

NON-PERMANENCE RISK REPORT FOR TIST PROGRAM IN UGANDA VCS-005, VERIFICATION 02



Document Prepared By Clean Air Action Corporation

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1 INTERNAL RISK

Project Management		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	Species planted (where applicable) associated with more than 25% of the stocks on which GHG credits have previously been issued are not native or proven to be adapted to the same or similar agro-ecological zone(s) in which the project is located. The only species that exceed or have the potential to exceed 25% are Pinus Patula and eucalyptus spp. Though the exact year of introduction to Uganda is unknown, Pinus Patula was being planted in commercial plantation scale in Kenya in 1940.¹ It is considered by the National Forestry Authority to be one of Uganda's main plantation species.² Eucalyptus was introduced in Africa before 1885 and in East Africa between 1890 and 1920.³ It has since become a highly recommended and successful species and as noted by their sale of Pinus Patula seedlings, is encouraged by the National Forestry Authority. In addition, the species planted are chosen by the farmers, who gather seeds from trees growing successfully locally, and so are adapted to project agro-ecological zones. Both species are common in Uganda, were introduced and proven successful well before the establishment of TIST and their selection does not pose a risk to the project.	0
b)	Ongoing enforcement to prevent encroachment by outside actors is required to protect more than 50% of stocks on which GHG credits have previously been issued. Ongoing enforcement to prevent encroachment by outside actors will not be required to protect stocks. The project areas are on lands owned by the Small Group members that plant the trees. Most of these lands are both their farmland and their residence and are protected by the farmers living there. 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).	0
c)	Management team does not include individuals with significant experience in all skills necessary to successfully undertake all project activities (i.e., any area of required experience is not covered by at least one individual with at least 5 years experience in the area). The management team has extensive experience that exceeds 5 years in all areas. CAAC created TIST in 1999 and began tree planting in 2000. The management team has not changed in that time.	0

¹ Exhibit 26: World Agroforestry Center, AgroForestryTree Database. TIST UG PD-VCS-Ex 26 World Agroforestry Pinus Patula.pdf at <http://www.tist.org/PD-UG-VCS-005-006%20Documents.php>

² Exhibit 28: Uganda National Forestry Authority website. TIST UG PD-VCS-Ex 28 Uganda NFA Pinus Patula.pdf at <http://www.tist.org/PD-UG-VCS-005-006%20Documents.php>

³ Exhibit 27: World Agroforestry Center, AgroForestryTree Database. TIST UG PD-VCS-Ex 27 World Agroforestry Eucalyptus Grandis.pdf at <http://www.tist.org/PD-UG-VCS-005-006%20Documents.php>

	Since the inception of TIST, the CAAC management team has proven its skills by growing the project to over 78,000 farmer members; planting over 16 million trees worldwide; providing the funding necessary to conduct operations for over 11 years without the sale of verified credits; expanding TIST to four countries; validating one TIST project in India under CDM; validating and verifying seven projects in Kenya, six projects in Uganda and one project in India under VCS; becoming the first project worldwide to be dually certified for VCA and CCB; and deploying an award winning monitoring system.^{4,5} Lack of management experience and skills does not pose a risk to the project.	
d)	Management team does not maintain a presence in the country or is located more than a day of travel from the project site, considering all parcels or polygons in the project area. The project management team maintains a presence in the country. There is a full time professional staff in Bushenyi, and no site is more than a day of travel from staff. 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 in the US, Quantifiers and farmers. They provide ongoing management support to foster increasing self-reliance on the part of project participants. In addition, TIST deploys a team of about 23 Quantifiers that visit each site periodically and has regular contact with the members. Also, each project area is managed by the Small Groups that own the trees.	0
e)	Mitigation: Management team includes individuals with significant experience in AFOLU project design and implementation, carbon accounting and reporting (e.g., individuals who have successfully managed projects through validation, verification and issuance of GHG credits) under the VCS Program or other approved GHG programs. Management team includes individuals with significant experience in AFOLU project design and implementation, carbon accounting and reporting (e.g., individuals who have successfully managed projects through validation, verification and issuance of GHG credits) under the VCS Program and other approved GHG programs. See section c), above.	-2
f)	Mitigation: Adaptive management plan in place. Not applicable	0
Total Project Management (PM) [as applicable, (a + b + c + d + e + f)] If a=0, b=0, c=0, d=0, e=-2 and f=0; then PM=-2 Total may be less than zero.		-2

