

NON-PERMANENCE RISK REPORT FUNDAECO REDD+ PROJECT (RISK AREA B)



Document Prepared By ecoPartners LLC for FUNDAECO

Project Title	<i>REDD+ PROJECT FOR CARIBBEAN GUATEMALA: THE CONSERVATION COAST</i>
Version	<i>2.10</i>
Date of Issue	<i>March 23, 2017</i>
Project ID	<i>Not yet registered</i>
Monitoring Period	<i>April 1, 2012 to March 19, 2014</i>
Prepared By	<i>Paz Lozano</i>
Contact	<i>ecoPartners Carbon LLC, 2930 Shattuck Avenue, Suite 305, Berkeley, CA 94705</i> <i>plozano@ecopartnersllc.com</i> <i>http://www.epcarbon.com/</i>

1 INTERNAL RISK

Project Management		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	GHG credits are not based on planted species. Moreover, no GHG credits have previously been issued.	0
b)	No previously issued credits. There are regular patrols funded by Fundaeco across the project area and within protected areas that will hold carbon stocks on which GHG credits will be issued. See project description annexes for example patrol logs (control y vigilancia2.doc).	0
c)	Management team includes individuals with significant experience in all skills necessary to successfully undertake project activities. See (e) below and sections 1.4 and 1.5 of Joint VCS-CCB Project Description (PD).	0
d)	Management team maintains a presence in-country and less than one travel day from project site. Fundaeco maintains a central office in Guatemala City where Izabal can be reached within 6-8 hours along the Carretera Jacobo Árbenz Guzmán/CA-9N. Additionally, Fundaeco holds several offices in Izabal located within protected areas. These offices are located within Cerro San Gil, Morales, Sierra Santa Cruz, and Rio Sarstun with approximately 10 field staff each, electricity, telephone, and vehicles for transportation.	0
e)	Mitigation: The ecoPartners team including Kyle Holland (Ph.D.) manages the technical components of the project design and implementation, as stated in the Plan de Implementación REDD V6.docx. The management team has extensive experience in AFOLU project design and carbon accounting under the VCS program.	-2
f)	Currently there is an adaptive management plan in place, as described in FUNDAECO's Implementation Plan (see Plan de Implementación REDD V6.docx)	-2
Total Project Management (PM) [as applicable, (a + b + c + d + e + f)]		-4
Total may be less than zero.		

Financial Viability		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	See (b) below.	0
b)	Project cash flow breakeven point is in 2025, a total of eight years from the current risk assessment as demonstrated in the cashflow analysis (BP_budget_and_cashflow_20170306_Final_30_años_2012_2041_WRC_v6.xlsx)	2
c)	See (b) above.	0
d)	See (b) above.	0

e)	See (g) below.	0
f)	See (g) below.	0
g)	As of the current risk assessment, the project has secured 42% of the funding needed to cover the total cash out required before the project reaches breakeven. For the analysis of secured funding, see the "Secured Funding" tab of BP_budget_and_cashflow_20170306_Final_30_años_2012_2041_WRC_v6.xlsx.	1
h)	See (g) above.	0
i)	Mitigation: None	0
Total Financial Viability (FV) [as applicable, ((a, b, c or d) + (e, f, g or h) + i)] Total may not be less than zero.		3

Opportunity Cost		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	See (c) below.	0
b)	See (c) below.	0
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. See NPV Analysis v1.3.xlsx for the NPV analysis of project activities and alternative land uses.	4
d)	See (c) above.	0
e)	See (c) above.	0
f)	See (c) above.	0
g)	Mitigation: FUNDAECO is a non-profit organization. See Estatuos FUNDAECO.pdf for their bylaws, establishing them as a not-for-profit organization.	-2
h)	Mitigation: see (b) in project longevity. Fundaeco's land holdings are protected by a legally binding agreement that covers the length of the project crediting period.	-2
i)	Not applicable.	0
Total Opportunity Cost (OC) [as applicable, (a, b, c, d, e or f) + (g + h or i)] Total may be less than 0.		0

Project Longevity		
a)	Not applicable, a legal requirement to continue the management practice is in place.	0
b)	The portions of the project area within Risk Area B are under legal agreement to	15

