

NON-PERMANENCE RISK REPORT

AGROFORESTRY AND FOREST RESTORATION FOR ECOLOGICAL CONNECTIVITY, POVERTY REDUCTION AND BIODIVERSITY CONSERVATION IN CERRO SAN GIL, CARIBBEAN GUATEMALA.



Document Prepared By FUNDAECO and AGRESTA

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Prepared By	FUNDAECO and AGRESTA
Contact	FUNDAECO: 25 calle 2-39 zona 1; Guatemala, Guatemala C.A.;+502 23141900; www.fundaeco.org.gt AGRESTA: C/Duque de Fernán Núñez, 2 1º. 28012. Madrid. Spain;+34 629341887; prodriquez@agresta.org ; www.agresta.org

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. Most important project planted specie is rubber (<i>Hevea brasiliensis</i>). Rubber is considered by CONAP (2011) as a "naturalized" plant in the Reglamento de Especies Exóticas e Invasoras. <i>Gmelina arborea</i>, is native from the southwest of Asia but it has been widely planted and adapted to the national conditions. Globally, <i>Gmelina</i> has significant commercial potential in countries such as Sierra Leone, Nigeria and Malawi (Africa) and in Brazil, Nicaragua, Guatemala, Honduras, El Salvador and Colombia where the success of plantations allow the species and is employed industrial and commercial level¹. Wild <i>Theobroma cacao</i>, is native to deep tropical regions of central and south America² San Juan (<i>Vochysia guatemalensis</i>) is a native species found in the native forests of the Izabal Department. In the region of Izabal is used to build canoes and agroforestry systems it is used to improve the soil and in windbreaks. Laurel (<i>Cordia alliodora</i>)³, Santa Maria (<i>Calophyllum brasiliense</i> var <i>Relco</i>)⁴, Mahogany (<i>Swietenia macrophylla</i>)⁵, Barillo (<i>Symphonia globulifera</i>)⁶, Ramón (<i>Brosimum alicastum</i>)⁷; Cedar (<i>Cedrela odorata</i>)⁸ are native in the project area.	0

¹ <http://www.revista-mm.com/ediciones/rev50/especie.pdf>

² http://www.corpoica.org.co/sitioweb/Archivos/Revista/4_Comportamiento.pdf

³ Stead, J.W. 1980. Commonwealth Forestry Institute international provenance trials of *Cordia alliodora* (Ruiz & Pav.) Oken. 11th Commonwealth Forestry Conference; 1980 September 7-27; Port-of-Spain, Trinidad and Tobago. Oxford, UK: Commonwealth Forestry Institute. 17 p.

⁴ FLORES, E. M. 2002. *Calophyllum brasiliense* Cambess. In: VOZZO, J. A. (ed.), *Tropical tree seed manual*, p. 353-356. Washington, USDA Forest Service (Agriculture Handbook, 721).

⁵ Calvo, J. C. (2000). *Diagnóstico de la caoba (Swietenia macrophylla king) en Mesoamérica. Visión general*. Centro Científico Tropical PROARCA/CAPAS, San José (Costa Rica).

⁶ Camacho, R. L., & Montero, M. I. (2005). *Manual de identificación de especies forestales con manejo certificable por comunidades*. Instituto Amazónico de Investigaciones Científicas "SINCHI".

⁷ Ballina-Gómez, H. S., Iriarte-Vivar, S., Orellana, R., & Santiago, L. S. (2008). Crecimiento, supervivencia y herbivoría de plántulas de *Brosimum alicastum* (Moraceae), una especie del sotobosque neotropical. *Revista de biología tropical*, 56(4), 2055-2067.

⁸ AGUILAR CUMES, J. M & AGUILAR CUMES M. A. (1992). *Arboles de la Biosfera Maya Petén, Guía para las especies del Parque Nacional Tikal*. Universidad de San Carlos de Guatemala, Facultad de Ciencias Químicas y Farmacia, Escuela de Biología, Centro de Estudios Conservacionistas (CECON). 272 p