⁴ Exhibit 07: TIST UG PD-VCS-Ex 07 Mgt Resumes 110215.doc at <http://www.tist.org/PD-UG-VCS-005-006%20Documents.php>.

⁵ Exhibit 08: TIST UG PD-VCS-Ex 08 Mgt Experience 110215.doc at <http://www.tist.org/PD-UG-VCS-005-006%20Documents.php>.

Financial Viability		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	Project cash flow breakeven point is greater than 10 years from the current risk assessment. Not applicable	NA
b)	Project cash flow breakeven point is between 7 and up to 10 years from the current risk assessment. Not applicable	NA
c)	Project cash flow breakeven point between 4 and up to 7 years from the current risk assessment. Not applicable	NA
d)	Project cash flow breakeven point is less than 4 years from the current risk assessment. The project has been breakeven based on external funding and commitments. ⁶	0
e)	Project has secured less than 15% of funding needed to cover the total cash out before the project reaches breakeven. Not applicable	NA
f)	Project has secured 15% to less than 40% of funding needed to cover the total cash out required before the project reaches breakeven. Not applicable	NA
g)	Project has secured 40% to less than 80% of funding needed to cover the total cash out required before the project reaches breakeven. Not applicable	NA
h)	Project has secured 80% or more of funding needed to cover the total cash out before the project reaches breakeven. The project had all the funds secured to cover the total cash needs to reach breakeven. ⁷	0
i)	Mitigation: Project has available as callable financial resources at least 50% of total cash out before project reaches breakeven. Since the project is breakeven, has ongoing funding available and has been financially viable for 16 years, this mitigation applies.	-2

⁶ Exhibit 09: TIST UG PD-VCS-Ex 09 Financial Plan 161231.xlsx at <http://www.tist.org/PD-UG-VCS-005-006%20Documents.php>.

⁷ Exhibit 09

Total Financial Viability (FV) [as applicable, ((a, b, c or d) + (e, f, g or h) + i)] If d=0, h=-2 and i=-2; then FV=-2 Total may not be less than zero.	0

Opportunity Cost		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	NPV from the most profitable alternative land use activity is expected to be at least 100% more than that associated with project activities; or where baseline activities are subsistence-driven, net positive community impacts are not demonstrated. Not applicable	NA
b)	NPV from the most profitable alternative land use activity is expected to be between 50% and up to 100% more than from project activities. Not applicable	NA
c)	NPV from the most profitable alternative land use activity is expected to be between 20% and up to 50% more than from project activities. Not applicable	NA
d)	NPV from the most profitable alternative land use activity is expected to be between 20% more than and up to 20% less than from project activities; or where baseline activities are subsistence-driven, net positive community impacts are demonstrated. In accordance with instruction 2.2.2 of the AFOLU Non-Permanence Risk Tool, "where the majority of baseline activities over the length of the project crediting period are subsistence-driven, an NPV analysis is not required, but an assessment of the net impacts of the project on the social and economic well-being of the communities who derive livelihoods from the project area (see Section 2.3.2) shall be undertaken. Based on this assessment, the project shall be assigned an opportunity cost score as set out in this table." As demonstrated by the Bushenyi District Environment Profile stating agriculture "engages over 86.7% of the population as peasant farmers," the majority of the baseline activity in the project areas is subsistence farming. ⁸ Assessment of the net impacts of the project on social and economic well-being of the communities was conducted as part of the Environmental Assessment report submitted to and approved by NEMA. It found the project benefited the social and economic well-being of the communities, which derive livelihoods from the project areas. ⁹ NEMA	0

⁸ Exhibit 13: National Environment Management Authority (NEMA), District Environment Profiles: Bushenyi. TIST UG PD-VCS-Ex 13 Dist Enviro Profile Bushenyi .doc at <http://www.tist.org/PD-UG-VCS-005-006%20Documents.php>.

