu group and have occupied their areas around Mt Kenya for hundreds of years. There has not been a history of tribal conflict in the area or conflict among the tribes. TIST members are from all tribes and there is no historical conflict. With long term occupancy of the areas and the PAs by the farmers, the chance of social instability having a consequential impact on carbon stocks is low.
Natural disturbance risk	8. Risk of fire	Low[5]	Fires pose a minimal risk to the project because the project is made of so many dispersed project areas scattered over thousands of square kilometers. As small self-managed project areas located around homes and on farms, an individual area is less likely to be affected by fire than isolated and remote forests. With regard to the affect on the project, the effect of a fire would be isolated and of little consequence to the overall carbon in the project. Fire hazards to isolated parcels are reduced because members are allowed to collect deadwood, prune and thin, reducing fuel loads and lifting the canopy

[4]Accessed 22 September 2010 at http://travel.state.gov/travel/cis_pa_tw/cis/cis_1151.html.
[5]Voluntary Carbon Standard, "VCS Program Update 8 September 2010." Voluntary Carbon Standard, Washington, D.C. 2010.

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			away from the ground. All trees will continue to be monitored and contracts require replanting in the case of any mortality. TIST qualifies as high fire return interval (<50 years) with best-practice fire prevention measures such as fuel removal, fire breaks and having thousands of small isolated tree plots managed by their own Small Groups.
	9. Risk of pest and disease attacks	Low	Project participants are trained and employ pest management and prevention practices on project parcels. They own the trees and for the most part reside nearby and can see early on if a pest or disease problem occurs. They have access to local foresters from the District. TIST members are planting over 100 different species of trees. None of the species have been subjected to a major outbreak of a species specific pest or disease. Should that happen, the other species would not typically be affected. In addition, the disaggregated distribution of project parcels should reduce the risk of catastrophic loss due to forest pest or disease outbreaks. Further, contracts require all trees will continue to be monitored and replanted in the case of any mortality.
	10. Risk of extreme weather events (e.g. floods, drought, winds)	Low	Kenya is drought prone with over 80% of the country categorized as arid or semi arid.[6] It is on going causing the United States Agency for International Development to issue disaster declarations in 2008, 2009 and 2011.[7] Droughts tend to exert the greatest impacts during the early stages of tree establishment, and given that most of the trees planted by the project are currently >2 years old (i.e. planted 2008 or earlier), most of the project trees are already well established and

[6] Accessed 16 February, 2011 at http://www.worldagroforestry.org/downloads/publications/PDFs/NL06291.pdf

[7] Accessed 16 February, 2011 at http://www.usaid.gov/our_work/humanitarian_assistance/disaster_assistance/countries/kenya/template/index.html

Table 1.11.A Analysis of risks applicable to all AFOLU project types.			
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			have passed the stage of highest risk. Hence, risk of loss due to these environmental fluctuations will be increasingly low. Further, contracts require that all trees will continue to be monitored and replanted in the case of any mortality.
	11. Geological risk (e.g. volcanoes, earthquakes, landslides)	Low	Neither active volcanoes, nor "major earthquake" activity are present within or near the project area. Mt Kenya last erupted 2.6 to 3.1 million years ago.[8] There are infrequent earthquakes in Kenya associated with the Rift Valley. There have been no earthquakes in the Mt Kenya area in recent history. Because of the dispersed nature of TIST and the fact that trees are flexible, the effects of an earthquake on carbon stocks would be insignificant. While landslides may occur within the project area, they pose insignificant impacts at the project carbon levels, as they are not likely to affect a large area. The project activity itself, planting of trees, stabilizes slopes, thereby reducing both the incidence and extent of landslides.