	Teak (<i>Tectona grandis</i>) originates from the Southeast Asian ⁹ . However, plantations of teak are common in Izabal Department ¹⁰	
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. Local communities have been involved in project's plantation campaigns and are aware of the positive environmental and socioeconomic project impacts. Reforestation and agroforestry will contribute to future indirect benefits to local communities (e.g. generate sustainable incomes for farmers, reduce erosion by runoff, etc.) and therefore enforcement is not expected to be required in order to protect carbon stocks.	0
c)	Management team includes individuals with significant experience in all skills necessary to successfully undertake all project activities FUNDAECO team has forest engineers with more than 10 of experience in ARR projects.	0
d)	The management team is located less than a day of travel from the project site considering all project parcels. The main office of FUNDAECO is in Guatemala City, less than a day travel from all Project parcels. Furthermore, FUNDAECO has a local office in Puerto Santo Tomas de Castilla (near Puerto Barrios) for the co-management of the protected area "Reserva Protectora de Manantiales Cerro San Gil" and for the management of the VCS project. Local project team has temporal offices in the rural communities where project has been implemented.	0
e)	Mitigation: Management team includes individuals with significant experience in AFOLU project design and implementation, carbon accounting and reporting under VCS program or other approved GHG programs There are members of the implementing partner (FUNDAECO) with significant experience in AFOLU (REDD and ARR) project design (under VCS) and REDD+, at a national scale, under FCPF (WB). On the other hand, the project proponent team in charge of this project has significant experience in AFOLU projects under CDM and VCS programs, with 4 ARR projects implemented.	-2
f)	Adaptive management plan is in place The project has a Management and Financial Plan including a mitigation planning for potential risks to the project. Several risks have been already identified and adaptation measures have been implemented.	-2
Total Project Management (PM) [as applicable, (a + b + c + d + e + f)] Total may be less than zero.		-4

⁹ Gajasen, Jiragorn; Jordan, Carl F. 1990. Decline of teak yield in northern Thailand: effects of selective logging on forest structure. *Biotrópica*. 22(2): 114-118

¹⁰ Vaides López, E. E. (2004). Características de sitio que determinan el crecimiento y productividad de teca (*Tectona grandis* L. f.), en plantaciones forestales de diferentes regiones en Guatemala. http://bibliotecaorton.catie.ac.cr:8080/bitstream/handle/11554/4036/Caracteristicas_de_sitio.pdf?sequence=1

Financial Viability		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	Project cash flow breakeven point is greater than 10 years (updating pending)	Not applicable
b)	Project cash flow breakeven point is between 7 and up to 10 years from the current risk assessment The cash flow breakeven point has been calculated by the financial department of Livelihoods Fund and is between 7 and 10 years. Documents supporting this statement are available for the VVB on request.	2
c)	Project cash flow breakeven point between 4 and up to 7 years from the current risk assessment	Not applicable
d)	Project cash flow breakeven point is less than 4 years from the current risk assessment	Not applicable
e)	Project has secured less than 15% of funding needed to cover the total cash out before the project reaches breakeven	Not applicable
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
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
h)	Project has secured more than 80% of funding needed to cover the total cash out before the project reaches breakeven. With the different financers of the project (Livelihoods, PINFOR and MAGA) more than 80% of the funding needed for its implementation is secured.	0
i)	Mitigation: Project had available as callable financial resources more than 50% of total cash out before project reaches breakeven. Balance sheet will be available for the validation team. The project proponent, in this project case, is a Fund with enough financial resources to finance the project cash out. Therefore it can be demonstrated that project has available callable financial resources for the total cash out.	-2
Total Financial Viability (FV) [as applicable, ((a, b, c or d) + (e, f, g or h) + i)] 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
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
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
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 Baseline scenario identified in section 2.4. "Baseline scenario" of the PD is the Status Quo. Baseline activities are subsistence-driven consisting basically on subsistence agricultural activities (agriculture and cattle ranching). Net positive community impacts are demonstrated. The approved <i>Environmental Diagnostic</i> of the project cites the following positive socioeconomic impacts identified: - Promote carbon sequestration. Generate sustainable incomes for farmers. - Support recovery of vegetation cover. - Promote ecological connectivity at the landscape scale. - Recover watersheds. - Reduce erosion by runoff.	0
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
f)	NPV from project activities is expected to be at least 50% more profitable than the most profitable alternative land use activity	Not applicable
g)	Mitigation: Project proponent is a non-profit organization	Not applicable
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.	-2

	See details in next table (section b)	
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
Total Opportunity Cost (OC) [as applicable, (a, b, c, d, e or f) + (g + h or i)]		-2