⁹ Exhibit 01: TIST UG PD-VCS-Ex 01 Environmental Screening 060803.pdf at <http://www.tist.org/PD-UG-VCS-005-006%20Documents.php>.

	concluded that TIST "activities are geared towards helping the communities in conserving the environment through tree planting." ¹⁰	
e)	NPV from project activities is expected to be between 20% and up to 50% more profitable than the most profitable alternative land use activity. Not applicable	NA
f)	NPV from project activities is expected to be at least 50% more profitable than the most profitable alternative land use activity. Not applicable	NA
g)	Mitigation: Project proponent is a non-profit organization. Not applicable	0
h)	Mitigation: Project is protected by legally binding commitment (see Section 2.2.4) to continue management practices that protect the credited carbon stocks over the length of the project crediting period. Project has contracts with each Small Group that extend beyond the length of the project crediting period. ^{11,12} Although there have been violations of the contract by some of the members, it had proven to be effective over 99% of the carbon stocks.	-1.9
i)	Mitigation: Project is protected by legally binding commitment (see Section 2.2.4) to continue management practices that protect the credited carbon stocks over at least 100 years. Not applicable	NA
Total Opportunity Cost (OC) [as applicable, (a, b, c, d, e or f) + (g or h)] If d=0 and either g=-2 or h=-2; then Total Opportunity Cost = -2 Total may be less than 0 (see VCS Errata and Clarifications, 24 July 2014.		-1.9

Project Longevity		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	Without legal agreement or requirement to continue the management practice. Not applicable	NA

¹⁰ Exhibit 02: TIST UG PD-VCS-Ex 02 NEMA EA Approval 070515.pdf at <http://www.tist.org/PD-UG-VCS-005-006%20Documents.php>.

¹¹ Exhibit 03: TIST UG PD-VCS-Ex 03 GhG Contract UG 051014.doc at <http://www.tist.org/PD-UG-VCS-005-006%20Documents.php>

¹² Exhibit 04: TIST UG PD-VCS-Ex 04 GhG Contract UG 080319.doc at <http://www.tist.org/PD-UG-VCS-005-006%20Documents.php>

b)	With legal agreement or requirement to continue the management practice. 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 planting schedule and different species means that there will not be a dip in overall carbon stocks. With a 60 year longevity, the risk is $(30-(60/2))=0$. During the second verification it was determined that there was harvest activity at 5% of the original PAs, in violation of the contract and have been dropped from the program. The percentage drops to under 2% when the new instances are added in. As a result, 95% of the PAs are in compliance covering 99% of the carbon.	.2
Total Project Longevity (PL) May not be less than zero		.2

Internal Risk	
Total Internal Risk (PM + FV + OC + PL) If PM=-2, FV =0, OC=0, and PL=0; then Internal Risk=-2 Total may not be less than zero.	0

2 EXTERNAL RISKS

Land Tenure and Resource Access/Impacts		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	Ownership and resource access/use rights are held by same entity(s). Control of project lands by project participants is clear and undisputed, either through a registered deed or by customary tenure. Customary tenure is an accepted form of ownership, where land rights are regulated by local customs.¹³ 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. During the second verification it was determined that 0 PAs had ownership disputes.	0

¹³ Constitution of the Republic of Uganda, 1995, Section 237. Land Ownership. Accessed 10 March 2017 at <http://www.statehouse.go.ug/government/constitution>.