[8] Accessed 01 December, 2010 at http://www.eoearth.org/article/Mount_Kenya_National_Park_and_National_Forest,_Kenya

Table 1.11.B Analysis of ARR project-specific risks.		
Risk factor category	**Risk rating**	**Comments**
1. Project longevity/ Commitment period	Low	In the GhG contract with CAAC, project participants have formally committed for 60 years not to cut down the trees, except when implementing best practices (to improve growth) for agro-forestry developed by TIST. No commercial harvest or clear cutting will occur. Fuel wood will only be gathered as dead wood or debris resulting from pruning and thinning. Thinning is allowed (i.e. it is not considered "harvest" in the context of the VCS Non-permanence tool) and is an acceptable forest practice used to improve the growth and health of surviving trees. While thinning may cause a dip in carbon stocks at a specific PA, the numerous project areas, different planning schedule and different species mean that there will not be a dip in overall carbon stocks.
		Constitutes "Long-term commitment (i.e., many decades or unlimited) with no harvesting" per VCS Non-permanence Tool – Low risk.
2. Ownership type	Low	The project area is private land entirely under the control of project participants, with land rights established either through direct ownership (possession of clear title) or by customary tenure (see Table 1.11.A, Sub Category 1 of Risk Analysis).
		Constitutes "established NGO or conservation agency; owner-operated private land" per VCS Non-permanence Tool – Low risk
3. Technical capability	Low	Tree planting technologies and planting materials are common. Project personnel, along with local forestry professionals, provide ongoing training to project participants on management, protection and pest control.
		Constitutes "proven technologies and ready access to relevant expertise" per VCS Non-permanence Tool – Low risk
4. Financial capacity	Low	The carbon project is financed by CAAC. CAAC has been operating TIST since 1999, is in six countries, and has been operating the Kenya project since 2004. While it has made some advanced carbon sales, most of the funding has been through corporate profits. CAAC is profitable and has been in business since 1993. CAAC is committed to financing TIST until it is self-funding through program carbon sales. Also see Table 1.11.A, Sub Category 2 of Risk Analysis. TIST has another sponsor, Institute for Environmental Innovation (I4EI) an NGO that funds the sustainable development aspects of TIST through grants and donations that help defray project costs. I4EI is a public charity.

Table 1.11.B Analysis of ARR project-specific risks.		
Risk factor category	**Risk rating**	**Comments**
		Constitutes "Financial backing from established financial institutions, NGOs and/or governments" per VCS Non-permanence Tool – Low risk
5. Management capacity	Low	CAAC has "substantial previous project experience." It developed two carbon projects under Ontario's PERT program in 2000 and has been operating TIST since 1999. TIST itself is made of numerous discrete projects in six countries. There are currently four projects undergoing validation in Kenya, with another 20,000 project areas to be considered for validation in the future. TIST also has discrete projects in India, where a subset has been validated under CDM; Uganda, where it has been approved by the DNA; Tanzania, which began in 2000 and recent expansion in Nicaragua and Honduras. Overall, CAAC has oversight of 8,500 Small Groups, which contain over 60,000 members, and over 10 years experience with TIST. Management resumes are found below in Exhibit 5. Additional information about specific management experience regarding carbon projects is below in Exhibit 6. CAAC has an on-site management team. The TIST local staff coordinates the local farmers and provides management support throughout project implementation. TIST Small Groups are provided training to help them manage their own individual project areas. See Table 1.11.A, Sub Category 4 of Risk Analysis for more.
		Constitutes "substantial previous project experience ($\geq$ 5 projects) with on-site management team" per VCS Non-permanence Tool – Low risk
6. Future income	Low	Project planting and initial monitoring has already been financed by CAAC and implemented. CAAC has developed a proprietary financial model for operating and expanding TIST and based on it, the long-term project will become self-funding and profitable. The project has been designed so that carbon revenues will ultimately be sufficient to fund the project through its term. CAAC's contract with the Small Groups provides for sharing 70% of the profits with the Small Group members. This is in addition to an annual tree payment to the farmers for each live tree. Bridge funding, between the time the project begins and when cash flow from current sales is sufficient to carry operations, has been addressed. One important aspect of the financial plan is that it addresses TIST as a larger consolidated project. This PD does not stand alone; it is a small subset of TIST in Kenya and even smaller subset of TIST worldwide. The economies of scale reduce the overhead costs and the development costs and help defray the cost of developing the data system.