Project Longevity		
a)	Without legal agreement or requirement to continue the management	Not applicable
b)	With legal agreement or requirement to continue the management practice Project longevity is 30 years as demonstrated in the contracts between the project proponent (Livelihoods) and FUNDAECO, and between FUNDAECO and the land owners. Project ownership, as demonstrated in section 1.12.1 of the PD and supporting documents, can be maintained for the entire project longevity.	15
Total Project Longevity (PL) May not be less than zero		15

Internal Risk	
Total Internal Risk (PM + FV + OC + PL) Total may not be less than zero.	9

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) Ownership and resource access/use right are held by the landowners (see section 1.12.1 of the PD.	0
b)	Ownership and resource access/use rights are held by different entity(s) (eg, land is government owned and the project proponent holds a lease or concession)	0
c)	In more than 5% of the project area, there exist disputes over land tenure or ownership In the project there are not disputes over access/use rights (or overlapping rights).	0
d)	There exist disputes over access/use rights (or overlapping rights) In the project there are not disputes over access/use rights (or overlapping rights).	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
f)	Mitigation: Project area is protected by legally binding commitment (eg, a conservation easement or protected area) to continue management practices that protect carbon stocks over the length of the project crediting period See Project Longevity table.	-2
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
Total Land Tenure (LT) [as applicable, ((a or b) + c + d + e + f + g)] 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 During the awareness campaigns of the project all residents within the area of influence that could be affected or benefited from its development were invited.	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 consulted The area where the awareness campaigns were conducted are within 20 km of the project boundary	0
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 Net positive community impacts of the project are mainly due to the plantation systems selected, providing short, mid and long term products. The main expected impacts are: • Improvement of food security and rural incomes; • Improvement of community resilience to climate change; and • Generation of sustainable incomes for farmers. Overall, all projects supported by the Livelihoods Fund have been selected and will be assessed on 3 criteria: social impact, environmental impact, carbon sequestration (see Livelihoods principles under http://www.livelihoods.eu/files/lh_charter.pdf). In view of this, Livelihoods is supporting all programs and projects in developing standard monitoring processes which integrate carbon monitoring and livelihoods monitoring aspects.	-5
Total Community Engagement (CE) [where applicable, (a + b + c)] 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
b)	Governance score of -0.79 to less than -0.32 The governance score (of between -2.5 and 2.5) has been calculated from the mean of Governance Scores across the six indicators of the World Bank Institute's Worldwide Governance Indicators (WGI), averaged over the most recent five years of available data. This score for Guatemala is -0.60.	4

	The historical data used to calculate this score are shown in the table below:							
		2011	2012	2013	2014	2015	Mean	
	Voice and Accountability	-0.34	-0.38	-0.40	-0.38	-0.42	-0.38	
	Political Stability No Violence	-0.76	-0.66	-0.68	-0.65	-0.65	-0.68	
	Government Effectiveness	-0.70	-0.75	-0.70	-0.71	-0.71	-0.71	
	Regulatory Quality	-0.11	-0.16	-0.19	-0.19	-0.20	-0.17	
	Rule of Law	-1.07	-1.10	-1.11	-0.99	-0.99	-1.05	
	Control of Corruption	-0.47	-0.62	-0.58	-0.70	-0.71	-0.62	
	Mean	-0.58	-0.61	-0.61	-0.60	-0.61	-0.60	
c)	Governance score of -0.32 to less than 0.19							Not applicable
d)	Governance score of 0.19 to less than 0.82							Not applicable
e)	Governance score of 0.82 or higher							Not applicable
f)	Mitigation: The country has an established Designated National Authority under the CDM and has at least one registered CDM As a member of the Coalition of Rainforest Nations, Guatemala had taken an interest in a REDD-like mechanism since 2008. Guatemala's Readiness Project Idea Note (R-PIN) was accepted by the World Bank Forest Carbon Partnership Facility (FCPF) in June 2009, authorizing a grant of US\$200,000 to help Guatemala prepare its REDD+ Readiness Preparation Proposal (R-PP). Guatemala submitted this in March 2012 in the middle of the transition to the current (at September 2013) Government of President Otto Perez, who was voted in at the end of 2011. The FCPF approved the R-PP and authorized a further grant of US\$3.6m.							-2
Total Political (PC) [as applicable ((a, b, c, d or e) + f)] Total may not be less than zero.								2

External Risk	
Total External Risk (LT + CE + PC) Total may not be less than zero.	0