b)	Ownership and resource access/use rights are held by different entity(s) (e.g., land is government owned and the project proponent holds a lease or concession). Not applicable	NA
c)	In more than 5% of the project area, there exist disputes over land tenure or ownership. Not applicable.	0
d)	There exist disputes over access/use rights (or overlapping rights). Not applicable	0
e)	WRC projects unable to demonstrate that potential upstream and sea impacts that could undermine issued credits in the next 10 years are irrelevant or expected to be insignificant, or that there is a plan in place for effectively mitigating such impacts. Not applicable	NA
f)	Mitigation: Project area is protected by legally binding commitment (e.g., a conservation easement or protected area) to continue management practices that protect carbon stocks over the length of the project crediting period. Each area is subject to a Small Group GhG contract that protects that carbon stocks over the length of the crediting period. ¹⁴	-1.9
g)	Mitigation: Where disputes over land tenure, ownership or access/use rights exist, documented evidence is provided that projects have implemented activities to resolve the disputes or clarify overlapping claims. Not applicable	NA
Total Land Tenure (LT) [as applicable, ((a or b) + c + d + e + f + g)] If a=0, c=0, d=0, e=-2; then LT=-2. Total may not be less than zero.		0

Community Engagement		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	Less than 50 percent of households living within the project area, who are reliant on the project area, have been consulted. Because of the nature of the project (i.e. the Small Groups are planting on their own land), 100% of the households within the project area, who are reliant on the project area, have been consulted.	0
b)	Less than 20 percent of households living within 20 km of the project boundary outside the project area, and who are reliant on the project area, have been	0

¹⁴ Exhibits 03 and 04

	consulted. Because of the nature of the project, the only households that are reliant on a specific project area are the same ones that join TIST and plant the trees. Therefore, 100% of the households in this category have been consulted.	
c)	Mitigation: The project generates net positive impacts on the social and economic well being of the local communities who derive livelihoods from the project area. This is a true statement as supported by verification of a similar subset of the TIST Uganda program under the CCB standard.¹⁵	-5
Total Community Engagement (CE) [where applicable, (a+b+c)] If a=0, b=0 and c=-5; then CE=-5. Total may be less than zero.		-5

Political Risk		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	Governance score of less than -0.79. Not applicable	NA
b)	Governance score of -0.79 to less than -0.32. Based on the World Bank Institute Worldwide Governance Indicators the average score of all six indicators¹⁶ for Uganda, for the five most recent years (2011-2015), is -.59.¹⁷	4
c)	Governance score of -0.32 to less than 0.19. Not applicable	NA
d)	Governance score of 0.19 to less than 0.82. Not applicable	NA
e)	Governance score of 0.82 or higher. Not applicable	NA
f)	Mitigation: Country is implementing REDD+ Readiness or other activities, as set out in this Section 2.3.3.	-2

¹⁵ Exhibit 29: TIST UG PD-VCS-Ex 29 ESI Val-Ver Report 120511.pdf at <http://www.tist.org/PD-UG-VCS-005-006%20Documents.php>.

¹⁶ World Bank Institute Worldwide Governance Indicators. Accessed 10 March 2017 at <http://info.worldbank.org/governance/wgi/#home>

¹⁷ Exhibit 11: TIST UG PD-VCS-Ex 11 Governance Indices.xlsx at <http://www.tist.org/PD-UG-VCS-005-006%20Documents.php>.

	Uganda is receiving REDD+ Readiness funding from the World Bank Forest Carbon Partnership Facility. ¹⁸	
Total Political (PC) [as applicable ((a, b, c, d or e) + f)] If b=4 and f=0; then PC=4. Total may not be less than zero.		2

External Risk	
Total External Risk (LT + CE + PC) If LT=0, CE=-5, and PC=2; then External Risk =-3 Total may not be less than zero.	0