Table 1.11.B Analysis of ARR project-specific risks.		
Risk factor category	**Risk rating**	**Comments**
		See TIST Financial Plan, Exhibit 7.
		Constitutes "appropriate management plan and financial analysis include future income to finance future management activities (e.g. carbon finance to be used for project management, tending operations, etc.)" per VCS Non-permanence Tool – Low risk
7. Future/current opportunity costs	Low	The PAs are all private lands owned by subsistence farmers. The historic and pre-project use of the lands is subsistence farming. The population of Kenya is growing at 2.6%[9], causing the need for farmland to increase. Infrastructure including roads, water, sewer, electricity and wired communication is relatively poor, making it unattractive for industrial development. Kenya is not a rich country and does not have an economy that would support the massive upgrades needed for industrial development. Because of Kenya's world renowned biodiversity, one alternative would be to displace the population surrounding Mt Kenya and convert the farmland to natural forest. It is not reasonable to think this is possible. There is no reasonable basis to believe that there are any other opportunities open to the farmers or for the land. After all, few would choose to remain subsistence farmers if another opportunity was present. The expected scenario without the project is for the land to be used for subsistence agriculture. The current opportunity cost to the farmers is crop yield, which is more valuable than carbon. When the subsistence farmers made the decision to voluntarily put part of their lands into reforestation with TIST, they were aware of the value of the carbon. Their decision to join TIST was made because they felt the holistic TIST tree planting program offered a superior opportunity. It gave opportunities for sustainable woodlots; diversification of food and income from tree products; improved local environment (erosion control and soil improvements); training in sustainable development concepts such as conservation farming, HIV/AIDS and improved stoves; and it pays an ongoing cash incentive. In addition, some were dedicating land that was severely degraded to the point that crop yields were poor. Tree planting in such cases may improve and protect soils for crop production. The future opportunity that presents the most risk is harvesting the trees for timber. TIST is aware of this risk and has taken the appropriate steps

[9] Accessed 22 September 2010 at https://www.cia.gov/library/publications/the-world-factbook/fields/2002.html.

Table 1.11.B Analysis of ARR project-specific risks.		
Risk factor category	**Risk rating**	**Comments**
		to mitigate them so that it will not have but a low risk to the overall carbon stocks. They include: • Training in the benefits of various tree species, so that trees can be selected for their long-term benefits. • The farmers are receiving cash tree payments in advance of their carbon revenues. Though a small annual amount, this is sometimes the only "cash" available to the farmers. • The farmers will continue to receive the cash incentive each year for every live tree they have, for the life of the project. • The farmers will receive 70% of the profits from TIST. If the world continues to believe controlling carbon is important, the value of carbon is expected to increase significantly from where it is today, increasing the money available to the farmers. • TIST members have the right to use dead wood. Since fuel wood is a significant household cost in terms of both purchasing wood bundles and transporting them, or the time taken to travel to a collection site and collect the wood, having an on-farm source is valuable. • TIST members are allowed to thin their PAs and use the thinnings. For some of the species, this means they can sell poles and other wood products and still continue to be part of TIST, receive a cash income and continue to sequester carbon. • Finally, TIST members are under contract and have formally committed not to "cut down the trees, except when implementing best practices [to improve growth] for agro-forestry developed by TIST or recommended in writing from their local government authority." TIST has designed a program for the farmers that takes a multifaceted approach to reforestation at the household level. Alternative land uses from the pre-project and historic use have not been identified. Current opportunities beyond TIST were explored by the farmers and they voluntarily chose TIST. Future alternatives would require breaking a legally enforceable contract with TIST and their peers (the contracts are signed jointly by all the members of a Small Group). As in microfinance, groups further reduce risk since members experience group pressure to honor their commitments and members themselves evaluate potential new members. In the event that a members does chose to quit the program and harvest the trees, the fact that this represents a small portion of the carbon stocks means there would be little impact on the overall project carbon inventory.

Table 1.11.B Analysis of ARR project-specific risks.		
Risk factor category	**Risk rating**	**Comments**
		Also see Table 1.11.A, Sub Category 5 of Risk Analysis for more.
		Constitutes "alternative land uses are unlikely to occur in the future" per VCS Non-permanence Tool – Low risk
8. Endorsement of project or land-use activity by local or national political establishment	Low	The Kenya Forest Department (now Kenya Forest Service) and NEMA have both provided letters accepting the project. An EIA from TIST has been received by NEMA and they had no negative comments. See Exhibits 8, 9, and 10.
		Constitutes "endorsement given and not likely to change in the future" per VCS Non-permanence Tool – Low risk