3 NATURAL RISKS

Natural Risk (Fire)	
Significance	Forest fires are not common in the project area. In 2005 there was only one wildfire in the department of Izabal which affected 42 hectares, representing less than 1% of the total land area affected by forest fires in all of Guatemala that year ¹¹ . Insignificant (less than 5% loss of carbon stocks)
Likelihood	Less than every 10 years
Score (LS)	2
Mitigation	The Livelihood & FUNDAECO Management and Financial Plan includes specific measures to prevent and control forest fires such as: - 3 meters width perimeter barriers firewall in planting area will be fitted where needed, as well as intermediate barriers within the plantation. Intermediate barriers may be used for transportation. - Permanent and temporary crews for preventing and fighting forest fires workers will be supported. - There will be permanent patrols in this area and during the period of greatest risk of fire. Project proponent has proven history of effectively containing natural risk and prevention measures applicable to the risk factor are implemented (0.25)

Natural Risk (Pest and Disease outbreaks)	
Significance	Cedar (<i>Cedrela odorata</i>) and mahogany (<i>Swietenia macrophylla</i>) may be attacked by <i>Hypsipyla grandella</i>. This insect scuttles the stems and may result in deformed trees without economic value. It is considered that the first three years of a plantation are the critical period for the following reasons: a) the basal log is the most valuable; b) it is often a tree with a low branch; c) <i>H. grandella</i> attack slows the growth, increasing maintenance costs, which are very high in the early years; and d) the evidence indicates that when the trees exceed about 6 meters high risk of injury is minor. There is evidence that the presence of lateral shade reduces pest damage, because it stimulates the vertical growth and self-pruning.¹² Minor losses (5% to less than 25% of carbon stocks) by <i>H. grandella</i> are expected. It is known that without proper control of infected trees, the total stem volume losses are between 15 and 20%¹³. The main disease that affects rubber plantations is a fungus called <i>Microcyclus</i>

¹¹ Instituto Nacional de Bosques. 2005. Informe Nacional de Incendios Forestales.

¹² Hilje, L., & Cornelius, J. (2001). ¿Es inmanejable *Hypsipyla grandella* como plaga forestal. *Man. Integ. Plagas*, (61).

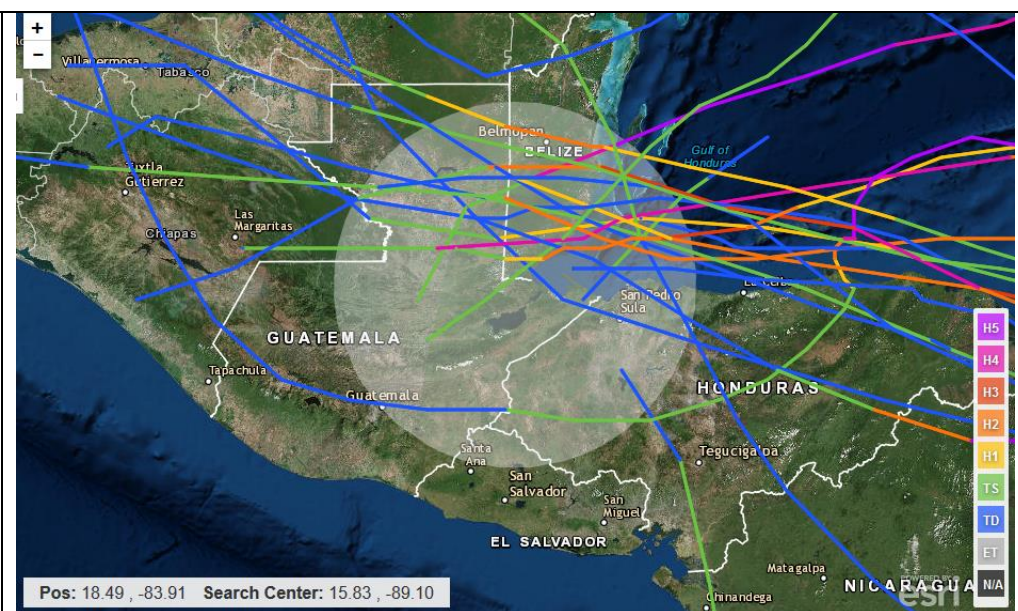
¹³ Espinoza H. et al. (2011) Evaluación de estrategias para el control del barrenador de los brotes de la caoba (*Hypsipyla grandella*) (Zeller) (Lepidoptera: Pyralidae)