3 NATURAL RISKS

Natural Risk: Fire	
Significance	The project is comprised of thousands of dispersed and discrete project areas spread out over thousands of square kilometers. The average project area represents 0.01% of the total carbon stocks. While there is always a possibility that one of the projects areas could be lost to fire, the impact would be de minimis. The fire risk significance is rated as "insignificant (less than 5% loss of carbon stocks)." During the second verification it was determined that 3 PAs representing 0.02% of the carbon were lost to fire, well below the 5% threshold.
Likelihood	The likelihood of a fire is also minimal. First is the fact that the project areas are dispersed and 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. The presence of the landowner means that the fires will be noticed early and have a higher likelihood of being put out before they burn too much of a project area. Many of the project areas are also active farm plots and lack the fuel density to be a fire hazard. Because of the number of plots and their dispersed nature, the level of likelihood is difficult to quantify. Since the baseline data goes back to 1990 (see Appendix 1, Land Sat 1990 imagery) and none indicate any issues relating to fire in the project areas, we are conservatively using a likelihood category of "every 10 to less than 25 years." The Project is 14 years old and the total loss to fire is 0.2% of the carbon stocks. The Project is well within the likelihood parameters of the risk tool and the score indicated.
Score (LS)	1

¹⁸ Forest Carbon Partnership Facility website, Uganda webpage. Accessed 10 March, 2017 at <http://www.forestcarbonpartnership.org/uganda>.

Mitigation	The risk of fire is greatly mitigated by the project design: • There are thousands of discrete, small and isolated project areas. • The project areas are widely dispersed over thousands of square kilometers. • The project areas are dispersed in different ecosystems. • Many of the project areas are bordered by roads which serve as fire breaks. • Many of the farmers live in the project areas and will be able to react early in any fire situation. • Most of the project areas are also used for farming so the overall stem density is often relatively low. • Members are allowed to collect deadwood, prune and thin, reducing fuel loads and lifting the canopy away from the ground. • TIST GhG contracts require all trees will continue to be monitored and replanted for 20 years in the case of any mortality.
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Natural Risk: Pest and Disease Outbreaks	
Significance	The presence of an especially aggressive pest or disease could cause tree mortality that could affect some carbon loss. There are three species where a total loss would exceed 5% - <i>Pinus patula</i>, <i>Eucalyptus</i>, and <i>Cupressus</i>. Pinus Patula: A report by researchers at Makerere University¹⁹ states the incidence of a wilt disease, in numerous pine species, in many of their plantations, and a "blight like problem" affecting <i>P patula</i> at one plantation. The wilt disease affected no more than 5% of the trees. The blight appeared to be limited and no pathogens were identified. <i>Phymateus viridipes</i> is present and can cause defoliation of <i>Pinus patula</i>. Eucalyptus: The Makerere report states "Eucalyptus clones showed marked variations in the incidence and severity of, particularly <i>L. invasa</i>, <i>Botryosphaeria</i> canker and <i>Mycosphaerella</i> leaf spots."²⁰ It also states that severely infested trees were stunted and gnarled and that a few one-year-old trees had died.²¹ Cupressus lusitanica: The Makerere report mentions the occurrence of a conifer aphid known to affect cypress trees but only observed an unknown browning symptom.²² While the above species represent more than 5% of the trees, none of the cited references suggest a widespread blight that would completely wipe out all of any one of them. Because of the thousands of separate and widespread project areas, loss above 5% of the total carbon is inconceivable and significance is ranked as "insignificant (less than 5% loss of carbon stocks)." During the second verification it was determined that 0 PAs were lost to pest, well below the 5% threshold.
Likelihood	Since the research from above indicates that pest and disease have been documented within the last ten years, the likelihood of any carbon loss is in the

¹⁹ Exhibit 12: TIST UG PD-VCS-EX 12 Pests and Diseases 2008.pdf at <http://www.tist.org/PD-UG-VCS-005-006%20Documents.php>.

²⁰ Exhibit 12, page iii.

²¹ Exhibit 12, Page 9.

²² Exhibit 12, Page 11.