	<p>continue the management practice. Of the 54,157 hectares of the Project Area, the land area in Risk Area B total 43,036 hectares. Properties within Risk Area B include those that are owned by national, municipal, private, or <i>posesore</i> entities that have transferred their rights of use to Fundaeco under a legal agreement that also requires prevention of deforestation and land use change (See <i>Contrato de participación entre FUNDAECO y el PROPIETARIO en el proyecto agrupado denominado: "PROYECTO REDD+ PARA LA REGION CARIBE DE GUATEMALA"</i>). The REDD+ Database present in the Fundaeco VM0015 Accounting Model v1.57.xlsm details which properties are not owned by Fundaeco and thus are a part of Risk Area B.</p> <p>The fifth, seventh, and twelfth clauses of this contract establish that the landowners is to avoid, by means at their disposal, deforestation on their property and will fully comply with the terms of the contract. The contract establishes a legally binding commitment by the landowner for a minimum period of 30 years.</p> <p>In addition, the project longevity has been established at 30-years as described in Fundaeco's Implementation Plan and Costing Worksheet (BP_budget_and_cashflow_20170306_Final_30_años_2012_2041_WRC_v6.xlsx).</p> <p>Project crediting longevity is 30 years, thus rating = $30 - (30/2) = 15$</p>	
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.	14

2 EXTERNAL RISKS

Land Tenure and Resource Access/Impacts		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	Not applicable. See (b) in Project Longevity above for justification.	0
b)	Ownership and carbon use rights are held by different entities. Properties found in Risk Area B are titled to national, municipal, private, or <i>posesore</i> entities and carbon use rights are held by Fundaeco.	2
c)	Not applicable. Land tenure is well-defined in the project area and there are no known disputes over land ownership or tenure.	0

d)	Not applicable. There are no disputes over access rights inside the project area. Fundaeco's right of use is firmly established within its landholdings, see PD Section 3.2.	0
e)	Not applicable, the project is not a WRC project.	0
f)	Mitigation: See Project Longevity (b) above. Portions of the project area in Risk Area B are protected by legally binding commitments with Fundaeco.	-2
g)	Mitigation: Not applicable. No disputes over access/use rights exist.	0
Total Land Tenure (LT) [as applicable, ((a or b) + c + d + e + f + g)]		0
Total may not be less than zero.		

Community Engagement		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	FUNDAECO has consulted with 2101 of the 2800 families living within the Grouped Project Area. This means that at least 75% of the families living within the Project Area have been consulted as part of the FPIC process. This is described in more detail in the FPIC guidance document (See Informe de Proceso de Consulta Previa _ GPV4.docx)	0
b)	Of the families living within 20km of the project area, roughly 5,000 households are likely to be dependent on the project in any way due to their proximity to the project area. A mobility analysis of agents within the project area found that the longest distance willing to travel to collect timber, firewood, or clear an area for cultivation was 2.6 km. In order to conservatively estimate the number of households surveyed by FUNDAECO, all households within the project zone were considered for this analysis. Of those roughly 5,000 households within the project zone, FUNDAECO has consulted with 2101 of those households that may be dependent on the project area. This means that FUNDAECO has consulted with roughly 42% of the households that may be dependent on the project area within the surrounding region, which is well above the 20% threshold.	0
c)	Mitigation: The project generates net positive impacts on social and economic well-being of local communities; see Joint VCS-CCB PD section 6.1 and MR section 7.1.	-5
Total Community Engagement (CE) [where applicable, (a + b + c)]		-5
Total may be less than zero.		

Political Risk		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	See (b) below.	0

b)	Score of -0.61. See wgidataset_v2.xlsx for the WGI dataset summarized for Guatemala.	4
c)	See (b) above.	0
d)	See (b) above.	0
e)	See (b) above.	0
f)	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 the R-PP in March 2012 which the FCPF approved and authorized a further grant of US\$3.6m. The Guatemalan national government in coordination with multiple ministries, national stakeholders, and international aid is preparing an Emissions Reduction Project Idea Note (ER-PIN) to establish a national REDD+ program along with a purchase agreement with FCPF for Verified Emissions Reductions (VERs).	-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

Forest Fires

While fire is used in some areas of the project for agricultural purposes to clear *guamil* or secondary forest, the project area has a very low risk of loss due to forest fires. The forests within the project area are considered tropical humid broadleaf forests and have a low likelihood of forest fire. This is evidenced by annual bulletins released by the *Institucional Nacional de Bosques* (INAB) in Guatemala that report on forest health and forest fire incidence across the country. The bulletins and summarized data can be found in INAB Boletín Estadístico. From 2004-2009 approximately 80-hectares were burned in the Izabal region that the *Sistema Nacional de Prevención y Control de Incendios Forestales* (SIPECIF) responded to. This relatively small area accounts for approximately 0.1% of the project area and is considered insignificant (less than 5% of carbon stocks) in terms of released emissions.