	<i>uler</i> ¹⁴ . This fungus attacks leaves of the rubber trees. Minor losses (5% to less than 25% of carbon stocks) by <i>Microcyclus ulei</i> are expected. Even the expected losses during the attack are higher than the 5% they are transient (full recovery of lost carbon stocks expected within 10 years of any event). Full biomass recovery is expected because of the initial planting density and to the competition for sunlight.
Likelihood	Less than every 10 years. It is expected that this problem appear during the first years after plantation. In trees older than 6 years problems are insignificant. The likelihood of this natural risk has been considered “less than every 10 years” as a conservative approach.
Score (LS)	2
Mitigation	Biological/chemical control of pests are considered in the Livelihood & FUNDAECO Management and Financial Plan. Cedar and mahogany are planted in mixed plantations, generating lateral shade and incrementing biodiversity. In this way, it is expected to reduce potential damages by <i>H. grandella</i>. At the time of silvicultural activities pruning and thinning residues will be completely removed to prevent the proliferation of phytophagous insects such as termites. To mitigate the potential negative effects of <i>M. ulei</i> a resistant clone (IAN 873) has been used. Project proponent has proven history of effectively containing natural risk and prevention measures applicable to the risk factor are implemented (0.25)

Natural Risk (Extreme Weather)	
Significance	The most significant extreme weather events with relevance to Guatemala are hurricanes. As can be seen in the next figure ¹⁵ , cyclones are a frequent occurrence in the project area.

¹⁴ <http://www.cbwinfo.com/Biological/PlantPath/MU.html>

¹⁵ <https://coast.noaa.gov/hurricanes/>

	 Pos: 18.49 , -83.91 Search Center: 15.83 , -89.10 In 1998 Hurricane Mitch caused severe damage to coffee and cardamom plantations. Heavy rains, accompanied sporadically of the action of winds, caused landslides, floods, overflowing rivers and strong surface streams. These damages affected to 20.7% and 1.8% of total area planted with coffee and cardamom respectively.¹⁶ Significant damages were recorded in the forests on the banks of the affected rivers. Landslides and mudslides were mainly in agricultural areas, precisely because it is devoid of permanent vegetation cover.
Likelihood	Since 1960, project area has been affected by 21 tropical depressions. However, the risk of a devastating hurricane impacting Guatemala during the life of the project is low only two have been registered as causing significant damage to forests; Hurrican Mitch in 1998, and Stan in 2010. These records suggest a return interval of 10-25 years.
Score (LS)	2
Mitigation	Not applicable

Natural Risk (Geological risks)	
Significance	Izabal department is located between Cocos and Caribbean plates, near from Motagua fault. This causes high seismic activity in the zone. Minor carbon losses are expected (5% to less than 25%) by earthquakes producing landslides in deserted slopes. Volcanic activity is not risk in the project area due to its location far from active volcanoes. Most plots entered in the project have a slope greater than 15%. All these plots have sliding threat because before the start of the project activity project were agricultural lands. This risk is minimized with appropriate soil conservation

¹⁶ www.cepal.org/publicaciones/xml/0/15500/I370-2.pdf

	practices (contour lines). Minor carbon losses are expected (5% to less than 25%)
Likelihood	Earthquakes: Once every 100 or more years. Only one earthquake bigger than 7.0 in the Richter scale has affected to Izabal Department in the last 100 years ¹⁷ . Landslides: Every 10 to less than 25 years. Due to hurricanes and tropical depressions.
Score (LS)	2
Mitigation	Appropriate soil conservation practices (0.5)

Score for each natural risk applicable to the project (Determined by $LS \times M$)	
Fire (F)	0.5
Pest and Disease Outbreaks (PD)	0.5
Extreme Weather (W)	2
Geological Risk (G)	1
Other natural risk (ON)	-
Total Natural Risk (as applicable, $F + PD + W + G + ON$)	4

¹⁷ <http://es.earthquaketrack.com/p/guatemala/izabal/biggest>

4 OVERALL NON-PERMANENCE RISK RATING AND BUFFER DETERMINATION

4.1 Overall Risk Rating

Risk Category	Rating
a) Internal Risk	9
b) External Risk	0
c) Natural Risk	4
Overall Risk Rating (a + b + c)	13

4.2 Calculation of Total VCUs

The carbon stock change for the first project activity instance in the first monitoring period is **62,967.82** tCO₂-e, therefore the total number of buffer credits that need to be deposited into the AFOLU pooled buffer account is 8,185 tCO₂-e (13 %). Based on these values, the number of GHG credits eligible to be issued as VCUs is 54,782 tCO₂-e.