	"less than every 10 years" category. After 14 years of project activity there has been no loss due to pests or disease indicating the Project is well within the likelihood parameters of the risk tool and the score indicated.
Score (LS)	2
Mitigation	The risk of pest and disease outbreaks is greatly mitigated by the project design: • There are thousands of discrete, small and isolated project areas. • The project areas are widely dispersed over thousands of square kilometers. • The project areas are dispersed in different ecosystems, • Many of the project areas are bordered by roads inhibiting the spread of pest and disease. • Many of the farmers live on the land where they have planted trees and can react early if a pest or disease problem occurs. • Most project areas are also used for farming, so the overall stem density is often relatively low, further inhibiting spread of pest and disease. • Farmers receive training in natural pest control. • TIST has a training network and, should a pest or disease outbreak occur, the information about outbreak and control options can be readily disseminated. • The farmers have access to local foresters from the District. • TIST farmers plant over 100 different species and many groves have multiple species including those not mentioned under "significance." • TIST GhG contracts require all trees will continue to be monitored and replanted for 20 years in the case of any mortality.

Natural Risk: Extreme Weather	
Significance	Cyclones, hurricanes and tornadoes are not relevant to TIST Uganda. Drought is the extreme weather that could have the most impact. However, droughts in Uganda tend to be in the north of the country. Southeast Uganda has moderate rainfall between nearing 1,400 mm per year in the Bushenyi District and around 900 mm in the Kabale District.^{23,24} Both reports discuss the bi-modal nature of the rainfall and neither indicate droughts have occurred. Droughts tend to exert the greatest impacts during the early stages of tree establishment. Since TIST does not count trees younger than six months and considers one year old trees as having zero biomass, loss of these vulnerable trees will have no impact on carbon stocks. The 2-year-old trees represent less than 5% of the carbon stocks. Therefore, the risk of loss of these younger trees has minimal impact on TIST carbon stocks. Drought can also affect larger trees. However, in spite of the droughts discussed under likelihood, TIST tree counts continue to rise and there is no indication that there has been any carbon loss. A significance rank of "no loss" is assumed.
Likelihood	It is not expected that Southeast Uganda will be affected by drought, so the likelihood is "risk is not applicable to the project area".

²³ Exhibit 13, page 18.

²⁴ Exhibit 20: TIST UG PD-VCS-Ex 20 Dist Enviro Profile Kabale.pdf, page 18 at <http://www.tist.org/PD-UG-VCS-005-006%20Documents.php>.

Score (LS)	0
Mitigation	The risk of Extreme Weather is greatly mitigated by the project design: • There are thousands of discrete, small and isolated project areas. • The project areas are widely dispersed over thousands of square kilometers. • The project areas are dispersed in different ecosystems, • Many of the farmers live on the land where they have planted trees and can irrigate if necessary. • Most project areas are also used for farming, so the overall stem density is often relatively low, reducing competition for ground water. • TIST has a training network and, should a drought occur, the information about mitigation options can be readily disseminated. • The farmers have access to local foresters from the District. • TIST farmers plant over 100 different species and many groves have multiple species. • TIST GhG contracts require all trees will continue to be monitored and replanted for 20 years in the case of any mortality.

Natural Risk: Geological Risk	
Significance	The project is exposed to little if any geological risks. There are several volcanoes and volcanic fields in the vicinity of Southwest Uganda associated with the Rift Valley. The ones listed herein are in Uganda, Democratic Republic of the Congo (DRC) and Rwanda. They include Bufumbira, Bunyaruguru, Fort Portal Field, Mount Katunga, Katwe-Kikorongo Field, Mount Muhabura, Mount Karisimbi, Mount Bisoke, and Tshibinda.²⁵ None are considered currently active. There are three active ones in DRC.²⁶ May-Ya-Moto is a thermal area about 30 km from the nearest TIST grove. Thermal areas do not erupt or make cones. Mount Nyamuragira is a shield volcano 75 km from the nearest TIST grove. It erupted in 2012 but too far from TIST groves to have an effect. Mount Nyiragongo is a stratovolcano 73 km from the closest TIST groves. It erupted in 2013 but was too far away to have an effect on the TIST project areas. There are infrequent earthquakes in Uganda associated with the Rift Valley. PreventionWeb reports 4 earthquakes between 1980 and 2010 risk and puts 62,000 people at risk out of a population of 32 million. The last significant earthquake was in 1994 near Kasese.²⁷ Because of the dispersed nature of TIST, none of these potential geological risks would have a significant impact on the carbon stocks of the project, even if they occurred. Because trees are flexible, the effects of an earthquake on carbon stocks would be minimal. Because none of these risks have been identified to impact any discrete project