No specific studies exist within the project area of Guatemala for the return interval for forests, however, there is considerable research on fire behavior in tropical rainforest systems in other geographies that can be generalized to Guatemala. Historical records and charcoal analysis of soil profiles show that tropical forest fire, even in wetter forests, are not unprecedented.¹ Fire can be considered endemic but rare in tropical rainforest with return intervals of hundreds if not thousands of years.² Fire susceptibility in tropical

¹ Sanford, R. L., Saldarriaga, J., Clark, K., Uhl, C. & Herrera, R. Amazon rainforest fires. *Science* 227, 53–55 (1985).

² Kauffman, J. B. & Uhl, C. in *Fire in the Tropical Biota* (ed. Goldammer, J. G.) 117–134 (Springer, Berlin, 1990).

forest occurs largely because of moisture stress, during periods of extensive drought, when normally moist fuels dry out and become potentially flammable. However, closed-canopy evergreen rainforest are remarkably resistant to drought.³ For this reason, the tropical humid broadleaf forests in Sarstun-Motagua are considered to have a very low likelihood of forest fire.

Natural Risk (Fire)	
Significance	Insignificant
Likelihood	Once every 100 years or more
Score (LS)	0
Mitigation	1.0 (none)

Pest and Disease Outbreaks

Due to the project area's wet tropical climate, high biodiversity levels, and natural distribution of native species, the forests have low susceptibility to losses due to pest and disease compared to forest plantations. No evidence of pest or disease outbreaks has been identified in the project area. The FAO profile for Guatemala shows a low incidence of disease outbreak across the country with 1,000 hectares being reported under the category "Disturbance by insects".⁴ The Institucional Nacional de Basques (INAB) in Guatemala released annual bulletins from 2004 to 2009 that reported tree species with pest and/or disease outbreaks and the area affected. The bulletins and a summarized data can be found in INAB Boletín Estadístico. The species listed with pest/ disease damage were cross-referenced with the existing forest inventory data for Izabal collected by the Universidad de Valle (UVG) and no species were identified and unlikely exist in the project area. Therefore the impact on carbon stocks in the project area by pest and disease is considered to be insignificant and the likelihood infrequent.

Natural Risk (Pest and Disease)	
Significance	Insignificant
Likelihood	Every 50 – 100 years
Score (LS)	0
Mitigation	1.0 (none)

Extreme Weather

Although hurricanes do affect the Caribbean coast, due to its geographic location, Izabal is very infrequently subjected to hurricanes. The only hurricane on record passing through the Izabal region was in 1887 and was a category 1 hurricane, the lowest category (see attached 1887 - Unnamed - Cat1 Hurricane.JPG). The frequency of hurricanes is on a level of once every 100 years or more and thus poses no risk to the project area. Severe flooding can occur as a result of tropical storms or depressions

³ Uhl, C., Kauffman, J. B. & Cummings, D. L. Fire in the Venezuelan Amazon 2: Environmental conditions necessary for forest fires in the evergreen rainforest of Venezuela. *Oikos* 53, 176–184 (1988).

⁴ <http://www.fao.org/forestry/country/32267/en/gtm/>, accessed March 2, 2016.

in the region, of which only three have hit Izabal in the past 100 years (see 1934 - Unnamed - Tropical Storm.JPG, 1971 - Laura - Tropical Storm.JPG, 2012- Helene -Tropical Depression.JPG, Historical Hurricane Tracks.JPG). These weather events pose no risk to forest carbon stocks, but do affect areas with annual crops due to a lack of vegetation stabilizing the topsoil, and ultimately these risks aren't considered applicable to the project area. The document *reporte_depression 12E.pdf* provides an example of the environmental damages that occurred on the Pacific coast of Guatemala as a result of a tropical depression. The primary environmental damage as a result of these types of storms is a loss of topsoil due to erosion within deforested areas, but no loss of forest carbon stocks are reported. Flooding and drought occur naturally throughout the project zone and life in the region has adapted to the natural cycles of these events. Protection of natural forest from deforestation and degradation will reduce the impacts of flooding events.