²⁵ Global Volcanism Program of the Smithsonian Institute website. Accessed 10 March 2017 at <http://www.volcano.si.edu/index.cfm>.

²⁶ Ibid.

²⁷ Prevention Web website. Accessed 10 March 2017 at <http://www.preventionweb.net/english/countries/statistics/risk.php?cid=180>.

	area, significance is considered "no loss."
Likelihood	The likelihood for geological risks is "once every 100 years or more, or risk is not applicable to the project area." As pointed out above, TIST has no discrete project areas in the vicinity of the volcanoes that have erupted in the last 100 years. While there have been tremors felt in Uganda in the last 100 years, there have been no earthquakes of a magnitude that would affect the carbon stocks of the project areas.
Score (LS)	0
Mitigation	The fact that the project is comprised of thousands of dispersed and discrete project areas qualifies as a prevention measure.

Score for each natural risk applicable to the project (Determined by (LS × M))	
Fire (F): LS=1, mitigation=0.50.	0.5
Pest and Disease Outbreaks (PD): LS=2, mitigation=0.50.	1.0
Extreme Weather (W): LS=0, mitigation=0.50.	0.0
Geological Risk (G). LS=0, mitigation=0.50.	0.0
Other natural risk (ON). NA	NA
Total Natural Risk (as applicable, F + PD + W + G + ON)	1.5
If F= , PD= , W= , G=0 and ON= ; then Total Natural Risk= .	

4 OVERALL NON-PERMANENCE RISK RATING AND BUFFER DETERMINATION

4.1 Overall Risk Rating

Risk Category	Rating
a) Internal Risk	0
b) External Risk	0
c) Natural Risk	1.5
Overall Risk Rating (a + b + c)	1.5

4.2 Calculation of Total VCUs

The AFOLU Non-Permanence Risk Tool requires a minimum risk rating of 10, so the risk buffer for this project is 10%. The calculation of total VCUs is therefore:

$$\text{Verified Reductions} \times (100\% - 10\%) = \text{VCUs}$$

or

Gross	Buffer	Net
517,479	51,748	465,731

Other References

Exhibit 01: TIST UG PD-VCS-Ex 01 Environmental Screening 060803.pdf
Exhibit 02: TIST UG PD-VCS-Ex 02 NEMA EA Approval 070515.pdf
Exhibit 03: TIST UG PD-VCS-Ex 03 GhG Contract UG 051014.doc
Exhibit 04: TIST UG PD-VCS-Ex 04 GhG Contract UG 080319.doc
Exhibit 11: TIST UG PD-VCS-Ex 11 Governance Indices.xlsx
Exhibit 12: TIST UG PD-VCS-EX 12 Pests and Diseases 2008.pdf
Exhibit 13: TIST UG PD-VCS-Ex 13 Dist Enviro Profile Bushenyi .doc
Exhibit 20: TIST UG PD-VCS-Ex 20 Dist Enviro Profile Kabale.pdf
Exhibit 26: TIST UG PD-VCS-Ex 26 World Agroforestry Pinus Patula.pdf
Exhibit 27: TIST UG PD-VCS-Ex 27 World Agroforestry Eucayptus Grandis.pdf
Exhibit 28: TIST UG PD-VCS-Ex 28 Uganda NFA Pinus Patula.pdf
Exhibit 29: TIST UG PD-VCS-Ex 29 ESI Val-Ver Report 120511.pdf