Natural Risk (Extreme Weather)	
Significance	Insignificant
Likelihood	Not applicable
Score (LS)	0
Mitigation	1.0 (none)

Geologic Risk

Seismic events are a regular occurrence within Guatemala, however, the majority of seismic activity is located to the west due to the subduction of the *Placa de Cocos* beneath the *Placa del Caribe*. The project area is located in the G6 seismic zone that runs from east to west across the country where, in 2012, only 8 seismic events was recorded that were detectable without significant equipment.⁵ Only one of these was located in the Izabal region. Moreover, in the G6 zone it is estimated that significant events that cause destruction occur every 225 ± 50 years.⁶ Active volcanoes lie far to the west of the project area and do not pose a significant threat to carbon stocks.⁷ Both the seismic and volcanic impact on carbon stocks is considered to be insignificant due to no historical evidence of loss from these types of natural events.

Natural Risk (Geological)	
Significance	Insignificant
Likelihood	Once every 100 years or more
Score (LS)	0
Mitigation	1.0 (none)

No other natural risks were identified.

Score for each natural risk applicable to the project

⁵ Boletín sismológico (2012). Instituto Nacional de Sismología, Vulcanología, Meteorología, e Hidrología (INSIVUMEH)

⁶ White, R. Tectonic implications of upper-crustal seismicity in Central America". Bulletin of the Seismological Society of America, Decade Map Volume I. 1991, Chapter 18.

⁷ <http://www.volcanodiscovery.com/guatemala.html>, accessed March 2, 2016.

(Determined by (LS × M))	
Fire (F)	0
Pest and Disease Outbreaks (PD)	0
Extreme Weather (W)	0
Geological Risk (G)	0
Other natural risk (ON)	0
Total Natural Risk (as applicable, F + PD + W + G + ON)	0

4 OVERALL NON-PERMANENCE RISK RATING AND BUFFER DETERMINATION

4.1 Overall Risk Rating

Risk Category	Rating
a) Internal Risk	14
b) External Risk	0
c) Natural Risk	0
Overall Risk Rating (a + b + c)	14

4.2 Calculation of Total VCUs

The total ex-ante VCUs calculated, accounting for the buffer contribution are outlined in the table below.

Year	Estimated net GHG emission reductions or removals (tCO ₂ e)		Ex ante Buffer Credits (tCO ₂ e)		Ex ante VCUs Tradable (tCO ₂ e)	
	Risk Area A	Risk Area B	Risk Area A	Risk Area B	Risk Area A	Risk Area B
1	56,973	220,473	9,970	38,583	47,003	181,890
2	105,482	408,194	18,459	71,434	87,023	336,760
3	111,360	430,939	19,488	75,414	91,872	355,525
4	128,896	498,802	22,557	87,290	106,339	411,512
5	145,451	562,866	25,521	98,760	119,930	464,106
6	155,283	600,913	27,316	105,708	127,967	495,205
7	166,308	643,577	29,330	113,502	136,977	530,074
8	180,907	700,072	31,986	123,779	148,921	576,294
9	199,151	770,674	35,303	136,615	163,848	634,059
10	221,004	855,240	39,280	152,007	181,723	703,232

11	236,338	914,581	42,116	162,980	194,222	751,601
12	233,154	902,260	41,651	161,182	191,503	741,078
13	226,258	875,574	40,519	156,800	185,739	718,774
14	225,627	873,131	40,515	156,783	185,113	716,348
15	225,504	872,655	40,595	157,096	184,909	715,559
16	209,270	809,830	37,751	146,090	171,518	663,740
17	186,326	721,045	33,683	130,346	152,644	590,699
18	181,515	702,424	32,892	127,285	148,623	575,139
19	200,165	774,598	36,378	140,777	163,787	633,821
20	207,717	803,823	37,879	146,585	169,838	657,238
21	202,523	783,724	37,066	143,436	165,458	640,288
22	230,668	892,640	42,442	164,243	188,226	728,397
23	178,118	689,279	32,875	127,221	145,242	562,058
24	112,704	436,142	20,778	80,407	91,926	355,735
25	47,352	183,243	8,701	33,671	38,651	149,572
26	31,188	120,691	5,717	22,123	25,471	98,568
27	25,787	99,792	4,727	18,294	21,060	81,498
28	22,282	86,226	4,091	15,831	18,191	70,394
29	18,333	70,946	3,373	13,051	14,961	57,895
30	14,137	54,706	2,606	10,085	11,531	44,621
Risk Area Totals	4,485,782	17,359,061	805,567	3,117,380	3,680,215	14,241,681
Project Totals	21,844,843		3,922,947		17,921,896	